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This Energy News contains excerpts of articles picked up from selected daily newspapers & magazines.
छात्रों ने हाईब्रिड साइकिल बनाई

आईआईटी पटना के छात्रों ने साधारण साइकिल का इलेक्ट्रिक मोटर बनाया है। इसकी अधिकतम गति 25 से 30 किलोमीटर प्रति घंटा होगी। बैट्री से चलने वाली यह हाईब्रिड साइकिल 150 किलो मकर भी उठा सकती है। इसे पैदल और बैट्री मोटर से चलाया जा सकता है। इसकी कीमत 10 से 12 हजार रुपये होगी। आईआईटी पटना अब इसके मोटर को पेटेंट करने के लिए आवेदन देने की तैयारी में है। भूपें-भादु वाले इलाकों में यह साइकिल इलेक्ट्रिक बाइक का सस्ता विकल्प साबित हो सकती है। आईआईटी पटना के इलेक्ट्रिक विभाग के अध्यक्ष डॉक्टर आरुके बेहरा ने बताया- सीधे हेंडल वाली साइकिल में बदलाव कर इसे बनाया गया है। यह टाप्ल सफल रहा है। इसमें उच्च क्षमता का मोटर लगाया गया है। इससे यह ऊंचाई पर भी आसानी से चढ़ सकती है।

तीन महीने में लांचिंग की तैयारी : अब इसके ब्रेक का डिजाइन तैयार किया जा रहा है, जो तेज गति में भी इसे आसानी से रोक सके। अगले दो से तीन महीने में इसे बाजार में लाने की तैयारी चल रही है।

इसके लिए साइकिल कंपनियों से भी बात चल रही है। साइकिल विभाग के छात्रों और शिक्षकों ने यह साइकिल तैयार की है। इस तीम में मॉटर, आईडिया और बैटरी कीमत भी शामिल है। अभिषेक ने बताया कि बढ़ते प्रदूषण के कारण ऐसी साइकिल बनाने का आइडिया आया।

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ई-वाहन चार्जिंग पर घरेलू बिजली दर लगेगी

इलेक्ट्रिक कार और स्कूटर खरीदारों को प्रोत्साहित करने के लिए केंद्रीय विभाग ने दी गई सीईए के 15 फीसदी से अधिक चार्ज भी दे दी गई है। इसके बाद वाहन भी बिजली की दर सस्ती हो गई। अब वाहन चालू करने के लिए चार्जिंग स्टेशन की सीईए के लिए 11.50 रुपये प्रति पूंजीत लें सकते हैं।

मनमानी शूटर्स ने वसूल नहीं करने का निर्देश दिया है। इस्तेमाल के लिए चार्जिंग स्टेशन खोलने वालों की कमाई पाएगी से सबसे सुविधा होगी। इसलिए स्टेशन वाले अभी मनमानी दरों नहीं ले पाएंगे।

राजमार्ग पर तीन किलोमीटर पर होने वाले स्टेशन- नई ट्राफिक शीर्षक के इलेक्ट्रिक, सड़कों और राजमार्गों के दोनों किनारों पर 3 किमी की दूरी पर एक चार्जिंग स्टेशन घोषित करने की सलाह दी गई है। वहाँ दो कमरे और बसों के लिए हर 100 किमी पर एक चार्जिंग स्टेशन लगाने की सलाह दी गई है।

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देश में सस्ती लीथियम बैटरी तैयार होगी

इलेक्ट्रिक वाहन की कीमत में सबसे बड़ी भूमिका निभाने वाली लीथियम आयन बैटरी का निर्माण देश में ही करने की तैयारी चल रही है। इसके लिए भेल ने एक अमेरिकी कंपनी के साथ मिलने का संकेत दिया है। दोनों देश में सस्ती बैटरी बनाएंगे, जिससे इलेक्ट्रिक वाहन के दाम भी घटेंगे। केंद्रीय मंत्री अनंत गते ने
Magenta Power joins hands with HPCL for e-vehicle charging

Magenta Power, a rooftop solar developer that earlier this year ventured into electric vehicles charging space, has announced installing an EV charging station under its brand “Charge Grid” at the HPCL staff colony in Chembur, Mumbai. The charger installed by Magenta Power shall have the ability to charge up to three vehicles at a time, the company said. The operations of the EV charging station would be carried out by Magenta Power via its ‘ChargeGrid App’, which provides an integrated platform for viewing network of charging stations. The app also allows cashless transactions and remote monitoring for the EV users. Charge Grid shall be open to all HPCL colony residents, who can charge their electric cars anytime safely and conveniently using the Charge Grid chargers. The chargers shall also be used in the colony for charging the Mahindra e-supro passenger vehicles which the colony recently acquired a shuttle service for the residents. “We are elated to be associated with HPCL for promoting the e-mobility initiative, “Maxson Lewis, Director – Magenta Power, said. He added this association will help the company scale its EV infrastructure on pan-India basis. Going forward, Magenta is partnering with HPCL to establish charging infrastructure for e-vehicles at various locations.

