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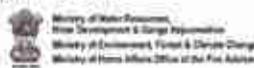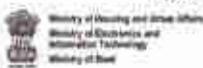
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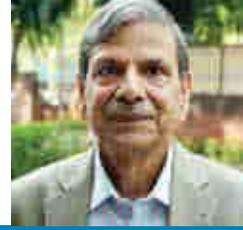
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Innovate to address urban issues

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

'Chennai beats Delhi in pollution, records 'very poor' air quality' read a headline early this month. Clearly the issue of air pollution is catching up and now affects cities beyond Delhi. While causes for the pollution in Delhi have been analysed for some years, a lasting solution has evaded us. Causes for the menace of poor, or rather dangerous air quality may differ across cities and thus call for customized measures to mitigate the problem.

Solid waste management, choked roads and weak service delivery are among other issues of our cities crying for urgent attention. Effective solutions to these have eluded us for long. Why? A famous saying goes that if you do the same things you will get the same results. Therefore we must do different things or do things differently. To put it differently, our cities need large doses of innovation in what we do and the way we do things. Take the case of waste management; almost all the focus is on waste management and hardly any on waste reduction. For example, in the case of toothpaste (and cosmetics) tubes, the carton in which the tube comes is completely useless once we open it. Millions of such cartons end up in landfills every single day. Manufacturers need to pack and transport goods in ways that eliminate such unnecessary packaging; it will reduce waste and also save huge amounts of money for producers and consumers. This calls for innovation. And for packaging that is necessary, there is huge scope for creating new materials which are benign and harmless when disposed. Our attempts at proper segregation of waste at source will continue to fail unless we do things differently.

Urban mobility too offers great scope for doing things differently. How can public transport be funded to make it the most affordable means of travel for all citizens? Can some roads near suburban rail stations and bus terminuses be reserved for public transport? Can non-motorized modes like pedicabs play a role in last mile connectivity (short distances)? Can staggered office/business timings reduce congestion on roads and rush in suburban trains? Can battery swapping be the solution for charging infrastructure for electric vehicles? Unless we look at some such possibilities, urban mobility could remain in the poor state that it currently is. Science and technology are valuable inputs for building innovations to deliver sustainable solutions for urban problems. For example developing a host of inexpensive, bio-degradable materials. Improved design of water faucets, cisterns and bathroom fittings can save us millions of litres of water (now a critical resource) each day. However innovation can also come from changes in lifestyle and the way we perform daily chores. Urban local bodies could devise programmes to engage with students and housewives to suggest new ways of doing things particularly in areas like road safety and waste management / elimination. While there could be several approaches to each of the challenges our cities face, one common thread runs through. We must discard the 'business as usual' approach.

This issue of Urban Update deals with the subject of innovation in addressing urban problems. We shall be happy to receive your feedback and suggestions. ■

PIN POINT

"Human health and wellbeing are fundamental to the progress of any nation. We must ensure that every citizen has a good quality of life and access to opportunities for growth and prosperity

M Venkaiah Naidu
Vice President of India

"Cities can help solve our environmental challenges. Well-designed cities could cut up to 54% of GHG emissions. They can make buildings zero-emission and resilient. They can implement solutions such as renaturing of urban spaces

Inger Andersen
Executive Director, UNEP

"We cannot consider rivers as merely resources. A river needs to be protected and rejuvenated to ensure the sustenance of the river itself as well as the aquatic biodiversity dependent on it

Rajiv Ranjan Mishra
DG, NMGC

"I'm positive about climatechange because we know exactly what to do and how to do it. We are seeing more and more companies taking leadership on climate change, but we need to ensure all our efforts are accounted for

Kevin Conrad
Executive Director, Coalition for Rainforest Nations

BUZZ

M S Swaminathan
Former Chairman, NCF
@msswaminathan

I suggest that Delhi, Haryana and UP govts put up Rice Bio-Parks where farmers can convert stubble into income and employment. We should stop blaming farmers. Instead we should propose methods which are economically & ecologically desirable

IEA
International Energy Agency
@IEA

The installation of solar PV systems on homes, commercial buildings & industrial facilities is set to take off over the next 5 years, transforming the way electricity is generated & consumed

Tijjani Muhammad-Bande
7th UNGA President
@UN_PGA

We must think of new ways of accelerating the #GlobalGoals. We need to intensify our efforts to fulfill the commitments we made to the people we serve. Especially on poverty eradication, quality education, #ClimateAction& inclusion

Cities Alliance
@CitiesAlliance

Over half of the world's population live in cities, which is expected to double by 2050. Urbanisation is both an opportunity and challenge. We must work together to ensure everyone reaps the benefits of sustainable urban development

Inside

Volume 6, Issue 7   November 2019

ARTICLES

32

44

COVER STORY

LEADERSPEAK

Equi-City conducts sanitisation awareness campaigns on single-use plastic

Team Equi-City

After the work on big schemes like Swachh Bharat Mission and HarGhar Jal, now Prime Minister Narendra Modi has officially launched a movement to end the use of single-use plastic in the country. In fact, on August 15, 2019, on the occasion of the 73rd Independence DayPMModi in his speech from Red Fort announced his mission to free India from plastic pollution.

He appealed to the masses especially the shopkeepers and traders to contribute in this mission.The PM said that the effort to release the country from plastic waste will take off simultaneously in the entire country from the Birth Anniversary of Mahatma Gandhion October 2, 2019.The Indian Railways have already begun a massive movement to rid the country of single-use plastic.But the question arises - what is single-use plastic and what products come under the ban?

List of six items banned in India
♦ Plastic carry bags
♦ Plastic cups and plates
♦ Plastic wrappers
♦ Plastic bottles
♦ Plastic straws
♦ Certain types of plastic sachets used in packaging

What is single-use plastic?
Single-use plastic basically refers to those plastic products which are used just once and then disposed of. Single-use plastic products include plastic bags, plastic bottles, straws, plates, plastic used in food packaging, gift wrappers and disposable cups of coffee and tea.

Around 300 million tonnes of plastic is produced every year. Of this, 150 million tonnes of plastic is single-use. At the same time, only 10 to 13 percent of the plastic can be re-cycled worldwide.

The degradation of environment due to climate change and global warming is the biggest concern for the world at present. In such a situation, plastic pollution prevention and plastic waste management has emerged as a major issue. Several lakh tonnes of plastic is being produced every year, which is not biodegradable and is harmful for the soil fertility and it alsohasafter affects on all living beings directly or indirectly. Most plastics are non-biodegradable and sometimes plastics break down and release toxic chemicals. Such chemicals reach our body through the water and food chain and cause serious problems. Therefore, countries around the world are devising stricter strategies to end the use of single-use plastics.

Keepig in focus the aforementioned facts the Equi-City team conducted two sensistisation campaigns in Nagpur specifically focusing on the ban ofsingle-use plastic.

Equi-city conducts sensitisationcampaign on October 2, 2019
The Equi-City team along with All India Institute of Local Self-Government (AIILSG) organised an awareness and sensitisation campaign in Dharampeth Zone. The urban awareness campaign organised on October 2, 2019, focused on plastic pollution and covered around 800 households in the locality of Valmiki Nagar, Gokulpeth Market and Coffee House Chowk.

India imposed a nation-wide ban on single-use plastic on October 2, 2019, on the occasion of the 150th Birth Anniversary of Mahatma Gandhi. The use of the six listed single-use plastic items namely plastic bags, straws, cups, plates, small bottles and certain types of sachets are banned with effect from this day. The Equi-City team conducted a cleanliness drive by collecting plastic

Equi-City team memeber distributing pamphlets to spread awareness on sanitation

waste alonglside the canal road and distributed pamphlets to citizens bearing message supporting ban on single-use plastic.

The waste generation in Nagpur city is estimated to be around 1200 tonnes per day. Out ofthis, 60 per cent is estimated to be organic waste, 16 per cent is plastic waste, 11 per cent is paper waste, 11 per cent is wood, metal, glass and two per cent is inert material. The key to efficient waste management is to ensure proper segregation of waste at source and see that the waste goes through different streams of recycling and resource recovery. Then reduced final residue is deposited scientifically in sanitary landfills. Sanitary landfills are the ultimate means of disposal for unutilised municipal solid waste from waste processing facilities and other types of inorganic waste that cannot be reused or recycled. Equi-City team along with Nagpur Municipal Corporation (NMC) is mobilising the community for waste management by conducting sensitisation workshops for swachhtakarmacharis in Nagpur.

Equi-City's sensitization campaign on October 8, 2019

The awareness campaign was conducted on October 8, 2019 at Deekshabhoomi by the Equi-City team. The campaign focused on spreading awareness among people about the implementation of single-use plastic ban.

The campaign occurred before DhammachakraParivartan Din (October 14, 2019) for which a large number of people visit every year. Around 8,000 to 10,000 people were present in and around the Deekshabhoomi on the day of campaign to celebrate the DhammachakraParivartan Din.

The worst form of single-use plastic is the multi-layered packaging used in sachets for packing and storing tobacco products such as gutkha. Many other eatables like chocolates, biscuits, chips and liquid food products are packed in them.The nationwide ban on plastic bags, cups, plates, small bottles, straws and certain types of sachets began on October 2 to eliminate single-use plastic from cities and villages that rank among the world's most polluted.

The campaign started early in the morning at the control center with the motivating words from the Commissioner. The Equi-City team was led by Shekhar Giradkar by explaining the motive of the campaign and starting to reach out to people in different stalls to make them aware about the plastic ban. Many shopkeepers were not aware about the notice of NMC regarding the ban on single-use plastic. The team not only made them aware about the ban but also distributed phamplets with information about the single-use plastic. Those who weren't aware about the ban were requested to get familiar with the NMC's orders and act as soon as possible.

The campaign was a huge success considering the participation level. The opinions and valuable comments were helpful to understand the perspective of common people who shared their ideassupporting the ban. The campaign was much appreciated by the Commissioner and his team for spreading the message of banning single-use plastic.

Equi-City launches its mobile app for citizens

The Municipal Rating System Mobile Application under the Equi-City Project was formally launched on Google Play Store for open downloads by both the citizens and the officials. The mobile application consists of basic information about the city of Nagpur along with Prabhag/Ward wise Corporator details with contact information. There is also a component of questionnaire based survey on the basis of which level of satisfaction of the citizens on services will be judged and will help in better decision making towards improvement of services in the wards lagging behind. ∎

AIILSG along with MMI organises IFAT India 2019 in Mumbai

MUMBAI: India's Leading Trade Fair for water, sewage, solid waste and recycling, the IFAT India 2019 was organised in Mumbai from October 16 to 18, 2019. Being the world's leading network for environmental technologies – IFAT India has firmly established itself as the most highly regarded trade fair in India's environmental industry.

A thought-out supporting program compliments the exhibition by bringing together industry leaders, trade associations and government representatives to critically discuss the most relevant topics. As a part of this program, AIILSG, Mumbai hosted the City Leaders' Conclave: India 2020 – Agenda on Sustainable Cities, with Messe Munchen India (MMI), to deliberate upon the future direction and prospects of urban development missions in achieving the targets set by the Sustainable Development Goals (SDGs).

The objective of the conclave was to provide a platform to the urban local government leaders, public enterprises, urban planners, sector experts, entrepreneurs, all other disciplines and businesses involved in improving city's infrastructure systems for interaction and networking. The conclave also aimed to recognise efforts of the cities which have shown exemplary progress in order to meet the National Development Mission targets.

The welcome address was given by the organising partners, Rajiv Agarwal, IAS (Retd), Director General, AIILSG, Utkarsha Kavadi, Senior Executive Director, AIILSG Mumbai and Bhupender Singh, CEO, MMI. Praveen Pardeshi, IAS, Municipal Commissioner, Municipal Corporation of Greater Mumbai (MCGM) gave the keynote address and a presentation briefing the participants with the development being undertaken under variouss sectors in Mumbai followed by a brief talk by Praveen Darade, IAS, AMC, MCGM. This was followed by the inauguration of the conclave by all the dignitaries.

To encourage cities in their path towards progress, national ranking systems such as the Swachh Survekshan and the Ease of Living Index have been launched by the Ministry of Housing and Urban Affairs (MoHUA). Through these rankings, various initiatives, innovative ideas and achievements have been acknowledged at the city level. The key highlight of the event was the felicitation of 30 such cities across the country for their outstanding performance under Swachh Survekshan – 2019 and Ease of Living Index – 2018. This was received with an overwhelming response from the cities. AIILSG, Mumbai and MMI, welcomed the city leaders from various cities across the country. Esteemed city leaders from Mumbai, Indore, Pune, Navi Mumbai, Mysore, Ambikapur, Bhubaneswar, Thane made presentations on their city's achievements under flagship urban development missions with a focus on sustainability and way forward.

The conclave was a huge success witnessing the participation of more than 100 delegates from different sectors. The dialogues of all the speakers were appreciated and were concluded with an interactive Q and A session. The closing session and vote of thanks was delivered by Utkarsha Kavadi.

Rajiv Agarwal, IAS (Retd.) , Director General, AIILSG addressing the delegates

'Urban centres are assuming larger role in achieving the SDGs'

Team UrbanUpdate

The United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) organized the 7th Asia Pacific Urban Forum (APUF7) at the SETIA SPICE Convention centre, Penang, Malaysia from 14-17 October 2019. Penang, Malaysia.

The Asia-Pacific Urban Forum is the region's largest and most dynamic multi-stakeholder forum held regularly since 1993, convening key actors in the Asia-Pacific region within the field of sustainable urban development. The 6th Asia Pacific Urban Forum was held in Jakarta, Indonesia. The forum proved to be great success in the region having participation from all over the region including India, Australia, Netherland, Japan, European Union and all cities of the country of Malaysia.

The main objectives of APUF-7 were to strategies and harness the transformative potential of cities, to enhance sustainable development, to achieve the interrelated goals and commitments of UN Sustainable Development Goals, 2030.

At the Inaugural ceremony, a host of dignitaries including Josaia Voreqe Bainimarama, Prime Minister of Fiji; Dato' Ar Yew Tung Seang - City Council of Penang Island, Mayor Malaysia; Maimunah Mohd Sharif, Executive Director of the United Nations Human Settlements Programme; Chow Kon Yeow - Chief Minister, Penang, Malaysia; Hajah Zuraida Kamaruddin - Ministry of Housing and Local Government along with Hansa Patel - Executive Advisor, AllLSG & Chairperson – ICLEI South Asia. "Across the world, urban centres

Hansa Patel, Executive Advisor, AIILSG & Chairperson of ICLEI South Asia, addressing the audience during the 7th the Asia Pacific Urban Forum at Penang, Malaysia on October 14, 2019

are assuming a larger role in achieving the SDGs, and this is particularly true with climate change," said Josaia Voreqe Bainimarama, Prime Minister of Fiji. "As concentrated population hubs with high-density living, the world's cities –– over 90 per cent of which are located on the coast –– are naturally more vulnerable to catastrophic weather events, they have an outsized carbon footprint, and their buildings and infrastructure trap heat, further intensifying the effects of global warming. But when it comes to meeting any of our SDGs, we shouldn't see our cities as the problem; with proper urban planning, and through innovative, local thinking, they can be the solution."

In the opening session Hajah Zuraida Kamaruddin, Minister of Housing and Local Government, Malaysia, said "Urbanization is one of the defining trends of Asia-Pacific's transformation. Cities generate over 80 per cent of gross domestic product in many countries in Asia and the Pacific and are engines of economic growth. The quality and efficiency of our cities will determine the region's long-term productivity and overall stability," said Chow Kon Yeow,

Chief Minister of Penang.

The Forum also discussed the implementation of various programmes to realize the objectives including backup solutions, information sharing and adoption of new methods and technologies through different methods with the pre-organised programs at various levels. The APUF-7 has also formed a steering committee comprising various eminent international agencies working in the areas specified above which includes commonwealth Local Government Forum, ICLEI-Local Governments for Sustainability and United Cities and Local Governments Asia and the Pacific.