*****
Will procure only e-buses in future if pilot phase is a success: Kejriwal

Chief Minister Arvind Kejriwal Tuesday said the government would buy only electric buses in the future if the imminent introduction of 1,000 e-buses turns out to be a success. The government has planned to introduce 3,000 buses in 2019, of which 1,000 would e-buses and the rest CNG-based. “Once these 1,000 e-buses arrive, and if they turn out to be technologically and financially viable, in the future, we will buy only e-buses,” the CM said while addressing a stakeholders’ consultation on the proposed draft of electric vehicle policy. But, officials in the state transport department and the Delhi Integrated Multi-Modal Transit System Ltd (DIMTS) are taking it one step at a time. Even as DIMTS, the nodal agency for the e-bus project, is yet to submit its final report, officials said the performance of e-buses is unlikely to match that of the existing CNG fleet. “The current buses run about 200km a day, but an e-bus will only be able to cover about 100km on a single charge. This, however, does mean that e-buses should not be rolled out. The trick to optimise the new fleet is to introduce e-buses of different sizes after a thorough route rationalisation study,” an official, on condition of anonymity, said. Also, increasing the power of the bus in terms of adding extra kilometres would mean installing bigger batteries which are not only more expensive, but also take up additional passenger space. “Maintenance is going to be another issue as it will be a first for the Delhi Transport Corporation (DTC) and bus manufacturers who currently deal only in CNG buses,” another official said. To augment the charging infrastructure, the government is planning to have multilevel depots with charging points. The idea comes from a similar infrastructure in Beijing, Shenzhen and Hong Kong in China, where a delegation from the transport department, including Minister Kailash Gahlot, and DIMTS had gone on a five-day tour last week. The focus of the tour was to study the infrastructure for buses. Beijing has a fleet of 30,000 buses—a mixture of electric and diesel vehicles—while Shenzhen has only electrical buses. We visited the facilities and found the multilevel depots interesting and are thinking of replicating these in Delhi,” Gahlot said. “We are also thinking of installing charging points on locations such as the DTC depots,” he said while adding that the proposal of 1,000 electric buses is in the final stages. The first batch of buses are likely to be rolled out in July next year.

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Charging infra and green power must for switch to e-vehicles