During the APUF7 week, LOGOTRI had its General council Meeting, Hansa Patel apprised the members regarding the specific areas where both the organizations can work together to realize the common objectives by joint and collective efforts. She also invited the international delegates in general and the Logotri Executive committee members to attend the 5th South Asian Cities' Summit that is being organized by AIILSG at Goa in March 2020.

Bhopal to get India's first e-waste clinic

The Bhopal Municipal Corporation (BMC) and the Central Pollution Control Board (CPCB) have joined hands to set up India's first e-waste clinic in Bhopal. The clinic will be able to segregate, process and dispose waste from both household and commercial units. The clinic is a three-month pilot project which, if successful, will be implemented elsewhere in the country. Door-to-door collection for the same will be conducted in two ways, either separate carts will be designed for the collection of e-waste or separate bins will be attached to existing ones meant for solid and wet waste. The clinic is being perceived in compliance with SWM Rules 2016.

IOCL constructs road from plastic waste in Faridabad

State owned Indian Oil Corporation Limited (IOCL) has built an 850 m long road using "varying concentration (1 – 3 per cent) of single-use plastic" alongside bitumen, a company statement said. The industry had previously demonstrated recycling opportunities to keep plastic in use. "As per the lab tests, the waste plastic roads have the advantages of higher strength, increased durability, lesser rainwater seepage due to plastic in the aggregates, better binding/bonding of mix and lesser stripping with fewer pot-holes," IOCL said. It has been reported that about 16 metric tonnes of plastic waste from single-use carry bags/packaging film was used in the construction of the road.

Nuclear power can be boon in fighting climate change: DG IAEA

VIENNA: The first-ever International Conference on Climate Change (ICCC) and the Role of Nuclear Power held on October 7. More than 550 participants from 79 countries and 18 international organisations participated to discuss the role of nuclear power in mitigating the climate crisis. Cornel Feruta, the acting Director-General of International Atomic Energy Agency (IAEA) said, "Without significantly increasing the use of nuclear power worldwide, it will be difficult to achieve the goal of reducing harmful emissions and fighting climate change".

However, the agency also accepted varied public concerns about nuclear threats to health and the environment. Liu Zhenmin, Under-Secretary-General for Department of Economic and Social Affairs (DESA) said that the problem of radioactive waste is an "unresolved issue" that needs to be addressed.

Zhenmin, pointed at the large up-front costs of nuclear power plants, while other renewable energies such as solar and wind, are continuing to drop in price, becoming increasingly competitive with conventional, fossil-fuel based sources. Government commitments and public acceptance will be required to meet the capital costs of building nuclear plants.

Zhenmin also outlined some of the benefits of nuclear power, such as monitoring pollution and assisting in the diagnosis and treatment of major diseases, and pointed out that radiation technology helps prevent food from getting spoilt and creating new crop varieties, which supports climate change adaptation.

India could miss 2022 renewable energy target, says CRISIL

NEW DELHI: According to a note by CRISIL Ltd, India is likely to produce 175 gigawatts of renewable energy by 2022. Not just that, it will miss the target by 42 per cent. CRISIL cites regulatory challenges and policy changes, amid record-low renewable power tariffs, as reasons for the shortfall. Recently, Prime Minister Narendra Modi, while speaking at the UNGA Global Climate Summit in New York on September 23, pledged to more than double India's renewable energy target to 450 GW. Following this, Dr Harsh Vardhan, Union Minister for Ministry of Science and Technology said that India is on track to achieve its renewable energy target by 2022, as set by the present government.

The ratings and research agency said in the note, "Renewable energy capacity may increase by just 40 GW to 104 GW in 2022 from 64.4 GW in 2019, thanks to the lingering policy uncertainty and tariff glitches. It would be a good 42 per cent short of the government's target of 175 GW of renewable energy." According to an analysis conducted by CRISIL, 26 per cent of the 64 GW renewable energy projects auctioned by the central and state governments have received unfavorable response while 31 per cent of the projects are facing delays in allocation after being tendered. Thus, despite the increase in tendering volume, not only has allocation of renewable energy projects slowed down, but both undersubscriptions and cancellations of awarded tenders have also increased, CRISIL said. However, the Ministry of New and Renewable Energy (MNRE) denounced the report by CRISIL and asserted that the government will not only be successful in achieving its target by 2022, it will exceed it.

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Tejas Express offers biodegradable water bottles for passengers

Tejas Express, India's first private semi-high speed train is now serving water to its passengers in biodegradable bottles. "At least 1,500 bottles are being served on Tejas Express every day in both up and down trips. The bottles would be in use for a few months to observe the results and check how much do they actually decompose. The bottles would be disposed of as prescribed," said Ashwini Srivastava, Chief Regional Manager (CRM), Indian Railways Catering and Tourism Corporation (IRCTC). The IRCTC is presently manufacturing the bottles at its Mumbai bottling plant on a trial basis. For the first time, IRCTC has taken an eco-friendly measure by using degradable bottles.

GHMC introduces first biomethanation plant

The Greater Hyderabad Municipal Corporation (GHMC) has set up its first ever biomethanation plant in the city's Chanda Nagar garbage transfer station at an estimated cost of ₹24.76 lakh. Bonthu Rammohan, Mayor, D Hari Chandan, zonal Commissioner were present at the inauguration ceremony. He instructed the bulk waste generators and gated communities to install some decentralised compost and gas plants in their vicinity which would reduce GHMC's transportation costs. The saved funds will be used for other city development plans.

Delhi tops NITI Aayog's Innovation Index across India

NEW DELHI: NITI Aayog in association with the Institute for Competitiveness as the knowledge partner has released India Innovation Index (III) 2019, ranking Indian states and Union Territories (UTs) on the basis of innovation ecosystem developed in a state or a Union Territory. The ranking was released by Dr Rajiv Kumar, Vice Chairman, NITI Aayog and Amitabh Kant, CEO, NITI Aayog. The rankings were classified into three parts: 'Major States', 'North East and Hill States' and 'Union Territories (UTs)/ City and Small States'. This is the first-ever innovation ranking of states.

The index displays strong trends in the innovation ecosystem in the southern part of the country as the states of Karnataka, Tamil Nadu and Maharashtra topped the innovation rankings. Sikkim was the leading innovator in the North Eastern part of the country. Telangana, Haryana, Kerala, Uttar Pradesh, West Bengal, Gujarat and Andhra Pradesh were among the toppers in the states category. Delhi topped the rankings for 'Union Territories (UTs)/ Cities and Small States' and also was the 'most efficient state/UT in translating inputs into outputs'.

Delhi scored the most (42.96) in the rating chart, hence Delhi made it to the top in Innovation Index in all categories across the country, said Saurabh Bharadwaj, Aam Aadmi Party's official spokesperson. Arvind Kejriwal, Chief Minister of Delhi tweeted on the occasion, "Congratulations to all Delhiites for coming first in NITI Aayog's Innovation Index. Delhi government's investments into high quality education, health and infrastructure are showing results." Deputy CM Manish Sisodia also hailed Delhi's ranking.

India to invest $60 billion in gas infrastructure

NEW DELHI: Dharmendra Pradhan, Minister of Petroleum & Natural Gas in his opening remarks at the third International Think Tank Meeting, said that India is investing more than $60 billion in building natural supply and distribution infrastructure as it chases the target of more than doubling the share of natural gas to 15 per cent by 2030 in its energy base. Pradhan said that natural gas is gradually becoming a low carbon economy in India. The government is giving special push to improve gas infrastructure all across the country connecting north to south and east to west parts of India. Pradhan said that the government is looking for partnerships for an overall development of the oil and natural gas sector. The role of both the domestic and international private players for bringing in investments with necessary innovations for future energy landscape in India will be critical. Talking about the key challenges, he added, "The foremost challenge of our time is the Energy Trilemma. It is about providing – sustainably, securely, and affordably-sufficient energy to our growing population." Secondly, in recent times, the world has seen uncertainty and instability in the world energy market. Various oil producing countries have come under pressure by some of the world's largest consumers of fossil fuels. The American government has continuously imposed and lifted sanctions on numerous oil producing countries and this has a direct effect on India's usage of fossil fuels too.

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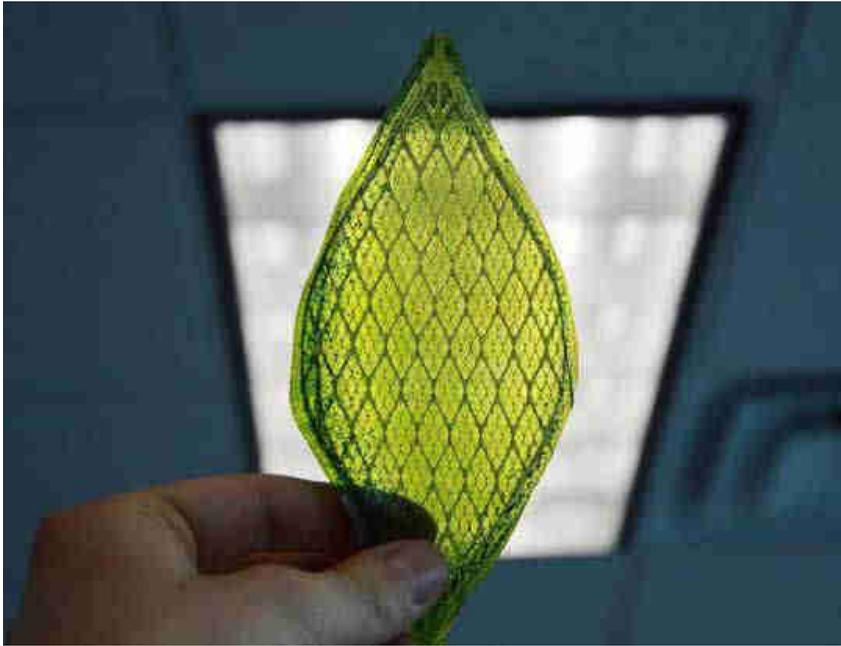
RESEARCHERS OF ARBOREA, biochemical tech startup, developed a cultivation system that allows microscopic plants like microalgae and phytoplankton to grow on large solar panel-like structures that can be installed on land, buildings, and on roofs to improve the city's air quality. Scientists are confident that their pioneering 'biosolar leaf' technology can do the work of 100 trees. Inspired by the natural process of photosynthesis, the biosolar panels allow the microorganisms to absorb CO_2 from the surrounding area and generate breathable oxygen back out again. They also help produce a nutritious, sustainable plant protein with tiny environmental impact.

GMC launches Mobile Malaria Dengue clinic to fight seasonal diseases

In a bid to control the mosquito spread diseases and increase awareness among public, the Guntur Municipal Corporation (GMC) has initiated Mobile Malaria Dengue clinics programme. The Guntur civic body has constituted 30 teams under the initiative to conduct house-to-house inspection. After the directions of I Samuel Anand Kumar, District Collector, GMC has identified 30 high-risk areas in the city and formed a comprehensive plan to cover every household under the civic body limits. The programme launched on October 9 will be continued till November 30. The team is directed to create awareness, distributing pamphlets on precautionary measures, fogging, using oil balls and other measures.

HP commissions solar power plant in Hamirpur

Under the Himachal state bona fide entrepreneurship program, the first solar power plant of Hamirpur district, Himachal Pradesh has come up in a village in Hamirpur. With the project, the government will be incrementing their power capacity by 250-500 kW and the initiative is directed towards ensuring 100 per cent electricity supply across Himachal. The project has been built in an estimated cost of approximately ₹2 crore and the government officials who have contributed in the establishment of the plant estimate its functioning to begin by October end. Wattan Singh Mehla, executive engineer, electricity subdivision, Barsar, said, Himachal Pradesh Electricity Board Limited willstart procuring power from the project for ₹4.20 per unit.

CPCB asks corporates to encourage employees to work from home

NEW DELHI: India's premier pollution control body, Central Pollution Control Board (CPCB) advised private companies and corporates to encourage employees to work from home or commute using public transportation or car-pooling for the coming month, Prashant Gargava, CPCB member secretary told reporters.

Gargava said at the review meeting that the 10-member CPCB task force on the Graded Response Action Plan (GRAP), which lays down measures to be followed as per air pollution levels in the NCR, asked state pollution control boards to remain vigilant and closely monitor air quality. A task force constituted by CPCB also has encouraged schools to arrange for the pick and drop of children together to reduce the use of private vehicles.

Power supply companies of Delhi has also requested to ensure continuous electric supply throughout the winter in order to reduce the use of diesel generators, which emit high quantities of pollutants. In the second half of the month of October, wind speed would be low due to which the air quality might not improve, he said. The task force also directed the respective agencies to prioritise the paving of roads to control road dust. He said that day and night patrolling and monitoring in high emission or priority areas has also been intensified. A specific action plan has been developed, in the last three review meetings of the task force, to deal with pollution caused due to unpaved roads, dumping of waste and heavy vehicles, another CPCB official said.

EDMC to use sprinklers to fight air pollution

NEW DELHI: In a wake to curb the rising pollution in Delhi, East Delhi Municipal Corporation (EDMC) has planned to introduce 40 truck mounted mist-fogging sprinklers to settle the dust particles during peak pollution seasons in Delhi under its jurisdiction. These sprinklers will be attached to water tankers of 9000 litres capacity and will be put for service in a day for eight hours. A senior EDMC official said, "The sprinklers will consume less water and work in a bigger area. We will be primarily using them at the identified hotspots for high pollution levels. We will run these sprinklers using the truck engine and not engage separate ones. This technique will not only cost saving but also will reduce pollution from fuel emission." Recently, a list released by Environment Pollution (Prevention and Control) Authority (EPCA) identified 13 hotspots in Delhi where the pollution level is much higher than city's average. These hotspots are identified after conducting surveys by various agencies, these include Okhla Phase-II, Dwarka, Mayapuri and RK Puram in south Delhi; Anand Vihar (including Mandoli) and Vivek Vihar in east; and Ashok Vihar, Bawana, Narela, Mundka, Punjabi Bagh, Wazirpur, Rohini and Jahangirpuri in north Delhi. Out of these 13 hotspots, two places – Vivek Vihar and Anand Vihar comes under the EDMC jurisdiction, and the sprinklers will be installed as per the Graded Response Action Plan (GRAP), said an official. Dilraj Kaur, EDMC Commissioner said that the civic body officials have been directed to periodically do patrolling in both day and night to keep the plan in check. North Delhi Municipal Corporation (NDMC) has also begun sprinkling water in the industrial area under its jurisdiction from October 14.

India slips to 102 in Global Hunger Index

NEW DELHI: India has been ranked 102 in the recently released Global Hunger Index report which features a total of 117 countries, slipping 6 positions since the previous report. India has been ranked the lowest amongst all South Asian countries and the report has warned that the progress towards the predetermined 'Zero Hunger by 2030' is 'under threat'.

The index was topped by the Central African Republic, having an "extremely alarming" level in the hunger index. Chad, Madagascar, Yemen, and Zambia displayed an 'alarming level' while nine other countries (Democratic Republic of Congo, Eritrea, Libya, Somalia, South Sudan, and Syria) were omitted due to lack of data. 43 countries have 'serious' levels of hunger. The report said that it was becoming difficult to feed the world due to climate change. As per the report, the gains are now being treated and severe hunger persists in many regions worldwide, although there has been progress in reducing hunger to an extent.

Collen Kelly, CEO, Concern Worldwide US said, "Hunger stubbornly persists in many countries and is actually increasing in others. Many countries have higher hunger levels now as compared to 2010, and approximately 45 countries are set to fail to achieve low levels of hunger by 2030." The compiling body also made a few recommendations such as bringing resilience improving disaster response mechanisms, addressing inequalities and mitigation measures for climate change.