The Delhi government has put its new draft policy on electric vehicles — which sets an ambitious target of electrifying 25% of all new vehicles registered by 2023 — in public domain for suggestions. While the details of the initiative are being debated, nobody disputes the urgency to fight the air pollution asphyxiating Delhi residents. Electric vehicles can help because they have zero tailpipe emissions and can reduce the dangerous nitrogen-oxide and particulate matter in the air. They also offer quieter and smoother rides. The new draft policy’s focus on electrifying two-wheelers, besides autorickshaws, cabs, goods carriers and public buses, could address a big problem. Out of 7.3 million motorcycles and scooters registered in Delhi, at least three million run on the polluting BS-III engines. While now, vehicles with only cleaner BS-IV engines are being registered, banning the older, polluting two-wheelers is difficult as much of the city’s working class depends on them for their daily commute. With the right pricing, e-scooters could emerge as an efficient, pollution-free option, say experts. But a switch to e-mobility would take a lot more than just buying and putting e-vehicles on the road. The biggest challenge is to keep them running. Delhi’s private power distribution companies, which will have to provide the vehicle charging infrastructure, say they are prepared to pull the weight. But they also flag concerns. The power lines carrying the existing load will also be used for EV charging and there are fears of overloading if the network is not shored up accordingly. Also, before they start upgrading, power companies say they will have to determine the demand in each zone, which will depend on how many vehicles are being bought in those areas. At the same time, until e-vehicles source power from green energy, the switchover cannot be dubbed entirely green. But can we really wait to clean up our coal plants before bringing in e-vehicles? The vehicular pollution problem in the city and emissions from coal-powered plants across the country must be addressed simultaneously. The best way to clean the power grid is to increase the share of renewable energy, mainly solar and wind. Right now, Delhi has only 3% of its power sourced from the renewables and as much as 62-67% comes from coal. While it has shut down its own coal-fired Badarpur plant two months ago, the Delhi government says it is making efforts to reduce dependence on older, inefficient thermal units located outside the city. If all goes well, Delhi will source as much as 18%
of its electricity from renewables from next year. Dedicated green corridors have made transmission of renewable energy from plants to the grid much cheaper. The push to rooftop solar installations in residential and government buildings and the schemes such as giving incentives to city farmers to install panels on their farmland could increase the generation locally. Experts point out that charging EVs at the right time — say, when solar and wind energy generation is at its peak — can increase the consumption of renewable energy and also improve the stability of the grid. For this, distribution companies say they would require customised time-of-day metering tariffs just for e-vehicle users. Even as the Delhi government takes the lead in promoting e-vehicles, for a better reach, the e-mobility plan requires similar efforts by the Uttar Pradesh and the Haryana governments. Many families with multiple daily commuters between Delhi and the suburban National Capital Region use more than one vehicle. Lack of charging infrastructure in the NCR towns may discourage them from switching to e-vehicles. More than 16 years since its introduction, the CNG is still not a popular fuel option in the NCR towns because of a shortage of dispensing stations. Delhi has long squandered the benefits of CNG switchover (in 2002, it had the world’s largest fleet of public transport running on the green fuel) by adding too many private vehicles since. While replacing some of these with electric vehicles may ease pollution, it will not solve the problems of congestion and parking. The real success of the clean air initiative would depend on how aggressively the government pushes electrification of public buses and augments the tried and tested humble CNG bus service.

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Soon, you can charge electric vehicles at homes and offices

Owners of electric vehicles can charge them at their residences with priority access to electricity from power utilities, according to new rules that seek to promote the use of such ecofriendly vehicles in the country. Also, establishing a public charging station (PCS) won’t require a license and can be set up by an individual or entity provided they meet the standards drawn by the power ministry and the Central Electricity Authority, according to the power ministry’s final guidelines and standards for charging infrastructure for EVs. The
guidelines, a copy of which has been seen by were issued on Friday by Anoop Singh Bisht, undersecretary in the power ministry, to all Union ministries and departments, and the chief secretaries of states and union territories. Power tariffs for charging EVs will be determined by the appropriate commission provided it does not exceed the average cost of supply plus 15%. For residential users, the tariffs for charging will be the same as for domestic consumption of electricity. A PCS can levy a service charge, with a ceiling fixed by a nodal agency in each state. A spokesman for the power ministry declined to comment. The new rules are expected to bolster the government’s efforts to roll out the second phase of the Faster Adoption and Manufacturing of Electric and Hybrid vehicles (FAME) scheme in April next year. FAME-2 is widely expected to provide financial incentives of around ₹5,500 crore to EV buyers over five years. Companies such as Maruti Suzuki India Ltd, Hyundai Motor Co., Volvo Cars and Kia Motors India have already announced plans to introduce hybrid or electric cars. Tata Motors Ltd and Mahindra & Mahindra Ltd are already supplying their electric cars to the Union government. The companies have however raised concerns about the inadequate charging infrastructure for such vehicles. “Charging infra is definitely a key enabler of electrification,” said Rakesh Batra, national leader, automotive sector, EY. “You can’t get people to buy EVs unless there is an option for them to charge. In terms of policy, this is an important step because on product side, EVs are commercially available now. The new guidelines aim to “proactively support creation of EV charging infrastructure in the initial phase and eventually create market for EV charging business and encourage preparedness of electrical distribution system to adopt EV charging infrastructure.” In August, reported the government may provide a ₹1,000 crore subsidy to build a nationwide charging infrastructure as part of FAME 2 scheme. The ministry in its document did not refer to any subsidy figure or a target for setting up charging stations. The roll out of the scheme will happen in two phases. In the first phase spanning up to three years, all nine mega cities, and expressways and important highways connected to them - Mumbai, Delhi, Bangalore, Hyderabad, Ahmedabad, Chennai, Kolkata, Surat, Pune - will be covered. This includes corridors such as Mumbai-Pune expressway, Ahmedabad-Vadodara, Delhi-Agra Yamuna expressway. Delhi-Jaipur, Bengaluru-Mysuru, Bengaluru-Chennai. In phase 2, which will roll out over the following 3-5 years, will cover state capitals and Union Territory headquarters and highways connected to them. The power ministry will designate a central nodal agency to facilitate this rollout, while states can have their own nodal
agencies, most likely the state discom. The guidelines recommend any person seeking to set up a public charging station should be provided connectivity on priority by the distribution company licensee in the area or may also obtain electricity from any generation company through open access

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EV Charging Stations Asked to Install Both Japanese, Chinese Technologies

Unable to decide between Japanese and Chinese charging technologies for electric vehicles, the government has asked public charging stations to install both platforms, ending months of ambiguity that delayed electric vehicles procurement by Energy Efficiency Services Ltd (EESL). The move, however, is likely to substantially raise costs of charging stations. The plugs and communication protocols to link batteries to chargers need to be limited to keep costs down, experts said. India has been trying to work out a standard charging format amid strong lobbies on each end. Lack of clarity on charging protocol has to an extent derailed the electric vehicles programme that planned
to aggregate demand and purchase about 20,000 cars over the next couple of years. EESL, which is tasked with the procurement of electric cars for use by government departments across the country, withdrew its tender for purchasing 10,000 electric sedans earlier this year. The revised standards are expected to allow foreign automakers to come into the Indian market. “If the guidelines open up all types of charging specifications, I think that is really the way to go. This will really encourage manufacturers to come with higher range cars because obviously, nobody is going to bring cars which are already present in India,” said Saurabh Kumar, managing director at EESL. The tender which by EESL called back had a provision for 20% of the 10,000 cars to be in the luxury cars category. With only Tata Motors and Mahindra & Mahindra manufacturing basic electric sedans in the country, this would have allowed foreign automakers like Nissan, Kia Motors to participate in the tender. Current international standards used by most vehicle manufacturers internationally are CCS and CHAde-MO. Hence public charging stations shall have, one or more electric kiosks/boards with installation of all the charger models, said the guidelines issued by the power ministry on Friday. The guidelines specify technical parameters for slow and fast varieties of CCS, CHAdeMO and Bharat platforms. CHAdeMO is a charging platform used by Japanese car makers like Suzuki and Toyota, while Combined Charging System (CCS) is promoted by 15 out of 20 major OEMs across the globe. Residential and captive charging infrastructure for internal use for a company’s own/leased fleet will not be required to install all type of chargers, the guideline have said. Alekhya Datta, fellow and area convenor, electricity and fuels division, at The Energy & Research Institute, said public charging infrastructure should be market driven depending upon vehicles that are coming up in India. “Mandating both CCS and CHAde-MO will unnecessarily increase infrastructure cost, and most of the top vehicle original equipment manufacturers have agreed to support CCS for fast charging option. As far as Bharat Chargers are concerned, these are temporary measures and not a globally accepted standard,” he said. The guidelines require one charging station to be set up every three km in cities and every 25 km on both sides of highways. The tariff for supply of electricity to electric vehicle public charging station shall not be more than the average cost of supply plus 15%, the guidelines said. The states will fix ceiling on service charges of the
public charging stations. The power ministry early this year issued a notification clarifying that setting up charging stations for electric vehicles will not require a separate licence under the Electricity Act of 2003.

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Delhi to be linked by 4 intercity green corridors with CNG buses

The national capital will soon be connected to Chandigarh, Jaipur, Agra and Haidwar through green corridors that will be conducive for running CNG powered vehicles. Speaking at an event to launch a digital customer initiatives of Indraprashtha Gas Limited, Minister for Petroleum and Natural Gas, Dharmendra Pradhan said, “We will be inaugurating green corridors that connect New Delhi from all four directions. The green corridors will be from Delhi to Agra, Delhi to Chandigarh, Delhi to Jaipur and from Delhi to Haridwar. These corridors will be inaugurated in February 2019.” These green corridors were first mentioned by Pradhan in 2015 and were initially supposed to be operational by 2017. “We are in the process of procuring eight long range CNG buses that will ply these routes as the first stage of the green corridor. These buses have been designed by Ashok Leyland and are in the final stages of getting regulatory approvals. Once these approvals are received, the buses will
undergo test runs for 45 days and then be declared fit for commercial operations,” E S Ranganathan, Managing Director at IGL told BusinessLine. “The buses can ply for 700 kilometers in each refill and each bus costs roughly ₹ 39 lakh. This pilot project is expected to be launched in February next year. Eventually there will be a CNG station at every 50 kilometers on both sides of these green corridors,” he added.