Researchers from IIT-H and KIIT Odisha develops 'bio-brick' out of agro-waste

NEW DELHI: Researcher Architect Priyabrata Rautray, a PhD scholar at Design Department of Indian Institute of Technology (IIT) Hyderabad and Architect Avik Roy, assistant professor at KIIT School of Architecture, have developed bio-bricks from agricultural waste. The product serves dual purposes – it is a better waste management technique and it promotes the use of eco-friendly and sustainable building materials.

The research was undertaken in the guidance of Deepak John Mathew, head of Design Department, IIT Hyderabad, and Boris Eisenbart from Swinburne University of Technology, Australia. The results were presented at the International Conference on Engineering Design (ICED-2019) at TU Delft, the Netherlands. The team also received a Special Recognition Trophy for sustainable housing at the Rural Innovators' Start-Up Conclave-2019, organised recently by the National Institute of Rural Development and Panchayati Raj (NIRDPR), Hyderabad. The process starts with careful selection of the dry agro-waste like paddy straws, wheat straws, sugarcane bagasse, and cotton plant. Architect Roy said, "Bio-bricks are not only sustainable when compared to clay bricks, but are carbon sinks as they fix more carbon dioxide than they produce during their life cycle." Although the only issue with the bio-bricks is that these are not as strong as burnt clay bricks and cannot be used directly to build load-bearing structures. However, these can be used with a combination of wooden or metal structural framework.

NGT denies proposal to fill quarries with municipal waste in Goa

The National Green Tribunal (NGT) fined the Government of Goa ₹5 lakh for failing to submit standard operating procedure to fill up open quarries. The Goa government came up with a proposal to fill up the open mines with municipal waste. The NGT rejected the proposal calling it a 'preposterous suggestion'. The NGT's directions for the government to fill up the quarries came post deaths of four boys in Pernem area last month, who drowned in a water-filled laterite quarry. After the deaths, the Goa Paryavaran Sangharsh Samiti approached the tribunal and alleged criminal negligence by the State government's mines department.

Senior citizens, students to get fare concession in Delhi Metro

In an interview on October 14, Hardeep Singh Puri, Minister of State (IC) Ministry of Housing and Urban Affairs, announced that the fares for students and senior citizens travelling in Delhi metro would be reduced soon. "We are ready with technology-based solution to provide relief to students and senior citizens travelling in metro trains," Puri said. The extension of fare reduction for women is not opposed by Puri, who said that concession should be offered to women only if necessary. In June 2019, Arvind Kejriwal, Chief Minister of Delhi, announced free-travel for women in metro and buses in Delhi.

Chennai taking steps towards sustainable water management

Two municipal experts from US cities Mehul V Patel, executive director of operations and Sudhir Murthy, CEO, NEWhub and expert in water reclamation sector, visited Chennai for three days said that the city has begun its journey towards sustainable water supply alternatives. The experts discussed reuse of wastewater and indirect potable water reuse with various government agencies, including Chennai Metrowater, and other stakeholders. The discussions were a part of 'Water Matters', a collaborative project of the US Consulate General of Chennai, Care Earth Trust, Smithsonian Institute, US and the Science Gallery, Bengaluru.

DMRC extends in Najafgarh corridor with Grey Line

Delhi Metro has extended its network by launching the 4.2 km long Grey Line of Delhi Metro, connecting Najafgarh with Dwarka. Three stations namely, Dwarka (interchangeable with Blue line), Nangli and Najafgarh constitute the line. Hardeep Singh Puri, Minister of State (IC) for Housing & Urban Affairs and Arvind Kejriwal, Chief Minister of Delhi, officially inaugurated the metro. The inaugural ceremony was held at Metro Bhavan. An 80m passageway connects the old Dwarka station of the Blue Line corridor with the new station, which has come up as part of the extension to Najafgarh.

Only 1 of 11 thermal plants abide with new emission norms

NEW DELHI: In a reply to Right to Information (RTI) application filed by Sunil Dahiya, an environmentalist at Greenpeace, revealed that only 1 out of the total 11 thermal power plants in the National Capital Region (NCR) is compliant with emission norms that are in line to come into force by December this year.

According to the estimates of Centre for Science and Environment (CSE), the norms that are to be implemented can help reduce PM emissions by about 35 per cent, nitrogen oxide emissions by about 70 per cent, and SO_2 emissions by more than 85 per cent by 2026-27 against a business-as-usual scenario with no pollution control technologies.

As per the application, it was found that there were 11 plants traversing Haryana, Uttar Pradesh and Punjab, that comes under the NCR area and were to implement the FGD technology by December 2019. Power plants — both private and state owned said that the costs

and technology access where prohibitive and implementation would take more time. Later on, the Central Electricity Authority, a Union Power Ministry body, agreed to a staggered plan where all units were expected to comply by 2024. Plants which were in a 300 km radius of Delhi were, however, expected to be compliant by December 2019 because of their tendency to increase pollution in the Capital. Only 1 plant of the 11, the Mahatma Gandhi Thermal Power Station in Haryana was found compliant with the new norms. The other 10 plants were in various stages of implementation.

Parking spaces to be reserved for e-vehicles in Delhi

NEW DELHI: In a bid to increase the popularity of electric vehicles, municipal corporations in Delhi are now pondering over reserving spots and setting up charging stations in parking lots. The South Delhi Municipal Corporation (SDMC) would be reserving five parking spots for electric vehicles in each of its designated parking lots. An official of SDMC said, "This move is a part of the new parking policy. The final list of parking lots where 70 charging stations will be set up has been drafted."

Earlier, the Delhi government also announced that it wanted 25 per cent of all new vehicles to be electric by 2023. To promote its initiative, the SDMC last year procured 75 electric cars for its senior officials. On September 30, the government notified about the parking policy on the intervention of the

Supreme Court. But the parking rules and the base fees are currently being finalised by a committee headed by the transport commissioner.

The officials said that in congested areas as well as commercial hubs like Karol Bagh and Connaught Place the parking fees would be high. Local area parking management plans will be created further. Also, the plans for areas – Aurobindo Marg, Lajpat Nagar market, Lajpat Nagar Part-III and Greater Kailash-I have been finalised and submitted, the official added.

The distinct advantage that EVs have over conventional cars is the low running cost. Assuming a vehicle is run 1,600 km each month, EVs can save ₹64,000 per month for the corporation. The only disadvantage is lack of charging stations, said an official. ₹100 per hour for parking in crowded areas of Delhi.

Students revamp Ajmal Khan Road in Karol Bagh for Diwali

Karol Bagh's only pedestrianised road, Ajmal Khan Road, served as the canvas for over 750 students of various schools and colleges of New Delhi. The event was organised by the North Delhi Municipal Corporation (NDMC). The students beautified the road, promoting open public spaces in cities, a feeling of community togetherness and spreading important awareness messages on climate change, plastic waste, and more through their artwork

NEW DELHI: Karol Bagh's famous Ajmal Khan Road, which hosts one of the biggest markets in the city of Delhi became the canvas of approximately 750 school and college students from eight institutions at 6 am in the morning of October 21. The event, which was organised by the North Delhi Municipal Corporation and the Public Works Department (PWD), saw the road being closed while students were allowed to redecorate the street with beautifully patterned artwork. A walking lane was reserved for the students on the 1.3 km stretch and each mural had an individual theme to it. "We wanted to create awareness regarding a 'pedestrian street environment' vis-a-vis a boring motorable road. The purpose is to form a visually compelling landscape similar to Lodhi Colony, Shankar Market or the Tughlakabad Container Depot where people stop to observe the beauty around them," said Akriti Sagar, Deputy Commissioner, NDMC.

Issues like LGBTQ rights, the environmental menace that is posed by the usage of plastic, campaigning against deforestation, dangers of drunken driving were some of the more recurring issues addressed by the kids of Delhi in their paintings. "The purpose of the paintings was to promote the community feeling. The aesthetics

of the road has been significantly improved and it suits the festive mood. The kids did a fantastic job in revamping the only pedestrianised road in Delhi," said MP Gupta, Superintendent Engineer, NDMC. Municipal officials have stated that the idea was conceived by them and implemented in order to compliment the festive mood. The shopkeepers of the bustling market have expressed gratitude towards the school children. "The paintings have really uplifted the whole vibe of the road. We thank the students for that," the shopkeepers in the area told us. Although the paint used for the drawings was durable, no measures will be undertaken for the upkeep of the murals, according to Gupta. These paintings will, however, be displayed

permanently on the corporation's website. Further beautification projects are being planned for some other areas as well, he mentioned.

The road stretch had been pedestrianised by the corporation since May 1. Although, the road has been touted as a success, it probably has caused adverse effects on the highly congested area of Karol Bagh. Since, no visible parking policy has been put in place in order to accommodate the plan of pedestrianising the road which sees heavy footfall on a daily basis, high congestion can be observed in the surrounding areas of Ajmal Khan Road. When asked about the future of such plans for Karol Bagh, Gupta said that as of now, there are no plans to pedestrianise other roads of the area.

Driest monsoon for Delhi in 5 years

Delhi's rainfall share a deficit of 38 per cent this year . According to the India Meteorological Department (IMD), this has been the lowest rainfall since 2014. An IMD official said that Delhi has recorded 404.1 mm rainfall this monsoon season against the 30-year average of 648.9 mm, a shortfall of 38 per cent. However, India as a whole has witnessed 10 per cent 'above-normal' monsoon as per IMD data. For July, the recorded rain deficiency was 24 per cent, registering 210.4 mm rainfall against the mean of 276.1 mm. For the next month, there was only 119.6 mm precipitation against the average of 247.7 mm – a deficiency of more than 50 per cent and 125.1 mm in September – a deficit of 41 per cent.

Boats to rid Mansar lake of plastic waste

Udhampur district administration launched a small fleet of boats to collect all plastic waste from the surface of Mansar lake in Jammu. The campaign was launched by Piyush Singla, Deputy Commissioner of Udhampur on the "Paryatan Parv – 2019" with the central theme of "150 years of celebrating the Mahatma" and World Wild Life Week. The highlight was that no plastics were used during the event. The plastic banners were replaced by wooden hoardings provided by the State Pollution Control Board. The Wildlife Department also introduced dustbins made up of bamboo.

IIIT-D, SDMC ink MoU for providing modernised civic services

NEW DELHI: The South Delhi Municipal Corporation (SDMC) and Indraprastha Institute of Information Technology Delhi (IIIT-D) have signed a memorandum of understanding (MoU) in order to provide modernised civic services to the citizens of all the three corporations of Delhi. Under this agreement, students of IIIT-D will study and analyze the functioning and services provided by municipal bodies to come up with technical solutions. All the three civic bodies will then adopt the suggested technological practices and solutions given by IIIT-D students. On this occasion, Anil Baijal, Lieutenant Governor of Delhi, advised that the Municipal Corporations should strive for modernising their operation using technology for different municipal functions like waste disposal, parking management, property tax collection, town planning, etc. Gyanesh Bharti, Commissioner, SDMC said that under this MoU, all corporations will provide research based inputs for adoption of modern technology. Through this MoU, all the three corporation will get technical assistance in their processes and service and they will be able to provide modernised services through various digital mediums.

The move is expected to benefit both the corporations and the public as it will supposedly make it easier for corporations to provide services and improve the quality of the services provided to the public. Since long, municipal corporations in Delhi have tried hard to improve services but due to financial constraints and lack of technical know-how, they fail to achieve their goals.

CBSE orders schools to be more water efficient

NEW DELHI: Central Board of Secondary Education (CBSE) has ordered schools to adopt a water management policy and conduct water audits at a regular interval. After NITI Aayog alerted that 21 cities in India, including Delhi, Bengaluru, Chennai, and Hyderabad, would run out of groundwater by 2020, affecting 100 million people, the National Green Tribunal (NGT) bench passed the directions.

The water conservation guidelines will see schools replacing old infrastructure with newer, more water-efficient models which will include the installation of automatic taps with sensors and double flush tanks and ensure regular check-ups for leakages and their prompt repair. A senior CBSE official said that it is no more a choice for the schools to become water-efficient. And, hence it is mandatory for all the affiliated schools to achieve the goal of becoming water-efficient school in the coming three years, he added. "While schools use a tremendous amount of water every day and require water for drinking purposes, restrooms, canteens, laboratories, playing fields, lawns, and gardens, it must be understood that water conservation helps bring down a school's carbon footprint," an official said. He added that the schools will also be required to conduct water audits which will set benchmark levels and help prepare a water efficiency plan, identify infrastructure improvements and better irrigation practices for green spaces in the school building besides monitoring habits, practices and processes of school personnel's water usage." The CBSE has also asked schools to establish "school water management committees" that may include administrators, teachers, students, non-teaching staff and parents.

Under the policy for water management, various suggestions were put forth like installing rainwater harvesting structures, planting native and drought-tolerant plants and replacing old fixtures.

'India reduces poverty rate to half since 90s; challenges to be faced in future'

WASHINGTON: World Bank has observed that India has been successful in reducing the poverty rate to half its value recorded since the 1990s. The World Bank, ahead of its annual meeting International Monetary Fund (IMF), also said that India has secured an annual growth exceeding seven per cent in the last 15 years and the growth rate is expected to climb in the coming years. With the economic trend today, India is all said to eliminate extreme poverty within a decade, thus meeting the Sustainable Development Goal – 2 (SDG – 2) before the deadline, according to World Bank. Hans Timmer, Chief Economist for South Asia, World Bank, has observed that "80 per cent of the economic slowdown" in India could be coming from the international causes.

"That is a transmission mechanism that is not too traditional. In the past we always thought that you have a shock in another part of the world, say

a high-income country then import amount is coming down, and that means that export opportunities for developing countries are coming down. They see their export slowing and then the whole domestic economy is slowing also," he noted.

Other South Asian countries have delivered mixed results in terms of economic growth in the previous decade or so. Growth in South Asia is expected to decline to 5.9 per cent by the end of 2019, which is 1.1 per cent less than April's growth rate measured jointly in the countries. Neighboring countries of Bangladesh and Nepal will fare better in terms of economic growth in comparison to India, whilst Pakistan's economy will continue to decline at a rapid rate and has already deteriorated to 2.4 per cent.

The bank said, "India is both critical to the success of global development efforts, including eliminating extreme poverty, and as an influential leader

for global goods such as addressing climate change."

However, the organisation also noted that although the development trajectory is on the right path, considerable challenges are yet to be faced in the future and hence, should be debated upon. Ahead of their annual meeting with the IMF, the World Bank brought forth some key suggestions for India to implement to better the situation.

Firstly, given the expanding population and limited resources, India needs to better their resource utilisation management in order to ensure sustainable growth. Proper planning of cities is the need of the hour to further economic development, as cities are essentially at the center of driving the economy forward. India's water management will need to provide for shifting water allocation to higher-value uses and policies to increase the value of water use within sectors. Electric supply must be less carbon intensive and far reaching as 230 million of the Indian population doesn't have proper grid connections.

A shift in the investment towards infrastructure must be sought. An estimated 8.8 per cent of GDP or $343 billion a year until 2030 is essential to ensure this shift. Female labor force participation is amongst the lowest in the world and work towards overcoming this by promoting education is called for.

India's public sector institutions will need to be modernised in order to provide services and regulations that match the aspirations of a middle income country; this will entail improving accountability and effectiveness, improving the ability of the state to interface with the private sector, and strengthening the compact among tiers of government to improve service delivery, the bank said.

Students as ambassadors to spread awareness on dengue prevention

R Sadheesh, Municipal Commissioner, Salem Corporation distributed ambassador cards to students of Government Girls Higher Secondary School, Kottai and interacted with them on spreading awareness about mosquito breeding and vector bourne diseases like dengue and malaria on October 21. Exhibits on mosquito breeding and conditions leading to mosquito breeding were also used to make the students understand the situation. Sadheesh said, the corporation is conducting various awareness campaigns for the public. Further, the student ambassadors will spread the awareness about the issue at their homes and surroundings.