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Centre, Delhi govt. under lens for hiring diesel cars

The Supreme Court-appointed Environment Pollution (Prevention and Control) Authority (EPCA) on Friday said that both the Centre and Delhi government are hiring private diesel cars and using them as taxis for commuting within Delhi-NCR, flouting orders. “It has been brought to our notice that the Union and Delhi government are using private diesel cars as taxis for commuting within Delhi-NCR. This is in contravention of the Supreme Court order, which clearly says that all taxis will have to operate on dualfuel or run purely on CNG or petrol,” said Sunita Narain, member of EPCA. In May this year, the apex court had said that no new diesel taxis will be registered in Delhi. All registration of city taxis shall only be permitted if the vehicles operate on dual-fuel, or purely CNG or petrol. More than 25,000 such vehicles are being hired by the Union government, Delhi government and public sector units, an EPCA member said. Narain said she would soon write to both the Union and state government to raise the issue. “The EPCA will first find out whether such practice is actually prevalent. If yes, then what remedial measures the governments could take,” said Narain after a meeting with cab aggregators, taxi associations and government officials. In the meeting, it was also suggested that EPCA propose to the governments that only CNG vehicles are hired. But a senior government official said it will not be feasible for the government to shift to 100% CNG vehicles, as many vehicles often need to move out of NCR where CNG infrastructure is still absent or in a rudimentary stage. The cab aggregators operating in Delhi-NCR informed the SC-appointed body that less than 2% of their vehicles are presently running on diesel.

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EPCA to write to govt. over use of pvt Diesel vehicles as taxis

The Supreme Court-appointed Environment Pollution (Prevention and Control) Authority (EPCA) will write to the Centre and the Delhi government questioning the use of private diesel vehicles by their departments and PSUs as taxis. This was decided in an EPCA meeting on Friday while discussing possible actions against diesel vehicles plying in the national capital region (NCR), starting with commercial ones. Private Diesel cars used by the governments are by nature taxis and as “the Supreme Court order clearly says all taxis will have to be dual fuel, petrol or CNG, this would be in contravention of the court order... Please let us know in case this is happening. And if so what action will you be taking to remedy the situation,” EPCA member Sunita Narain said. In May 2016, the Supreme Court had ordered a gradual phase-out of diesel taxis from Delhi-NCR and said they could operate until the expiry of their permits. New licences should not be given for diesel taxis in Delhi and those with all-India tourist permits (AITPs) may operate till their permits expire. While diesel taxis are not allowed in NCR, the court had allowed existing AITP diesel cabs with limited life as AITP-O (old). New AITP-N can be registered on petrol, CNG, dual fuel and on diesel only with an affidavit stating they won’t offer point-to-point services in NCR. While Ola and Uber submitted to EPCA that they have around 1.8% diesel-run vehicles, Mega and Meru cabs had no diesel car. According to Delhi transport department, around 11,088 AITP-O and 4,137 A-ITPN vehicles are registered in the city. An EPCA member pointed out that 25,000-30,000 hired private vehicles were on duty as cabs in the various government departments in the capital. “Cost of operating diesel cars is very low. We can ask government departments to only hire CNG cars or make 75% of the fleets CNG.” Earlier, EPCA had said that it might impound violating vehicles as well.

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Understanding the curse of air pollution

The quality of India’s air needs to be addressed as a pan-India public health emergency. Air pollution was responsible for 12.5% of the total deaths in 2017, as per the most recent iteration of India State Level Burden Assessment. The World Health Organization reports nearly 100,000 deaths in infants to be attributable annually to air pollution in India. But deaths form only a part of the story — there is growing evidence of how it causes illnesses in nearly every organ of our body. It affects the elderly and babies still in their mothers’ wombs — newborns show traces of particulates in their blood stream. It affects all of us.
This article is the first of a four-part series by researchers at the Centre for Policy Research written in collaboration with leading air pollution researchers. We take stock of what we know about air pollution, and what we could do to improve the air quality in India. In this series, we focus on fine particulate matter (or PM2.5), a useful proxy indicator for air pollution. These particles — a complex mixture of solid and liquid particles, originating from different sources and comprising multiple chemical substances — are the most damaging, as they can penetrate the lung barrier and enter the systemic circulation. In this article, we will lay out four foundational facts about when, how much, and where we should worry about air pollution. In short, the answers are: most of the time, a lot, and all over India. First, air pollution is a near yeararound problem, even though we notice pollution much more during periodic spikes especially in winter (see figure). Many parts of India, especially in the Indo-Gangetic belt record poor air quality levels across the year. In 2018 (so far), PM2.5 levels were ‘poor,’ ‘very poor’ or ‘severe’ 56% of the time in Delhi (RK Puram), 49% in Patna and 32% in Kanpur. Conversely, it was ‘good’ for six days in Delhi, one day in Patna and 37 days in Kanpur. While it is understandable that we focus on the visible peaks, adverse health outcomes result primarily to high long-term exposure, not just pollution spikes. To understand the severity of the problem, we have to look at annual average levels of emissions. Second, annual average emission levels in much of India are multiple times safe levels (see figure). Three quarters of India’s population lives in areas where levels of PM 2.5 exceed the Indian national standard of an annual mean of 40 microgram/m3. These norms themselves are four times the far lower levels recommended by the WHO (see figure). Big western cities such as London, New York City and Paris have air quality nearly at these levels, and make the news when some of their neighborhoods exceed the WHO norms by a few microgram/m3. Our levels are not just somewhat higher but many multiples higher: 72 of 640 districts in India, primarily in Delhi, UP, Bihar, and Punjab, have annual averages 10 times the WHO levels. Even Beijing, infamous for its air pollution, had PM2.5 levels about half of Delhi’s in 2016. We often hear that India suffers from inadequate data and knowledge of air pollution. While India does indeed need much better data and more sensors – much of the data reported here is from satellite data – this uncertainty should not be a
reason for inaction, since new monitors will only tell us what multiple above safe standards we are. Third, air pollution is not just a city or industrial area problem but a regional problem. Satellite data shows that air pollution levels are especially poor across the entire Indo-Gangetic Belt stretching from Punjab and parts of Rajasthan in the west to Bihar in the east. To an extent, this is a curse of geography. Sandwiched between the Himalayas in the north, and the Vindhyas in the south, this belt becomes a virtual valley where outward dispersion is difficult. Thus, while cities contribute to their own air pollution through traffic, industry, and waste burning, they are also affected by emissions from the broader regional ‘airshed’. As a result, rural areas are frequently also polluted. In addition, emissions from cookstoves using solid fuels not only lead to high levels of indoor air pollution, but also account for an estimated quarter to a third of outdoor pollution. India is dealing with both modern sources of pollution such as industries and vehicles, as well as pollution from traditional practices such as cooking with firewood, and we need to tackle both. Finally, PM2.5 levels have been growing. Across Punjab, pollution levels nearly doubled between 1998 and 2016. It is sobering that India’s air quality is worse than China’s even while its GDP (PPP) per capita is less than half that of China. Clearly, the environmental quality of India’s growth is not sustainable. Any serious plan to mitigate air pollution has to be long-term in nature, target multiple sources, operate year-round, and focus on regions rather than cities. In subsequent articles, we describe the impact of air pollution on health, explore the different sources of air pollution and conclude with a reflection on an approach to air pollution across India.

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Focus on local solutions to improve air: Experts

Discussing the air pollution reduction targets and policy measures in Delhi, academics and scientists from different institutes stressed on the need to find solutions to local environment needs. The experts were speaking at a conference ‘Towards Clean Air in Delhi’, organised by the Indian Institute of Technology-Delhi. Mukesh Khare, professor at IIT-D and coordinator at the Centre of Excellence for Research on Clean Air, said, “There needs to be a focus
on the local air quality management to find solutions at the local level. There should not be unnecessary regulation in the name of combating air pollution. It creates confusion among people and there is a need to promote clarity. For instance, odd-even was implemented without any data, so it did reduce congestion but not concentration.” Another professor, Harsha Kota, also talked about the need to have an action plan different for different sites. “California divides its counties into different air districts and that’s what we also need to do. There cannot be same regulation across NCR. Each hotspot area need to be seen differently as per their requirement and a solution needs to be found,” said Kota. Further, an official from Central Pollution Control Board (CPCB) stated that construction was the main source of pollutants. Experts talked about the need to look at the blanket banning of construction activity. “When the air pollution reaches a severe level, the construction activity is banned. There’s a need to delineate the construction activity and that is the way forward,” said Khare, who is also working on another project ‘Air Pollution and Human Health’ with institutes from India and England. Another expert, SK Goyal, scientist and head of National Environmental Engineering Research Institute, zonal centre, Delhi, talked about the need to take decisions based on scientific stage. “Should age be the criteria to ban vehicles or should it be determined by the condition of vehicle,” asked Goyal.