Uber, DMRC partners to introduce 'Public Transport' service in Delhi

Uber, a US based taxi aggregator has joined hands with the Delhi Metro Rail Corporation (DMRC) to introduce a seamless public transit system 'Uber Transit' at a few selected metro stations in Delhi. Delhi will be the Asia's first city to have such a transit system by Uber. Once implemented, the people using Uber will see an option of 'Public Transport' alongside 'UberGO' and 'UberPool' after entering the destination. The users selecting 'Public Transport' as an option will see fastest and affordable routes, real-time schedules for metro trains, buses and walking directions, to and from nearby metro stations and bus stops.

Luxembourg becomes first country to offer free transportation

LUXEMBOURG CITY: Luxembourg will soon become the world's first country to make public transit completely free of charge. The recently re-appointed prime minister of the small European country, Xavier Bettel announced that the government would be lifting all charges from all trains, trams and buses from early half of next year. At present, fares are still quite reasonable, costing no more than €2 for up to two hours of travel, which, given the size of the micro-nation, covers almost any journey. Anyone who wants to avail of first-class rail travel pays €3. The move enables the country to reduce its carbon footprint and also reduce traffic congestion, which is one of the worst in the world. Over 400,000 commuters come to Luxembourg to work from neighboring countries. A driver in Luxembourg on an average spent 33 hours in traffic jams in 2016. Although, the country has 600,000 inhabitants, around 200,000 people living in neighboring countries – France, Belgium and Germany crosses the border every day to work in Luxembourg. As a predecessor to the move, the government has already enabled people under the age of 20 to avail free transportation earlier in 2019. Secondary school students have also been able to ride free shuttles between school and home. Luxembourg has the highest number of cars per person in the European cities.

Part of the subsequent cost resulting from this move will be covered by removing tax break for commuters. According to reports, the move will also save on the money spent by authorities on the collection and processing of fares and may also lead to a shift away from use of private vehicles. The scrapping of the transit fares also removes the two-hour travel limit that has been in place in the country.

Typhoon Hagibis hits Japan

TOKYO: Typhoon Hagibis had hit the island country of Japan and left the entire nation reeling in its wake. Kyodo News service, assembling information from a wide network, counted 36 deaths caused by the typhoon with 16 people missing. The official count from the Fire and Disaster Management Agency was 19 dead and 13 missing as a result of the major flooding sparked by the high velocity winds and torrential rain. The Nagano prefecture was one of the worst hit regions of the country. The Central Government has deployed around 27,000 soldiers of the military to take part in the rescue efforts, local news agency Kyodo reported. In Tokyo, water of the Tama river was flowing above the limit resulting in the flooding of many buildings in the city. Shinzo Abe, Japanese Prime Minister has convened an emergency meeting of relevant ministers and dispatched the minister in charge of disaster management to the worst-hit areas. Abe offered condolences to the families of those who died and said that the government was working to save people's lives and property.

"The government will do everything it can to cooperate with relevant agencies to restore services as soon as possible," he said. Tokyo Electric Power Co has said that more than 100,000 homes were without power across the nation days after the typhoon hit Japan.

In the prefectures of Tohoku, north east Japan, and Kanto, which includes Tokyo the rain recorded on September 12, amounted to 30-40 per cent of the annual rainfall in the region, NHK reported. Transport in the country has been disrupted massively due to this typhoon's passage. Although services are being restored gradually, more than 800 flights remain cancelled on Sunday, September 13.

Mayors of major cities pledge to march towards a cleaner future at C40 summit

COPENHAGEN: 35 mayors from different cities across the world assembled in Copenhagen for the C40 World Mayors Summit to discuss the ongoing climate change and devise solutions to curb the emissions of cities which account for population of more than 140 million. During the three-day course of the summit, which began on October 9, the mayors agreed that the global climate emergency seeks an unprecedented course of action from the world's leading cities and by signing the C40 Clean Air Cities Declaration, pledged to work towards delivering clean air to their population, which is their basic human right. Progress by these major cities—which include London, Delhi, Los Angeles, Washington, Mexico City, Seoul, Athens and Paris—would drastically affect the global struggle towards carbon-free transit and curtailing vehicular emissions.

With the pledge, the cities have set up the necessary emission reduction targets and have agreed upon the implementation of sustainable clean air policies by the year 2025. Worldwide, cities account for about 70 per cent of all greenhouse gas emissions, significantly impacting the fight against climate change. City authorities would be held accountable by the citizens in achieving the set goals as public reporting on the progress has been ensured. The 35 signatories aim to reduce the annual average PM 2.5 emission levels to the established World Health Organisation's (WHO) guidelines (10 $\mu g/m^3$). In doing so, 40,000 annual deaths could be averted. This means cities will continually reduce their local emissions, and advocate for reductions in regional emissions, resulting in continuous declines in air pollution levels that move towards achieving the WHO standards. On the opening day of the conference, 94 city mayors accorded with the Global Green New Deal. The deal aims to "drive an urgent, fundamental and irreversible transfer of global resources away from fossil fuels and into action that averts the climate emergency." The deal has been backed by a range of other international players, including major corporates, civil societies and youth climate activists.

Arvind Kejriwal, Chief Minister of Delhi, who attended the conference online via skype highlighted the plight caused by air pollution in Delhi and how the issue is being resolved, he said, "Delhi faces challenges ranging from Indo-Gangetic emissions, misaligned governance structures, and multiple government agencies in the nation's capital, with the common citizen bearing its greatest burden. Thus, the Delhi Government has strived to make energy, mobility, water, infrastructure, health, and education into a sustainable public good. These initiatives have led to a 25 per cent reduction in particulate emissions in three years making Delhi a role model for Indian cities. Our clean air plan ahead focuses on an integrated system of governance with welfare outcomes and green solutions at scale at its core. These include the creation of city-scale 269 water bodies, greenscaping of 500 kilometers of roads and induction of 1000 electric buses as well as several policies, programs and projects to curb air pollution."

Michael Bloomberg, C40 Board President and former New York Mayor remarked that if top 100 US cities adopted the WHO guidelines, total carbon emissions that would be reduced would be equivalent to taking 50 million vehicles off the street.

Scientific efforts initiated by the city of Kolkata were lauded at the conference as the city's low carbon commute transition, which will soon see the commissioning of 5,000 e-buses and electrification of all ferries that will run across the Ganges river by 2030, was announced as one of the world's seven best climate projects at the conference.

'Integrate various modes of public transport to solve mobility issues'

Team UrbanUpdate

UNESCO House, New Delhi hosted a conference on Integrated Sustainable Transport for Smart and Resilient Cities as a Pre-event for 12th Regional Environmentally Sustainable Transport (EST) Forum in Asia (which is scheduled for Ho Chi Minh City on October 29-30) on October 10 and 11, 2019. The objective of the conference was to discuss the agenda for sustainable development, primarily focusing on the 17 Sustainable Development Goals (SDGs) and the progress made towards achieving them by the deadline of the year 2030. The SDG goals, at their core, represent a plan of action for people, planet and prosperity, and reflect national commitments to put the world on a more sustainable and resilient path. Through the adoption of this Agenda, member states acknowledged

the vital role of sustainable transport in achieving the SDGs and 169 related topics with them. The Bangkok 2020 Declaration (2010-2020), which was adopted at the UNCRD led Intergovernmental 5th Regional EST Forum in Asia (2010, Thailand), is based on Avoid-Shift-Improve strategy to influence the decisions of governments and various transport stakeholders in the region over the decade (2010-2020) towards realization of safe, secure, affordable, efficient, people- and environment-friendly, and inclusive transport in rapidly urbanising and modernising Asia.

The two-day conference featured eight sessions and over 30 academicians, intellectuals and officials who explored the challenges faced by public transportation systems in Indian cities and highlighted possible innovations that can be implemented in the growing Indian transportation sector, which directly contributes to India's ability to reach the set SDGs.

The conference began with an

opening address by a panel of eminent speakers who highlighted the agenda of the coming sessions. Eric Falt, Director, UNESCO, started the dialogue by highlighting the importance of SDGs in the sustenance of the planet by saying, "Humanity has developed a roadmap for the common good of the planet. These are the Sustainable Development Goals." He said that Delhi would be facing challenges of immense proportions in future if urbanisation continues to accelerate. One of the biggest challenges is the menace of pollution which is intricately interlaced with the growth of transportation alternatives in the city, which contribute in the deterioration of the environment.

He said that it is highly essential to integrate various transportation alternatives to minimise this damage. Kamal Singh, Executive Director, UNGC, said, "SDGs are key game changers which will push India to achieve the set goal of a five trillion economy." Talking about developing a sustainable transportation system as being one of the key factors in achieving the SDGs, he highlighted that it won't be easy merging the current public transportation systems of India within the constraints of the pre-existing infrastructure. Ravi Ranjan Guru, Deputy Director General, All India Institute of Local Self-Government (AIILSG) encapsulated the contributions made by AIILSG in supporting the Government of India to achieve sustainable transportation and the Sustainable Development Goals (SDGs).

Following the inaugural session, a debate on the role of 'Public Transport Planning for Small, Medium and Large Cities' took place in the first session. The speakers focused on the essential

policy imperatives required to foster the selection of transport systems and its interrelationship with urban form. Samir Sharma, Vice President & Head – Transport Planning, DIMTS, made it clear that buses will dominate as public transport in the future (2041-42). Ravinder Minhas from DTC remarked that for improving the efficiency of public transport systems, it is essential to minimise time taken to reach bus or metro terminals. "Integrating different types of transit systems is essential", he said.

Sarika Chakrabarti of the NIUA remarked that MPD suggests a shift towards sustainable mode of transport and providing people with the option of choosing between various modes of transport by increasing their accessibility. It was also highlighted that the role and roadmap of SDG11 sub-clause 2 can be achieved within the projects; implementation and integration at planning level need to be achieved through these projects.

The second session reinforced the importance of non-motorised transport as we move towards a time period where greater advancements are being made in automation. The role of citizen engagement was explored and while each presenter referred to some form of engagement that was contextual to their

work such as crowdsourced data using apps, extensive consultations with the customers or making a community of followers, it was also highlighted that India does not have a process of public consultation in place that is of any merit or quality. DV Manohar, Vice President, World Cycling Association, pointed out that Delhiites average lifespan is reduced by 10 years due to air pollution. "The solution to curtail this level of pollution is to go back to our old transportation method: bicycle. Utmost importance must be given to pedestrians and cyclists following other motor transport. Cycles improve last-mile connectivity, improves health amongst other benefits," he added.

The third session focused on the work being done in smaller (< 1 million population) cities to achieve a better transportation system as well as progress towards SDGs. Case studies of new innovations introduced in cities like Patiala (Punjab), Bulandshahar (UP) and Nainital (Uttarakhand) were put forth by the panellists. Laghu Parashar, Senior Advisor, gave an interesting presentation about the operation of the Amritsar's Bus Rapid Transit (BRT) model, which incorporates the city's elevated road network. The project, which was first of its kind in India, was developed

on a budget of ₹500 crore and was implemented by Punjab Bus Metro Society in a corridor of 32 km.

The fourth session was based on the feasibility of shift to electric mobility in the private transportation sector. The session was highly focused on the technicalities that we must consider before going into this.

Sajid Mubashir, Scientist G, Department of Science and Technology, gave a presentation which put forth the current challenges that the government is facing in expanding the e-mobility infrastructure across cities and the solutions that will grow the concept gradually. Just moving to a different power source won't be enough, overall usage of vehicles must be reduced. Professor Nizamuddin, IIT Delhi, who has conducted research in the field of EV infrastructure said, "The major challenges for the implementation of EVs in developing nations are: reduction of cost, increasing the range of the vehicles by developing charging stations. No plan for investment in infrastructure is currently introduced by the government." The fifth session was centred around the Financing and Legal Aspects of Sustainable Public Transport in India. The major takeaway was that Integration of transport is not the integration of 2-3 modes, but it should instead be integration with the flow of traffic. Equity in the allocation of resources is extremely important.

The sixth session debated that road safety needs a balance between accessibility and mobility. The need for a safe system approach in meeting road safety challenges is required. Role of indicators and a data-driven approach to planning sustainable mobility is required. The two-day event was concluded by a presentation which encapsulated all the major points that were raised during the conference and would be further brought to the attention of the EST Forum. A brief address by Raghav Chandra, Kulwant Singh and Ravi Ranjan Guru concluded the ceremony.

India's Urban Planning
there are no shortcuts

Better urban planning always plays a key role in improving design and development of a city. Enhacing planning requires advanced technological and political decisions. Therefore, to level-up the game of our city planning, we not only require better equipment but skilled and well educated architects, engineers and city administration. Only then can we optimistically expect things to change

Urban Planning is a process. It involves design and development of land used constructively to the built environment. This involves technical and political decisions pertaining to air, water and infrastructure. It requires detailed planning of architecture, structural designing, and civil engineering to create the solutions for the communities. We need to reflect upon it.

Points that we must talk about

1. Exploration: This includes considering and exploring several aspects of the environment to build communities that have access to the communication network, transportation in a methodical way that social environment remains protected.

2. Solving Problems: Organized, practical, balanced, modern, and stylish approach in solving town planning related problems are possible through innovative ideas and their implementation at the design level.

3. Expansion: This domain of urban

Kumar Dhananjay
Consulting Editor

planning includes economic development based on the infrastructure and other natural resources planning for support of the community. It is a tie-up of social and environmental planning.

4. Human Experience: The interaction of people has an interlocking effect on the availability of resources and easy connectivity. It enhances the experience of people and intensifies community connection.

5. Vitalizing the Town: Passage of time is a factor for change in the requirement of land, water, energy, transportation and this leads to redesigning the town to match the standard of living the citizens expect, repairing, and renovating the urban areas to adapt to the modern technology.

1990's was the decade when economic liberalisation began and India charted a new course of development economics. It also witnessed the emergence of two major trends – information technology that started connecting cultures and people and improved mobility of capital across geographic boundaries. Indian cities started driving socio-economic change and put themselves firmly on the global map. Today, our cities are the focus of global commercial activity and interest. They not only contribute substantially to the Indian economy but also attract investments. They have become hubs for education, job creation, innovation, arts and culture.

It is important that we view our cities as 'urban platforms'. An integrated ecosystem that involves the stakeholders and drives their engagement. The policy makers need to factor in while formulating policies, issues like inclusiveness, governance, ecology and at the same time maintaining the unique identity of respective cities. Urban invention is a new norm that brings different communities in a city together.

So the question is are integrated cities the answer to the woes of urban India? There is a view that yes it is. Urbanisation in India is continually reinventing itself. An Integrated city provides a mixed ecosystem that includes nurturing of industry, throws up employment opportunities and enhances the quality of life of its citizens. Emphasis must be laid on creating 'self-sustaining and resource-efficient ecosystems'. And it must be supported by a strong infrastructure of power, roads, water, drainage, sewage, etc. We must have a long term vision to modernise our cities. The ever changing demographics, new technologies and global and local socio-political shifts demand urban planning must have flexibility to ensure future-readiness. And usage of natural resources is of utmost important in urban planning. If we look around, our ecosystem is based on consumption of natural resources. We need to find a solution with a right mixture of farsightedness, agility, resilience and innovation. This can be done at the master planning stage as it will offer an opportunity to create sustainable cities.