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Jatayus to battle dust pollution in city

Manual sweeping of roads and market places with brooms adding to dust pollution has been plaguing the capital for years. South Delhi Municipal Corporation has launched its first set of ‘Jatayu’ litter-picking machines which replace manual sweeping in major markets.

“These machines are suction units that are mounted on smaller CNG pick-up
vehicles, so they pull in all the dust, leftovers on the streets etc. Four machines — one for each zone — has been launched and will be seen working in major markets of south Delhi and central verges,” a senior corporation official from DEMS (sanitation) department said. SDMC mayor, Narendra Chawla, said the new litterpicking ‘Jatayu’ machines will accelerate cleaning on footpaths in various markets. “SDMC has been using 18 road sweeping machines and 40 water sprinklers to clean roads but footpaths are still being undertaken by safai karamcharies. More such Jatayu machines will be procured after looking at their performance,” Chawla said. Each unit costs Rs 12 lakh and is equipped with a 400 litre container. At the heart of Jatayu lies a suction pump with 30mbar pressure and a minimum of 1,350Litre/second airflow. “Operators need to point the pipe extension towards an area being cleaned and the giant ‘vacuum cleaner’ takes care of litter, garbage and dust,” an official said.

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Now, a genetically modified plant to clean indoor air

Researchers have genetically modified a common indoor plant — pothos ivy — to remove pollutants inside the house, including chloroform and benzene that have been linked to cancer, according to a new study. The modified plants express a protein, called P450 2E1 or 2E1, that transforms these compounds into molecules that the plants can then use to support their own growth. “People have not really been talking about these hazardous organic compounds in homes, and I think that is because we could not do anything about them,” said Stuart Strand, Professor at the University of Washington. For the study, the team tested how well their modified plants could remove the pollutants from air compared to normal pothos ivy. They put both types of plants in glass tubes and then added either benzene or chloroform gas into each tube. Over 11 days, they tracked how the
concentration of each pollutant changed in each tube. Findings, published in ‘Environmental Science and Technology’, showed that for the unmodified plants, the concentration of either gas did not change over time. However, for the modified plants, the concentration of chloroform dropped by 82% after three days, and it was almost undetectable by Day 6. In addition, the concentration of benzene also decreased in the modified plant vials by about 75%. “If you had a plant growing in the corner of a room, it will have some effect in that room. But without air flow, it will take a long time for a molecule on the other end of the house to reach the plant,” Strand noted. IANS

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Bright ideas to spark clean-air revolution

Two years ago, Delhi government and the University of Chicago announced three winners for an urban innovation challenge that looked for ideas to reduce air pollution in the capital. The winners were selected from among nearly 250 students, researchers, entrepreneurs, NGOs and citizens from India and other countries. However, only one of the three innovations has been successfully implemented as part of a pilot project in Delhi. Mahila Housing SEWA Trust, in collaboration with the Tata Centre for Development at UChicago, Energy Policy Institute at the University of Chicago’s India team and Energy and Environment Lab, has deployed cool-roofing solutions in a west Delhi slum in an attempt to evaluate the effectiveness of using heat-reflective paints on roofs in lowering indoor temperatures and improving quality of life. “Houses in low-income communities in India are often constructed with materials that absorb heat and require more energy to cool down. These communities often use cooling fans and air coolers for several hours a day, raising their energy bills. By shifting to passive cooling, these homes could be better adapted to days of extreme heat, which could make households less vulnerable to weather impact and improve their resilience against climate change risks,” Anna Agarwal, associate director, urban innovation, at Energy Policy Institute at the University of Chicago’s India team, told TOI. According to her, while these paints were widely used, there was little rigorous evidence on their effectiveness outside of small-scale pilots. The second innovation involved Chakr Innovation Pvt Ltd, which proposed to
pilot a technology that, coupled with the exhaust pipe of diesel engines, absorbed PM emissions and converted this captured particulate matter into black ink and paints. In this project, the goal was to test the effectiveness of Chakr’s device in reducing PM emissions, and assess if this technology was a cost-effective way of reducing diesel genset pollution. “This project could not be implemented, as due to the DPCC ban on the use of diesel generators in Delhi, Chakr lost a significant number of sites in the study and had to identify and recruit additional ones. This led to considerable delays and, then, Chakr did not have resources for the project,” the University Of Chicago official said. The other project, Charvesting, proposed to deploy “Charvesters” that would recycle rice straw into biochar with clean emissions using the biochar reactors. It was supposed to help farmers comply with existing air pollution laws at minimal cost and effort, increase soil productivity and restore depleted land. “This project was not easy as there was no prior experience in implementing the technology at scale, and required engagement of multiple stakeholders. We worked with the winning team for over a year on the plan and the research design, but due to slow progress, we had to cancel the project,” Agarwal said. Sampath Kumar from Tide Technocrats said: “Even though the funding has stopped, we are still working on the technology part.”