An integrated city development requires movement on multiple fronts. On the one hand industrial growth is a must – it will spur economic activities and help create jobs. On the other, it will make available ample recreational facilities and combined with a generous landscaping and walk to work culture will add extra time a person's daily life. It also demands numerous commercial and retail spaces. Appropriately designed public spaces and open areas will also strengthen community bonding and place for people to interact. Technology will change the health of urban planning. It will change the health of towns. People are yearning for a better health and a lifestyle. That requires a
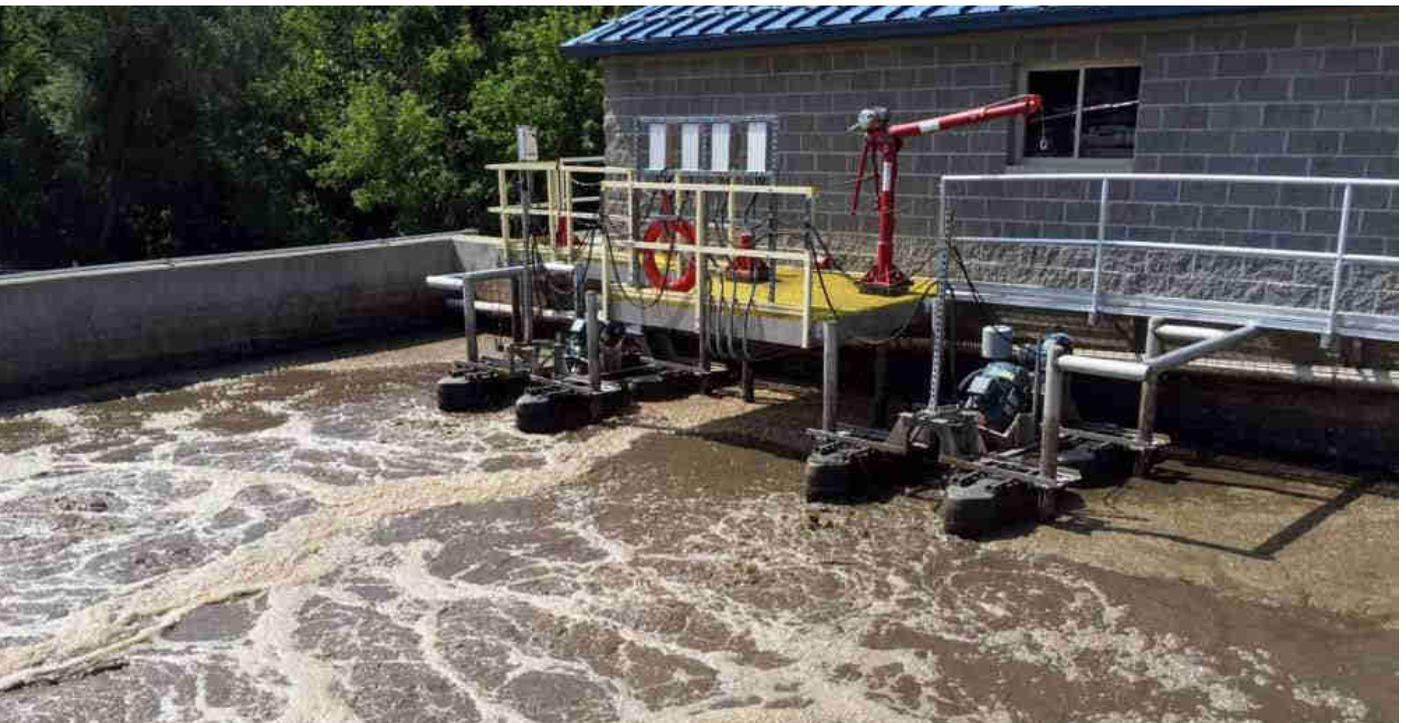
redesigning of urban areas. We now need broader roads and sidewalks where people can walk, some running tracks and exercise areas outside the residential complexes or common plots. Initially, it could be expensive but with the involvement of technology it will be compensated. There is a greater awareness among public at large. They are concerned about oil prices, environmental challenges and global warming. In order to support them, the urban planning needs to contemplate the required change in the variety of public transport for its availability and comfortable commute. The initiatives like e-bikes and renting of cycles is possible with the support of technology, making the booking and return of bikes easy, cheaper and environment-friendly.

Urbanisation on upswing in India

♦ Private cities are now expanding due to the support of private companies. Private developers are building private housing projects that will exponentially grow in the years to come.
♦ The Delhi-Mumbai Corridor is an infrastructure program set to develop 'Smart Cities' and combine next-generation technology with infrastructural development.
♦ The transport and logistics sector of India underlines the importance of interconnecting the different modes of transportation: road, rail, sea and air. An efficient multi-modal system is relevant in the development and successful growth of the infrastructural systems.
♦ Special Economic Zones dot the landscape of India. Each of these zones is focused on a particular sector such as IT, apparel and fashion, or petroleum and petrochemical industries.
♦ Industrial townships are built to house employees close to the factories and manufacturing plants at which they work. After the success of the pioneering industrial township - Tata's Steel Town - the government is planning on

developing more like it.
♦ India's expected economic growth opens up expansion prospects for Indian airports. Domestic and international passengers are inevitably predicted to double in number in the years to come.

India's urban infrastructure

We need to make changes as we face urbanisation. The challenges of urbanisation are multifaceted. In order to face the challenges of urbanization, infrastructures need to be improved. But the point is rapid population growth and a lack of adequate investment is making urban infrastructure growth slow. This will require major investments. There are number of issues that we will need to address. To name a few, affordable housing in India, transport and mobility, water and wastewater management, power and infrastructure.

Affordable housing

India is facing a housing shortage in urban areas at the moment and more housing would be required in order to meet future demand. This demand comes from the economically weaker section due to lack of housing policies. Some parts in India have introduced public-private-partnership policies, which have led to the development of housing.

Transport business opportunities

Private mode of transport is dominant in India. There is a heavy reliance on private transport that has led to the congestion of roads and increasing commuting time and pollution. Road networks therefore need to increase because of the influx of these vehicles.

On a separate note, public mode of transport is gradually decreasing in terms of popularity.

In an effort to improve the urban transport situation in India, new metro rail networks have been developed.

Water and wastewater management

The water supply in India faces several

issues and the water and wastewater management in the country needs to be improved. The government though has taken initiatives to improve water supplies establishing projects for selected areas. Sewage and sanitation is also facing a dilemma in India at the moment. Nevertheless, projects to further improve this is currently a work in progress.

Power and power infrastructure requirements

Increasing urbanization has led to increasing demand in energy consumption. India greatly needs to increase their power-generating capacity and develop new ways of generating power.

We are at a point where we need to engage in a serious debate on the size of cities and their impact on overall liveability. What we have observed till today is that megacities are exalted by policymakers by virtue of the contribution they make to the national and state economy. However this view is being challenged by many as this often happens at the cost of a sharp deterioration in the environment. Above all, megacities fall sharply on the scale of equity. What is important to note is that the massive rise in land costs puts decent housing and basic services beyond the reach of the poor. Indeed, the larger the city, the more anti-poor it seems to become and this adversely impacts women, children and the elderly. There is, therefore, a strong case to strategise nationally in favour of decentralised urbanisation.

There are numerous planning challenges associated with cities which includes their growth and decline, their role in climate change. In a UN report former UN Secretary General Ban Ki Moon on the Global Report on Human Settlements 2009 said that "evidence from around the world suggests that contemporary urban planning has largely failed to address these challenges". In the cited background, it is quite clear that a new, innovative strategy ought to be devised. The old formulations, given the context, will not solve the problems of cities. ■

Local governments have major responsibility for ensuring clean air in cities

Winter has arrived and the cities in India have been caught unprepared this year with no hands-on solutions available to tackle the problem of poor air quality. The problem is so severe that even many air quality indices have touched their upper limit and can no longer tell the severity of the problem. Though Delhi may be in focus in media but the problem goes much beyond the national capital. Governments in many states are taking various measures but there are many initiatives which local governments, individuals and communities can take to keep their cities' air clean and breathable

Ranjit S Chavan
President, AIILSG

Local Governments cater to a range of services to citizens for their day-to-day needs;whether it is picking of garbage from households, cleaning streets and lanes, lighting up roads, or providing water supply to houses. Municipalities help people run their daily lives smoothly. The mentioned services are definitely important for urban living but nothing can be more important than clean air that everyone, poor or rich, young or old,man or woman, breathes. When national and state governments are failing almost every year, local governments must pull up their socks and enforce stringent actions to ensure all stakeholders are held accountable and are forced to clean up their acts.

This is quite strange that many cities around Delhi like Gurugram, Meerut, Karnal, Ghaziabad, Faridabad and many other North Indian cities are facing air pollution of almost same proportion or even worse but the state governments have not taken any concrete action to address the issue in their cities. They are just waiting for the Supreme Court to give them guidelines on curbing pollution. This has been proved right at many instances when the apex court pulled up the Chief Secretaries of these states and questioned their inaction.

Delhi, however, has taken a slew of measures to protect its citizens from foul air quality but to no avail. Inspired by Beijing, Delhi came up with Graded Response Action Plan (GRAP) that has a host of actions including vehicle rationing scheme, banning of construction and industrial activities when the air quality is poor.

Beijing, once among the most polluted cities, has managed to clean its air to a safe level. A few years ago, Beijing air quality hovered somewhere between 300-700 on AQI but today

it has drastically come down in two digits and many monitoring stations in the city even report air pollution level below 50 now. In this winter and just after Diwali, Delhi's AQI was reported to have touched 999 that is because it is the maximum limit which anair quality monitoring device can report. The situation may have been worse. It is to be noted that the safe level AQI is 0-50.

Health issues

The negative health impacts of poor air quality isa major concern worldwide. Exposure to poor air quality has severe health impacts and the data suggests that over seven million people died last year because of air pollution. People breathing in Delhi's air bring air pollutants deep into their lungs, so it's no surprise that air pollution causes serious damage to the respiratory tract. Air pollution exposure can trigger new cases of asthma, exacerbate(worsen) a previously-existing respiratory illness, and provoke development or progression of chronic illnesses including lung cancer, chronic obstructive pulmonary disease, and emphysema. Air pollutants also negatively and significantly harm lung development, creating an additional risk factor for developing lung diseases later in life.

Particulate matter pollution is an environmental health problem that affects people worldwide, but low- and middle-income countries disproportionately experience this burden. According to a World Bank report, ambient air pollution is estimated to cause about 16% of the lung cancer deaths, 25% of chronic obstructive pulmonary disease (COPD) deaths, about 17% of ischemic heart disease and stroke, and about 26% of respiratory infection deaths. World Health Organisation also states that 9 in 10 citizens around the world breathe dirty air, and 7 million people die prematurely each year due to air pollution. Air pollution is creating a global public health crisis – one that is rooted in social injustice. Typically, it is the poorest and most vulnerable

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communities that are most affected by dirty, polluted air.

Air pollution, people and ULBs

There are several factors that are contributing to air pollution including stubble burning in villages, vehicular pollution, industrial pollution, and waste burning.

The role of local governments in ensuring clean air had not been much talked about. Their role is limited to keeping the streets clean, imposing fines on people for burning garbage, and monitoring industrial and construction activities. The elected representatives and municipal officials can also run a campaign to make people aware of the hazards of air pollution.

Local governments can spread awareness on harmful effects of bursting crackers on citizens' health. Irrespective of festivals or occasion, people need to stay away for bursting crackers. There are many small, but critical sources of air pollution in our homes and neighbourhoods. Whether it is small coal-powered tandoors in nearby dhabas or burning of garden and street cleaning waste in the morning by street sweepers or using cars for small distances, these

actions contribute significantly to air pollution. People can surely start with using their car less. There are certain actions which only governments can take but there are certain initiatives which people can promote e and bring about change. Citizens can also form communities which propagate the idea of using public transport but for that the local governments have to make sure that people can easily walk to public transit systems. There are many places where people are willing to walk but the walking spaces have been either encroached or in poor shape.

There are certain actions that are obvious but people do not give heed. Citizens and local governments both must plant and care for trees. Trees filter pollutants and absorb carbon dioxide. There are many living room plants which can help in keeping indoor air clean. Trees also release oxygen into the atmosphere and help cool our homes. Another step that people can take is to use less energy. High energy consumption is indirectly responsible for poor air quality because most of the energy our cities are guzzling is generated through coal-powered plants that cause serious air pollution.

Each one of us must do our bit so that together, wecan help keep air clean! ■

A slum after the storm!
Are urban poor prepared to face climate change disasters?

Ranjan K Panda
Convenor, Combat Climate
Change Network, India

On November 10, 2019, the morning after cyclone Bulbul passed through Odisha coasts, the fear of the storm was still reflecting on faces of people residing in Pandakudia slum on the outskirts of Bhubaneswar. We visited there to see the state of rehabilitation of the urban poor who were severely battered by the extremely severe cyclonic storm Fani a few months ago. Thankfully, Bulbul did not hit Odisha the way Fani did. However, it did not leave the state without damage. Thousands of trees were uprooted and broken, around 3 lakh hectares of standing crops were damaged, and around 5.5 thousand houses were destroyed besides one human casualty. Bhubaneswar was not affected but residents of Pandakudia were on high alert. They did not want to take a chance despite the fact that they could hardly have saved their houses and belongings from severe damage had Bulbul hit with the same wind velocity and rainfall intensity like Fani. This is because most of the houses of this slum, hosting about 500 households are yet to be completely repaired after the damages they suffered due to the May cyclone.

Adaptation gets difficult

Villagers migrate to urban areas for various reasons. The common cause attributed to such migrations is aspiration for better earning, living and education for their children. However,

conflicts, climate change induced-disasters and other factors too drive a lot of migration. Such distressed migrations make the people more vulnerable to changing conditions as they are not prepared to adapt to the new locations and situations. Almost about 70 percent of the residents of Pandakudia came to Bhubaneswar from Kandhamal district in the year 2008 after a fierce communal riot, worst in Odisha's history, broke out in their localities. They settled themselves in a shanty colony called Jagannath Basti near Jayadev Vihar close to the Kalinga stadium. Over the years, their livelihood got dependent on working mostly on a daily wage basis in the nearby areas. Most of the women worked as domestic helps and had established long-standing clientele bases. Things took a nasty turn for all these people residing near Kalinga Stadium as the government drove them away from there to the current location, almost 10 kilometres away, breaking most of their established links to the local livelihood opportunities. They are still finding it difficult to get opportunity to work as daily wager or other job opportunities in this location, which is also not connected to public transport facilities unlike the earlier place. Many children, mostly girls, have dropped out from schools.

Rebuilding blues

When they were forced to shift to this place, the government supported them with Rs 35,000 each for houses in this congested location. The ones who did not have a house in the previous slum just got a support of 5000 rupees. Many of them, when they came and settled at the previous location about a decade ago, had initially built mud huts but gradually improved upon the same to make concrete houses spending most of their savings. The compensation that they received after shifting here was not enough to make suitable houses. So, many of them added remaining savings, some had to top that up with loans. Fani damaged many houses of the colony, and even

THE NEWS OF BULBUL THREATENED THEM BECAUSE OF OPEN OR WEAK TIN ROOF SHELTERS, BROKEN TOILETS AND MUDDY NARROW ROADS WHICH GET STICKY WHEN IT RAINS. THE ONLY SAVING GRACE FOR THIS SLUM IS THAT THEY HAVE ACCESS TO SAFE DRINKING WATER THROUGH A WATER ATM THAT DISPENSES FILTERED WATER BUT THERE IS A RESTRICTION OF ONLY 10 LITRES OF WATER PER CARD THAT THEY HAVE BOUGHT AT RS 25

six months after about 30 to 40 percent of them have not been able to rebuild or repair the same. They are adjusting with their relatives or neighbours. Current income of the poor people is normally drained out in spending for daily family expenses. Families who were in this location for long before have faced the Super Cyclone 1999 as well. The colony has absolutely no drainage facility and many toilets have been destroyed during Fani. All the people practice open defecation.

Water, Sanitation and Hygiene problems

The news of Bulbul threatened them because of open or weak tin roof shelters, broken toilets and muddy narrow roads which get sticky when it rains. The only saving grace for this slum is that they have access to safe drinking water through a water ATM that dispenses filtered water but there is a restriction of only 10 litres of water per card that they have bought at 25 rupees. One has to buy more cards to be able to increase the daily quota. In a colony where many have not even been able to buy the 25 rupee card, water thus is a commodity and not a matter of right. Storage of water is another huge problem. Due to want of a proper place, many houses have stored water in the toilet. Some are even using the toilet as store room or bed space. People reported frequent diarrhoea episodes.

More cyclones should not mean more distress

Climate change is already increasing both frequency and intensity of cyclones. Weather watchers have pointed out that frequency of severe cyclones in the north Indian Ocean (the Bay of Bengal and the Arabian Sea) has seen a three-fold increase during the past decades. As compared to the previous decades, when about one severe cyclone was expected to form every year during the intense cyclonic period — May, October and November — the number has now gone up to about three per year. With Bulbul, India has already equalled last year's record of having been hit by seven tropical cyclones in a year. In fact, last year the country, after being hit by seven cyclones, broke its 33-year record.

With more and more number of people migrating to urban areas, and expected to live in such shanty locations, the city authorities need to create a better and resilient world for these communities. Besides proper housing, they need water, sanitation and hygiene along with livelihood, food and nutrition security. Cities need to develop their own climate change action plans that consider the urban poor as important stakeholders. ∎

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

What can farmers do with stubble?

Akshit Pushkarna
Editorial Assistant

Delhi's air is toxic. There are several factors responsible for it but a study by SAFAR suggests almost 46 per cent pollutant are contributed by stubble burning in neighbouring states during the beginning of winter season.

Many other factors contribute to the deterioration of the already poor air condition. The pollution levels within the city traditionally see a spike due to bursting of crackers in Diwali. Along with this, the Kharif crops are harvested during the autumn season and the farmers opt to burn off the paddy residue in order to quickly ready the land for the next crop. Adding to this, Delhi, being a developing city, is the host to new constructions year-round, which dent the environment by dispersing dust particles. All of this accumulates for the fall season as the wind speed lowers to nearly a third of its summer counterpart, leaving behind pollution levels that get bumped up to 80 per cent higher than the levels that are seen the rest of the year.

There have been many attempts to resolve the issue but to no avail as either the alternative is expensive for farmers or not feasible for operational reasons. Farmers have been quoted saying, "what could be cheaper than a matchstick?" There could be environmental concerns but farmers who have to make ends meet cannot go for expensive options. It is the responsibility of the government to provide them with compensation or buy the stubble. The apex court has also directed the government in this regard. Many research institutions and private organizations have conducted researches to come out with a feasible solution that solve the issue of burning stubble without burning a hole in the pockets of farmers.

What do we do with the leftover stubble?

In order to better gauge the environmental damage that is inflicted by stubble burning, one must venture out into the villages on the outskirts of Delhi. On a recent trip, we discovered that the entire highway stretch from Delhi via Ghaziabad to Bulandshahr had diminished visibility due to the burning of stubble in the adjoining farms.

Farmers have to ready their fields for sowing Rabi crop by clearing out the stubble and straw of the previous harvest. Burning the harvest residue is just economical, more convenient to them as observed by the Economic Survey of 2017-18: "Once the machine has harvested the crop, the cost of getting the stubble removed is Rs 3,500 per hectare...it is more economical for the farmers to just burn by using 1 Rupee matchbox and clear the fields."

Manohar Lal Khattar, Chief Minister of Haryana, announced cash incentives for those reporting such incidents on 1st November. Meanwhile, the Punjab government has initiated action against approximately 3000 farmers for burning stubble. Farmers do not seem to be in a position to change their ways as there is too little time left to clear out the fields for the next seeding and no other feasible option is readily available.

Farmers not happy with 'Happy Seeder'

In a bid to replace incineration of agricultural residue, the government proposed that the farmers may buy the 'Happy Seeder' machine at a 50 per cent subsidy. This machine uproots the stubble while simultaneously planting the seeds for the next harvest. A great tool, at least on paper. Yet, you rarely see them in use and incidents of stubble burning have not come down since the introduction of this machine. Farmers deem the machine ineffective in sowing as it is unable to plant the seeds at an adequate depth, hence making the process more tedious for them. Plus, the machine comes in use only during the month of October, making it useless for the rest of the year. Also, heavy tractors are needed to drive the machine in the fields, hence doubling the investment.

Waste potentially a financial asset

Ironically though, the stubble that has been deemed as a problem could very well be converted into an asset in a number of ways. One such alternative exploits the yet untapped energy potential of the crop residue. Development of biofuel plants, which can convert stubble into Compressed Bio Gas (CBG) is a way the government is trying to implement. The Petroleum Ministry launched the Sustainable Alternative Towards Affordable Transportation (SATAT) scheme through which the government invites entrepreneurs to install Compressed Bio-Gas (CBG) production plants in villages.

Devendra Surve, CEO of Star Projects and Consultancy, who is working with the government in the initiative, speaks on how Compressed Bio-Gas would bring down the number of stubble burning cases. He says, "Finding an application for the waste will make it an asset. Converting the crop residue into biogas will successfully change the outlook towards the waste and they won't burn it as they will be able to generate some income out of it."

His company will be setting up a biogas generation plant in Bareilly, where farmers would transport their rice paddy and it will be stored on-site by Hindustan Petroleum Corporation Limited. However, in order to make such a project a success nationwide some challenges must be addressed. "We need better technology to treat the substance before undergoing the process of conversion. Also, the equipment used in such facilities must be state-of-the-art. Then only would the government be able to attract investors in such projects," Surve added.

He explained that ensuring farmer support is another challenge. Having strong ties with Farm Producing Organisations (FPOs) is required. For ensuring this, incentivization is necessary. For this, authorities need to take charge of the coordination with the farmers. Technology and investment will follow. For states like Haryana, Punjab or UP, the demand for CBG is huge, so the end product will catch on quickly.

The leftover paddy can also be used by various private players by employing new technologies to convert the "waste" into something useable. Kriya Labs is one such startup. Established under IIT Delhi's startup incubation wing, they are reusing paddy stubble to make paper pulp. In order to understand their concept and operation better, Pracheer Dutta, co-founder and COO of Kriya Labs spoke to Urban Update. He says, "We are making products from agro-waste by converting the waste, primarily the rice paddy, into cellulosic pulp. This product is used to make paper, biodegradable tableware and even packaging material. We employ a chemical process to do that."

On their relatively new operation, he said," We will be collaborating with farmers to set up multiple decentralized units across fields. Farmers would initiate the process by feeding the machines with the waste paddy and obtaining the pulp. The paper produced from this pulp is yellowish in colour, high in quality and can be used in packaging or decoration. After the production, we would be providing them with market assistance as well."

With this, the startup aims to essentially create a market for the recycled rice paddy, which is burnt off more than any other crop residue, he added. When asked how would they ensure the collection of the rice paddy and remunerate the farmers for it, he said, "We are trying to partner with large farmers of particular regions who would be given the responsibility to collect and incentivize the farmers who have stored the rice paddy." He also told us that the first of such units are set up in Hisar and will be operational by December.

There could be several other innovations which could be helpful in bringing down air pollution that need to be encouraged and supported by the government. Implementing reuse measures could make a lasting change in the outlook of the farmers towards the stubble and will also have a positive impact on the environment. Seeing that the "waste" can be reused and actually serve as a financial asset to them, they would definitely refrain from incinerating it and hence, a lasting fix to the problem may ensue. ∎

Air pollutants causing serious damage to PEOPLE'S HEALTH

Dr P P Singh
Former Medical Superintendant
Hindu Rao Hospital

Citizens of Delhi every year experience air pollution rise to 'hazardous level' especially during winter. Otherwise also, throughout the year, the concentration of gases, dust, fumes or odour remain in harmful amount in the city's air. These harmful gases, etc have direct or indirect effect on people's health.

Air pollution is basically of two types--Outdoor & Indoor air pollution. This is mainly due to Smog (combustion), Particulate Matter, Acid Rain, or Green House Gas effect. Natural source is due to smoke coming from wild fires, volcanoes eruption, methane and dust whereas human sources dominate in contributing air pollution and are because of thermal power plants, automobiles, fumes, aerosols, burning wood, stove, fire places and furnaces.

John Evely Fumifugium complained to King Charles II in 1661 that due to the greed of manufacturers, inhabitants of London were forced to "breath nothing but an impure and thick mist, accompanied by a

Burden of disease depends on environment

♦ Cancer: air pollution, mainly PM 2.5 and smaller, PAHs, metals (AS Cd Cr)
♦ Cardiovascular disease: air pollution (CO, O3, PM, Pb)
♦ Respiratory diseases: SO2, NO2, PM10 and PM 2.5, O3. Very likely to 90-99%.
♦ Asthma causation (air pollution): medium likelihood 33-66 %, high, moderate
♦ Pneumoconiosis.(Asbestosis, bysnosis, bagasosis, Anthroconosis, Sidrosis etc
♦ Cancer: air pollution, mainly PM 2.5 and smaller, PAHs, metals (AS Cd Cr)
♦ Cardiovascular disease: air pollution (CO, O3, PM, Pb)
♦ Developmental disorders: due to Lead(Pb), mercury (Hg), Cadmium (Cd).
♦ Nervous system disorders: Pb, PCBs, Methyl Hg, Mn
♦ Neurodevelopment (Pb): very likely 90-99 %, moderate, high
♦ Neurodevelopment (Hg): very likely 90-99 %, low, high.
♦ High level of UV radiation due to the depletion of Ozone layer leads to Eye Cataract, Skin Cancers, and also weakened the Immunity.
♦ Air pollution also reduces the reserve of Meth haemoglobulin , which is the important component to absolve some of the toxic gases.

Major issues associated with 'Severe' Air Quality

♦ AIIMS recently reported a surge in the number of patients suffering from respiratory and breathing complications. 20-25 per cent spike in the number of elderly patients suffering several health issues directly owed to the stark spike in pollution in the last quarter of the year
♦ Diminished visibility leading to increase in road fatalities. Regular accidents reported in the Delhi- NCR region during the months of October and November

fuliginous (sooty) and filthy vapor, which render them obnoxious to a thousand inconveniences, corrupting the lungs, disordering the entire habit of their bodies". The same is true today.

As per standard rule, disease always depends upon various environmental factors such as—type of disease, vulnerability, genetics, population group & socioeconomic aspects, type of area people living in-Industrialized/ developing countries and others.

Air pollutants have adverse impact on human body. Lungs are the vital organ for respiration and exchange of gases. It is the most effected system of our body. The impact of air pollution on respiratory system effects include irritation of airways, cough, decreased lung function (Vital Volume), airway inflammation, asthma attacks, bronchitis and chronic bronchitis among many others.

The pollution is also causing greater deposition with Chronic Obstructive Pulmonary Disease (COPD) amongst older adults. Some groups are at greater risk such as children, elderly population and people with heart or lung diseases.

Children are having greater prevalence of heart and lung disease because they are more likely to be active and breathe more air per kg and their bodies are still developing. Some studies suggest that mental retardation due to lead exposure was estimated to be nearly 30 times higher in regions where leaded fuel was still being used compared with regions where leaded fuel had been completely phased out.

There are several dangerous pollutants in the air including poisonous gases, metal and dust particles and particulate matter. Some of these gases are: Carbon dioxide; Carbon monoxide, Sulfur dioxide and Nitrogen dioxide.

Every effort must be taken to reduce air pollution so that we can give a clean and healthy future to coming generations. The government must ensure that there is chemical weather forecasting, beside weather forecasting, in every urban area and not just in Delhi. The state government must issue advisory in all the cities which are facing with the problem of air pollution. ◼

Pollution Levels in Delhi (2019)

Pollution Levels in Delhi (2019): January 243, February 262, March 163, April 177, May 247, June 302, July 169, August 108, September 87, October 310, November 500

Interim measures implemented to bring down the AQI

♦ Indefinite ban on construction activities in Delhi-NCR
♦ Odd- Even scheme reintroduced between November 4 to 15
♦ Increased vigil and penalties on stubble burning in areas surrounding Delhi
♦ Public transportation strengthened

Basic Precautions in poor AQI

♦ Reduce Risk Dose = Concentration x Ventilation rate x Time
♦ Reduce concentration – schedule activities when pollution levels lower.
♦ Reduce ventilation rate by taking it easier
♦ Reduce time spent in vigorous outdoor activities
♦ Pay attention to symptoms.
♦ Phasing out leaded fuel

Classification of Pollutants

1. Particulate matter
   a) PM10 (PM < 10 microns)
   b) PM2.5 (PM < 2.5 microns)
   c) (PM10-PM2.5 = coarse fraction)
2. Nitrogen dioxide (NO_2)
3. Sulfur dioxide (SO_2)
4. Ozone (O_3)
5. Carbon monoxide
6. Lead etc

With over 1.09 crore registered motor vehicles, Delhi has the highest number of vehicles plying on its roads in the country.

According to the Delhi Economic Survey 2018-19, this number continues to grow at 5.81 per cent per annum, which is also one of the highest rates of growth. Numerous studies and reports have claimed that this traffic problem can only be addressed by improving public transport system.

Despite the presence of the Delhi Suburban Railways (DSR), Delhi Metro, Delhi Transport Corporation's bus services, app-based taxi services like Ola and Uber, autos and e-rickshaws, the city's population largely fails to adopt more than one mode of transport for their daily commute.

Lack of inter-connectivity of different modes of transport, multiple points of ticketing are reasons why the public prefers to travel either using just one mode of public transport, or via private vehicles. Delhi's mass-transit system has yet to find ways to cope up sufficiently with the demands of its commuters.

Mass transit - problems and solutions, Rail Transport

Delhi hosts a wide variety of public transport facilities, both state and privately owned. Delhi Metro serves the most number of people. Started in December 2002, the metro service quickly gained popularity amongst the population and became one of the most used public transport because of convenience, reliability, cost effectiveness and increasing connectivity.

B I Singhal, Former Director General, Institute of Urban Transport says, "No doubt that the Delhi Metro is an excellent example of how well can a planned, state-owned mode of public transport operate. The Delhi Metro Rail Corporation (DMRC) continues to learn from experiences and make its services better for the commuters." He also explains how the metro service could complement the existing ring railways.

He added, "While planning and development was going on for the Delhi Metro, had the government adopted a truly integrated approach, the metro service could have easily revived the Delhi Suburban Railways with it. The DSR could then have served as a means of diverting excess ridership from the pre-existing modes of transport along with the Delhi Metro." The Delhi Suburban Railways was built in 1982 as part of Delhi development plan for the Asian Games. Since then, its popularity continued to decline to the point where a majority of the population did not even know of its existence. Every day, a few EMU trains ply under the DSR serving a few hundred riders. Mr Singhal further explained, "The potential of the DSR has been largely ignored. Careful development of civic amenities in and around the suburban railways could have easily helped commuters, even those who undertake regional travel on a daily basis."

The government must consider re-developing the Delhi Suburban Railways as a means of reducing the strain of vehicles on Delhi roads, particularly the Ring Road. They must plan while keeping aspects like population density along the route, condition of railway stations and the trains, security of travelers (especially women) and most importantly, first and last mile connectivity along with integration of DSR with other modes of public transport in the city in mind. The bus services in Delhi can play an

Delhi's Traffic Mess

Cities offer opportunities for prosperity and growth therefore they attract people. Delhi is the most populous city of the nation; people travel to and from the city for work and study. This makes traffic jams and congested roads a common sight. There is a dire need to address the city's mobility issues. How can this problem of traffic congestion be solved? Do we need to consider building new modes of public transport and expand roads or can the existing transport infrastructure be modified to suit the dynamic demands of the city's travelers

Ashley Paul
Reporter

Delhi Suburban Railways
The ignored savior

The Delhi Suburban Railways (DSR) includes the Delhi Ring Railways (DRR) the tracks of which run parallel to the famous and integral Delhi Ring Road. However, apart from a few hundred regular users of the service, the city population is largely unaware of the existence of the service. Despite having extremely low pricing on its tickets, the service has been unable to compete with any other mode of public transport running parallel to it, whether it be the DTC bus service, the Delhi Metro or even autos and cabs. A few reasons for failure of the DRR are:

◆ The tracks mostly pass through areas that have very low population density as compared to other areas in Delhi.

◆ The concept of first and last mile connectivity of the DRR is entirely absent. There is no mode of transport fixed for people to reach the station or to reach other places after getting off at the station. So much so that the DTC bus service has only a handful of bus routes that even connect passengers to any of the stations along the DRR.

◆ A majority of the stations of the DRR are located in secluded, vegetated areas. This makes them unsafe for the passengers, particularly women.

◆ Due to the above points, the popularity of the DRR is extremely low. This low popularity coupled with low frequency of the trains eventually leads to low demand of the DRR services.

◆ The condition of the train coaches is also very poor. They are not air conditioned and many of them don't even have proper doors or seats for people to sit on.

◆ The condition of the stations along the route is also dilapidated. They lack basic amenities like washrooms and drinking water facilities. A number of them are also not accessible for the handicapped population of the city.

It is therefore clear that until the concerned authorities are determined to amend these shortcomings, the DSR and the DRR in particular will continue to remain ignored and act as a liability rather than an asset for public transportation in the city.

important role in providing this first and last mile connectivity to the rail transit services.

Bus Transport

Since its establishment in 1948, the Delhi Transport Corporation's (DTC) bus service remained the city's lifeline for almost five decades. During the 2010 Commonwealth Games, DTC was given a massive upgrade with the introduction of a new fleet of low-floor AC and non-AC buses. The service was aimed at improving the quality of DTC buses and fixing problems like frequent breakdown of buses. This was a much needed improvement for the DTC. However, over the years, due to the lack of upkeep of the buses, the condition of DTC's services was back to square one. Frequent breakdowns of buses, overheating and damaged exteriors started becoming a common sight again. This is not the only problem that the bus service faces. Dr. Sewa Ram, Professor, Department of Transport Planning, School of Planning and Architecture, Delhi says, "Since long, the bus routes have not been revised. Certain bus routes which were once integral now have only a few riders. On the other hand, newly developed residential and commercial societies are yet to be connected with the DTC bus routes. Here, the problem of integration of different modes of transport is highlighted again. The bus service could have easily provided the much needed first and last mile connectivity to other services like the Delhi metro and the DSR." However, this aspect was never addressed. Moreover, transport corporations across the world are now taking their services online to allow passengers to buy tickets and search for bus and train routes online. This consequently increases the popularity and ease-of-use of the transport services. The DTC is yet to work towards development of online services for its passengers. Meanwhile, some privately owned modes of public transport have started providing services online and through mobile apps like Ola, Uber and Shuttl.

Privately owned public transport

The national capital boasts a variety of privately-owned modes of public transport including app-based taxi services, CNG autos and electric rickshaws along with shuttle bus services. These newly introduced taxi services, daily shuttle services and electric rickshaws are helping in bringing down the overall carbon footprint as the taxis and buses run on CNG while the rickshaws are electric. However, companies running the taxi services often raise prices during peak hours while the shuttle bus service has still not covered all major routes in the city. This discourages a number of commuters from opting for cab and shuttle bus services for their daily travel. On the other hand, rickshaws and autos do not have a high average speed due to technological restrictions. Drivers of these vehicles often do not follow the most basic traffic rules or drive in their designated lanes leading to traffic slowdowns and sometimes even accidents.

Dr Sewa Ram suggested that the government must seriously consider bringing these modes of transport under a centralized, integrated organization which will be responsible for fixing rates of cabs and rickshaw services. They must also actively help companies running cab and shuttle bus services to expand their reach. The government can also consider constructing auto and rickshaw stops in order to make movement of autos and rickshaws more organized and make it easier for the public to board these vehicles.

Delhi has been the center of growth in the country since a long time now and with growth, a city comes face to face with a range of new problems. Despite an existing web of public transport services in the city, the state apparatus and all other concerned authorities need to come together to plan a more sustainable and integrated transit system. This system must assist one mode of public transport to overcome the shortcomings of another. Unless this is achieved, Delhi's commuters will continue to suffer. ◼
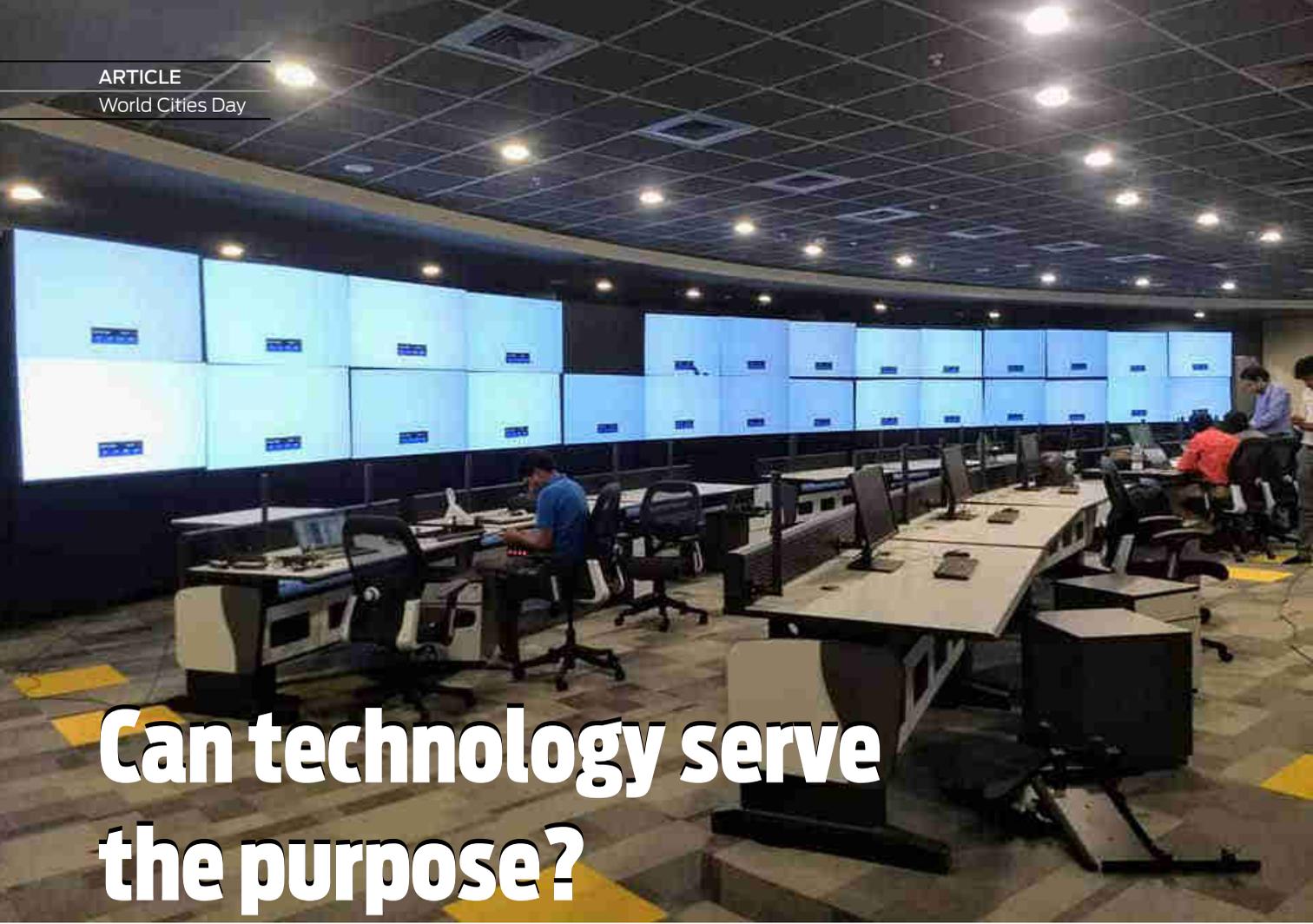
Can technology serve the purpose?

Tikender Singh Panwar
Former Deputy Mayor, Shimla

October 31st is United Nations World Cities Day and the theme for this year was "Changing the world: innovations and better life for the future generations". Antonio Guterres, UN Secretary General remarked, "let us commit to embracing innovation to ensure a better life for future generations and chart a path towards sustainable, inclusive urban development that benefits all."Over half of the world's population now resides in cities and with rapid urbanization the number of people will almost double by 2050. While cities provide ample

opportunities for better living, there are immense challenges that cities globally face. The slogan of 'better living with sustainable development linked with technological innovation' may prove extremely hollow and delirious in case the phenomenal wealth that gets generated in the cities is not distributed equitably; then all the talk of sustainability gets eroded.

John Closs, the former executive director of Habitat III had expressed similar views about sustainable development in cities. He had categorically remarked in the Habitat conference in Quito that in case the socio-economic system is inherently unsustainable, we cannot imagine sustainable cities. And, to get to that we need to go the basics of development. He was equally critical of the way in which cities were being developed in the last few decades. The whole notion of laissez faire i.e., the free market economy to decide the course of development in cities, should be given up, John vehemently stated.

Cities cannot be run as enterprises where these are considered as business units and through competitive bidding they compete against each other. This methodology of city development has not succeeded and we need to go back to the basics of planning.

The vision for World Cities Day 2019 seems to be following the same old dictum of privatizing the cities by allowing big technology giants to operate and manage the affairs, and then believe that these technological solutions will make the cities better places to live and will make them inclusive and sustainable. There are doubts over such a belief and handing over the city resources to mega technological giants is not going to help the cities to come out of their real problems. PPP(Public Private Partnership) is considered to be the mantra of success for city development. However, the last few decades suggest there is hardly any investment in the cities made by the private sector and this sector has mainly been interested

in smart city solutions like internet of things. And, using technology to advance the vision of better living is quite linked to it.

Let us recap the main goals of World Cities Day 2019:

♦ Increase awareness of how digital innovations can be used for urban service delivery to enhance the quality of life and improve the urban environment.

♦ Show new frontier technologies that can create more inclusive cities.

♦ Present opportunities for renewable energy generation in cities.

♦ Explore how frontier technologies can promote social inclusion in cities.

Digital innovation is a very big market and big companies are eyeing cities as large spaces for maximizing their profits through their interventions. It can come in the form of smart city projects, smart control command centre, bringing cities under complete surveillance through the use of smart cameras, etc. Bloomberg reported that the Internet of Things(IOT) represents a $ 19 trillion opportunity (www.bloomber.com/news/videos/b). Forbes estimated that the Smart City industry is expected to become an over 1.5 trillion dollar market by 2020. This new industry signals the privatization and financialisation of public service provisions, and will accelerate the growth of inequality in our societies by brining increased convenience and services to the wealthy few at a cost to the public as a whole.

In India, the Modi government is following the same dictum of privatization of cities as a whole. Technological solutions are offered to create an environment that it can be a panacea for all the ills in Indian cities. The technological smart city is curtailing individual freedoms and rights and leading us to an Orwellian future. The new smart cities effort as we know has promised progress by using technology to fix some of the most mundane and difficult urban planning

problems. Technology is inherently neither good nor bad and can be used to advance human progress or further human exploitation and violence.

The biggest proponents of smart cities fail to explain that they are seeking to privatise our 'city commons' and in turn sell data that they will collect from every move to the highest bidder, in perpetuity. Cities in Asia and Global South stand to lose the most in this game.

Indian cities are facing another major challenge of massive unemployment which is the highest in the last 45 years. The urban employment is nearly 28 per cent for the working population according to the CMIE data. In such a scenario, the whole notion of inclusive cities cannot brush aside this reality and must consider steps to eradicate it. Some of the civil society groups working in the urban realm and left political parties have raised the demand of an urban employment guarantee scheme which shall not just be highly beneficial for inclusive development in the city but shall also be able to manage some of the city affairs/works which the city governments are always looking for outsourcing.

Another important challenge facing Indian cities is huge shortfall of urban planners. In more than 9,000 urban agglomerations in the country the ratio of urban planners in the country is 0.23 for a population of 100,000 whereas Britain has 38 planners for the same number of people. Thus, this in itself shows the immediate intervention that is required for planned development in Indian cities. There is a famous saying for the satellite towns that have emerged in the country, and, that is, "the people inhabit the city spaces first and then the planning of the city begins." This cannot be a sustainable model of development.

Take for example the recent case of a murder of a town planner in a relatively peaceful state, Himachal Pradesh. The woman town planner was killed by a hotelier whose demolition order was passed by the Supreme Court of India for violations in the building

plans in Kasauli in Solan District. It was virtually impossible for the said town planner to monitor and execute the town plan in three districts as she was the only planner for the region. And, whence the construction was done some of the environmentalists knocked at the doors of the courts and eventually the court passed an order for demolition. The same construction work could have been stopped at the inception had there been ample number of town planners to monitor and execute the town planning. Such models of cities without getting into the basics of planning are not going to survive.

Romi Khosla, one of the finest planners that independent India has, has stated that there should be an ease out period for the planners before they join the Masters course. They should be given a reasonable sum to sustain and asked to work at least for two years in the Indian cities and prepare their plans.

Finally, the common issues and challenges that most of the Indian cities face are poor governance, multiple jurisdictions (despite 74th constitutional amendment), very weak revenue base and understaffed local bodies. The flagship Smart Cities programme of the government of India which should have become lighthouses for mitigating these challenges has further accentuated the problems. Instead of strengthening the democratic structure and authority of the elected bodies and empowering the people, it(Smart City programme) has undermined them altogether. Some of the commentators have even termed the SCP as an 'obituary of the 74th constitutional amendment'. In such a background, the World Cities Day, 2019 which just focuses on techno driven development and finding solutions in it will be a blurred vision and may not serve the purpose of inclusive and sustainable development. ■

Women's journey for identifying plastic waste hotspots along the Ganga

Seven cities and towns in India along the Ganga river have been identified by the NatGeo expedition as hotspots generating most plastic waste that goes into the Ganga and onward into the ocean

Nivedita Khandekar
Independent Journalist

That Ganga is one of the ten big rivers that dump most plastic waste into world oceans was known last year. But exactly which places in the basin generate this waste was not clear.

At a time when the Central government is making repeated claims of a clean Ganga – and focusing mostly on functional and non-functional sewage treatment plants and cosmetic ghat cleaning – an all women team of explorers has travelled from Gangotri till Sundarbans in Bangladesh to cover the entire stretch of Ganga to first-hand know the plastic menace.

The team, led by National Geographic Explorer Heather Koldwey, has identified 10 hotspots – seven in India, three in Bangladesh – which generate most plastic that goes into the Ganga. National Geographic, as a part of its multi-year global initiative 'Planet or Plastic?', has been working to better understand the impact and scope of plastic pollution in our waterways.

Earlier on August 15, in his Independence Day address, Prime Minister Narendra Modi had appealed to eliminate single-use plastic in India, beginning on October 2, Gandhi Jayantiday. Several states – including those in the Gangetic basin – have banned single use plastic, polythene bags and embarked on a massive awareness drive. India generates about 26,000 tonnes of plastic waste out of which 10,000 tonnes remain

Photo Credit: Taylor Maddalene
Heather Koldewey and Jenna Jambeck, National Geographic Fellows and Scientific Co-Leads of the "Sea to Source: Ganges" expedition in India
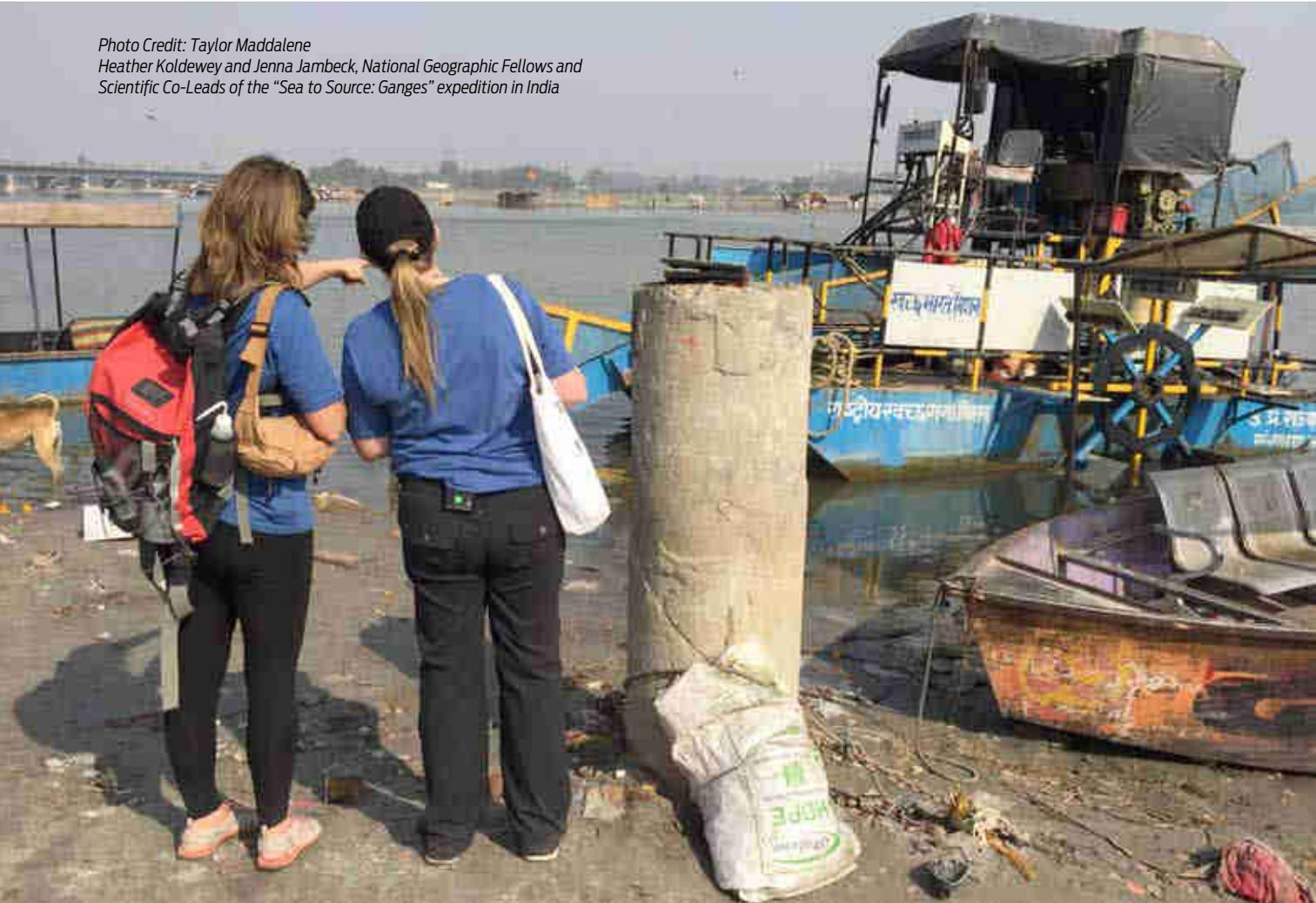
uncollected. Almost 90 % of this waste is mismanaged and a staggering amount of this is dumped into rivers and then flows into the oceans, polluting the waters and harming the marine ecosystem, studies have established.

This NatGeo's all-women expedition's first round of travel was from 'sea to source' i.e. from Sunderbans in Bangladesh where the Ganga meets the Bay of Bengal till Gangotri, near the Gaumukh glacier. As they conducted a rapid assessment of locations across the riverbank, they focused on spreading awareness as to how plastic is impacting people and planet and then, also discussing with multiple stakeholders, about providing solutions.

The first round happened before monsoon and there would be another one post-monsoon.

Initially the team had all women only but at later stage, some men got involved post the expedition stage. "That study that said Ganga was one of the ten big rivers to dump humongous amounts of plastic into the ocean was our starting point. But there were huge scientific knowledge gaps that needed empirical data. We needed scientific observations as to how and what roles do the rivers play in bringing plastic to the oceans," Koldwey told this correspondent.

The team has social scientists and community workers. "We were looking at populations and waste management infrastructures and making estimates, which are really significant in ascertaining the levels of plastic going into the oceans."

But even when Ganga is not the top-ranking river amongst the top ten to dump plastic into the oceans, Koldwey could not explain why they did not choose other rivers, including those in China. "There are patchy bits done … for instance, in Thailand they are looking at micro-plastics only in Mekong river. But this is going to be a comprehensive study.

We are hoping to develop a methodology here and take it to other rivers."

China has permission issues, she said.

Seven towns and cities in India

The seven places identified in India are: Harsil and Rishikesh (Uttarakhand); Sahibganj, Kannauj, Anupshahar, District Bulandshahar and Varanasi (Uttar Pradesh) and Patna (Bihar).

This is the first kind of project on Ganga (among the top 10 most polluting rivers) which has a comprehensive study looking at land, looking at the river, looking at people, looking at wildlife, a four-dimensional study. The broad outcomes that are expected: 1. Fill knowledge gaps by collecting data. 2. Identify the key intervention points so that there is a solution and 3. Education and communication.

Lack of understanding how plastic persists in the environment is the main hindrance and talking to the community about it would be the focal point and then mobilising solutions around behaviour change, be it how the communities manage their waste or how they reduce their plastic consumption. "Challenge is to make behaviour 'easy to change'," she said.

On the one hand, she and her team met with the communities along the Ganga banks, and on the other, she also met business community and addressed them at the World Economic Forum here earlier on October. Koldwey said she and her team are reaching out to businesses and engaging with them. It is important as it is easy putting a ban on usage, consumption of single-use plastic, but what about the industry that manufactures it? What about the producers of these plastics?

"Big brands are slowly waking up to the problem. Also, there are other businesses … the alternatives. This is not to say, it is environment versus business. It is actually saying, there is a new way of doing business."

What gives confidence to Koldwey is her previous experience. Currently as Head of Marine and Freshwater Conservation, Koldwey's approach includes finding solutions through interdisciplinary research and conservation action at the interface between communities and environment. The project 'Net-Works', that won multiple awards, has developed a novel community-based supply chain for discarded fishing nets that are recycled into carpet tiles addressing issues of marine debris and poverty alleviation in coastal communities. It has removed more than 160 tonnes waste netsbenefiting 62,000 people. Heather says she uses collaborative approaches to communicate and engage people in marine conservation. For instance, in the 'One Less' campaign aimed at building a more ocean-friendly society, she has beenworking to make London the first capital city to stop using single-use plastic bottles. ■

Nivedita Khandekar is an independent journalist based in Delhi. She writes on environmental and developmental issues. She can be reached at nivedita_him@rediffmail.com or follow her on twitter at @nivedita_Him

Make Cities Liveable to Make Them Great

Kumar Dhananjay
Consulting Editor

Cities are the engines of growth. Cities are driving the life in an urban set up. Cities are providing the citizens that which they come aspiring for - jobs, a better life, pros-perity and a dignity that they long for. But what describes a city includes its govern-ment, politics and planning. There have been generalized studies on the metropolitan governance in recent years, but very few focused on the cities that are driving the life across the globe. The problem that we confront while reading any scholarly work on the' great cities' is that its mostly by American scholars and is thus oriented towards American scene. But, here you have a book 'Great Cities of the World' where authors from across continents have come together with their experience and knowledge and have put together this volume presenting a picture which is so true and hits you straight in your face.
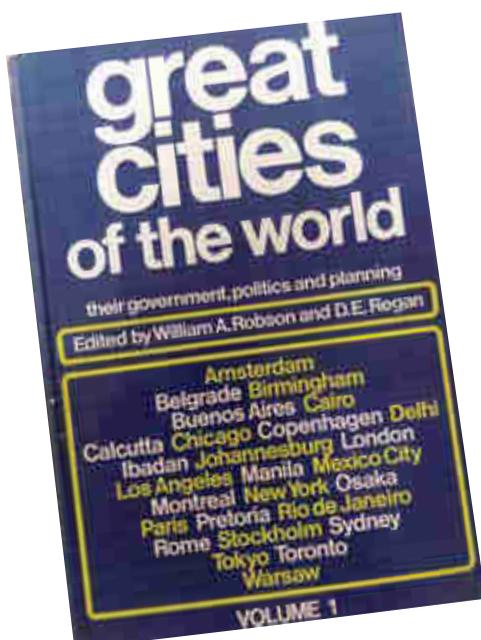
The Great Cities

The scope of the book has been deliberately kept worldwide, avoiding over attention on European and North American cities. It's not easy to find relevant information about a city all the time and that is evident while going through the book; nonetheless, authors seem to bring a true account of the cities they are writing about. A good as-pect about the book is that it is not just about, locations, history, tourist sites but actually talks about governance of the cities that makes them great and livable. Cities and towns have been founded, discovered, reinvented in the past but when we talk about great cities of the world in a modern phenomenon it brings its own import. The rising population numbering in millions in these cities would not have been possible without the railways, the cars, the cargo driven by steam or oil in old days and now by aircrafts. In these modern times, a great city is not about its history, monuments and places to visit. Today greatness is about a city's ability to sustain itself. Isn't it fasci-nating that a book was talking about garbage collection, sewage disposal service and others

fifty years back while talking about great cities of the world? The cities de-scribed in the book cover a wide range of sizes related to the population and the terri-tory contained. Zurich, with a population of half a million then made to it to the list. Such a small population could be best described a medium sized city in the United States. But, the economic significance, commercial and financial power becomes a dominant factor. Equally important is its cultural eminence. Arts and science are al-ways strong pillars of a great city without which the quality of greatness gets weaker. But the political significance of a city is important but not paramount.

In the words of the authors, 'the political importance of the great cities does not nec-essarily derive from their position as a national capital. Indeed, only fourteen of the twenty seven cities dealt with in this book, are national capitals. It arises rather from the massive concentration of highly organized power which the great city is able to exert. When the concentration of power and resources is associated with the prestige and authority of a capital, the result is formidable in the extreme'. There lies the prob-lem. Many regard that potential dominance of the great cities in the context of nation-al politics needs careful consideration because the western way of life tends to ignore the political problems that need urgent rethinking.

Culture, Industry and Government

In the modern sense of the term that describes a great city, it ought to be a metropoli-tan area. William and Robson say that 'it must connect to commercial, industrial, cul-tural or governmental center surrounded by suburbs, housing estates, dormitory towns or villages. Large number of people who work in the city reside in these outly-ing areas beyond its boundaries'. The book takes you through Argentina, Brazil, Can-ada, Denmark, France, India, Italy and many

Book
Great Cities of the World

Edited by
William A Robson
D E Regan

Publisher
George Allen &
Unwin Ltd

Pages
493

more countries describing how they are governed through their municipalities, local governments and institutions. One of the famous authors on the metropolis Dr. Victor Jones defines it as "a mother-city from and toward which people move to suburban aggregation on the periphery. Many of the people who live in the suburbs work in central city; and they and their families use the cultural, recreational, trade, professional, and commercial of the mother-city al-most as freely as do those who live within its boundaries".

In the most metropolitan areas, tendency is for suburban areas to grow more rapidly than the central city because the livable area is simply not available. The great cities distinguish themselves from others by their constitution vis-à-vis their relations either with national or state government. Paris could be as different from Tokyo, though both may be capital cities. London has a two tier structure to govern the city but Delhi has three tiers of governance. The city governance in Rome differs from local gov-ernments of other Italian cities. However, one thing that comes across clearly is that financial power is heavily invested in the central government.

The separation of power is essential for the functioning of cities. It makes the city work and move forward. What separates national capitals and those cities that still make it to the list of great ones is that local governments are quite powerful. But there are always exceptions. Capital cities these days tend to enjoy a high level of local governance than other cities. You don't have to travel far to seek an explanation. Capital city is the seat of national governance, has representatives of foreign coun-tries, security is a key responsibility and on top of it the possession of capital is crucial to exercise control over the country. But in these times cities are struggling. Local government councils have failed to remove obstacles in the standardization of emol-uments and conditions of service.

Rapid urbanization and importance of city council or municipality is the key to make a city great. What is required is to remove the inherent structural weakness of its social foundation. We need to remove the wreckage of past hopes and fears. Perhaps the answer lies in the devolution of power. In principle, a collection of agencies, both pub-lic and private would perform the task. The devolution of powers will have to be made with discretion and logic and will require active public participation; participation that would enable manage its own affairs and cannot be denied any further. This is crucial to defy the dangers of proliferation of the agencies. There must be a very firm hand to guide and co-ordinate their services over the city. What is significant is that there must be a pool of voluntary bodies to perform a leading role in the activities and must be supported by a highly trained cadre of technical and professional officers. In order to make our cities not just great but livable as well, we must bring the citizens at the core of it. Physical planning controls should rest with all users, local, state or center to ensure that they can make the city great. ■

Cities need to become healthy again

Ashok Wankhade
Managing Editor

Cities have been a hub of opportunities for people hence people keep coming to cities in search of better standard of living, prosperity and greater access to better health and education facilities. Now, cities themselves are getting sick. The governments need to find out solutions to cure the problems cities are grappling with.

A range of urban sectors determine the quality of life people live in cities. These sectors include urban transport systems, use of fuel by vehicles, housing patterns, energy consumption patterns, waste management systems, etc. Many of these sectors are well within control of governments which they can regulate for ensuring better living condition in cities.

Policymakers and politicians need to take certain actions to mitigate urban health risks and these can have important co-benefits for multiple policy objectives. If we talk about well-planned cities, they offer opportunities to create urban patterns that minimize health risks from air pollution, traffic injury, and physical inactivity, while also mitigating climate change.

For example, an energy-efficient urban transport system can help cities meet multiple health and sustainability goals. Strategic investments in public transport networks can reduce air pollution in cities in the long term and control emissions generated by private transport. It has been seen that cities with effective urban transport system have better air quality. Local authorities can also focus on developing walking and cycling infrastructures which are comparatively inexpensive solutions and can be implemented with local interventions and community assistance.

For instance, according to a report of World Health Organization, in Nairobi, it is estimated that some 40% of daily trips are on foot and another 40% of travel is via informal and poorly organized "matatus," or shared taxi systems – while only about 9% of travel is by private vehicles. As in most of Africa, no formal air quality monitoring system exists in Nairobi. However, research studies have attributed much of the city's air pollution to traffic, with reported PM2.5 air pollution levels several times over WHO guideline limits.

Improved urban environment

People in cities are increasingly using air-conditioning systems that impact the environment negatively. The problem is going to become more severe as more and more

AN ENERGY-EFFICIENT URBAN TRANSPORT SYSTEM CAN HELP CITIES MEET MULTIPLE HEALTH AND SUSTAINABILITY GOALS. STRATEGIC INVESTMENTS IN PUBLIC TRANSPORT NETWORKS CAN REDUCE AIR POLLUTION IN CITIES IN THE LONG TERM AND CONTROL EMISSIONS GENERATED BY PRIVATE TRANSPORT. LOCAL AUTHORITIES CAN ALSO FOCUS ON DEVELOPING WALKING AND CYCLING INFRASTRUCTURES WHICH ARE COMPARATIVELY INEXPENSIVE SOLUTIONS AND CAN BE IMPLEMENTED WITH COMMUNITY ASSISTANCE

people opt for ACs in their homes and offices. The situation is getting worse because of urban heat land effects. For cooling the urban environment, cities need to go back to basics. The cities need to be planned thoughtfully keeping in mind open skyline design, green buildings, vertical gardens, urban forests, walking and bikeways, etc. These initiatives will help in mitigating urban heat island impacts and also reduce energy requirements for air conditioning, smog levels, and health risks due to heat stress and poor air quality. Slum up-gradation is also a useful tool to address health-related risks in cities. Slums are often associated with poor sanitation facilities, sub-standard use of fuel for cooking, and unhealthy living conditions. Cities are becoming denser by the day and the problems of the slums are not going to remain limited to those areas. If we want to make inclusive cities, the problem of low-income and unauthorized colonies must be addressed with sincerity. To achieve this, local participation can be a powerful instrument to mobilize low-income communities around the planning, management and governance issues of their neighbourhoods. Most of these problems are interconnected and need to be addressed with a holistic view. ∎

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