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पराली नहीं जल रही, फिर क्यों बढ़ रहा प्रदूषण, बताएगी रिपोर्ट

दिल्ली में गहरा रहे प्रदूषण के बीच एनवायरनमेंट मिनिस्टर इमरान हुसैन ने डीपीसीसी को एक रिपोर्ट तैयार करने की कहने का कहा है। इस रिपोर्ट से यह साफ होगा कि पराली नहीं जल रही है तो दिल्ली में बढ़े प्रदूषण की वजह क्या है। इसे कैसे कम किया जा सकता है। इमरान हुसैन ने सभी संबंधित अधिकारियों की बुधवार को एक मीटिंग बुलाई थी। इसमें इमरान हुसैन ने कहा कि मोसम पर किसी का कंट्रोल नहीं है लेकिन प्रदूषण को कम रखने के लिए उपाध किए जाते रहने चाहिए। उन्होंने सभी निर्माण एजेंसियों को निर्माण के दौरान धूल कंट्रोल करने, निर्माण सथ पर गाड़ियों के टायर वॉशिंग की व्यवस्था, सड़कों की मिकेनिकल सफाई, रोड स्पिंडिंग की व्यवस्था करने को कहा है। इसके अलावा, छैटीए को निर्देश दिया गया कि ऊंची इमारतों से पानी के धो हो जाए। ब्रांडोर्ट विभाग और टॉफिक विभाग मिलकर प्रदूषण फैलाने वाली गाड़ियों को जब्त करने के लिए विशेष अभियान चलाएंगे। इसके अलावा, पेट्रोल पंपों पर प्रूफ की देस्टिंग, दिल्ली की सड़कों पर एनक्रॉमेंट हटाने और हाइड्रिक्लार विभाग को यह देखने का आदेश दिया गया है कि सफाई के बाद पतियों में आग न लगे, कूडा न जले। दिल्ली में सॉलिड वेस्ट मैनेजमेंट की पूरी व्यवस्था की जाए।

साल का सबसे ठंडा दिन, 3.6 डिग्री- बुधवार को राजधानी का न्यूतम तापमान महज 3.6 डिग्री दर्ज हुआ, यह इस साल का सबसे ठंडा दिन रहा, लेकिन पिछले तीन सालों के दौरान दिल्ली कभी इतनी ठंडी नहीं
हुई। इससे पहले इसी साल 23 दिसंबर को न्यूनतम तापमान 3.7 डिग्री रहा था। दिल्ली के कई क्षेत्रों में न्यूनतम तापमान 3 डिग्री के आसपास ही दर्ज किया गया। इनमें लोडी रोड पर 3.4, जफरपुर में 3.6, मंगोलीय में 3.7 और पूर्व में 3.5 डिग्री रहा। न्यूनतम तापमान सामान्य से 4 डिग्री कम था रहा है। मौसम विभाग के अनुसार अभी ठठक इसी तरह रहेगी। कोहरा भी शिवंता दर्ज करेगा। 30 दिसंबर तक दिल्ली में घने कोहरे का अलटज जारी किया गया है। 1 जनवरी को तापमान अधिकतम 21 और न्यूनतम 4 डिग्री रह सकता है। पिछले करीब एक हफ्ते से राजधानी की सीतलहर का चपेट में है। इन्हें लंबे समय तक शीतलहर का प्रकोप पहले कभी नहीं देखा गया। पिछले 10 सालों के दौरान दिसंबर में 4 डिग्री से कम तापमान सिर्फ 4 मौकों पर ही देखा गया। ये मौके भी दिसंबर के अंतिम माहों में आए। ऐसे में अनुमान है कि इस साल दिसंबर के अंतिम माहों में तापमान 2 डिग्री तक भी जा सकता है। अभी कोई वेदना सिस्टम एक्टिव होता नहीं दिख रहा है।

102-city clean air mission gets ₹300 crore

The Centre has earmarked Rs 300 crore for implementation of the National Clean Air Programme (NCAP) in the 2018-19 and 2019-20 financial years. However, the cost of taking air pollution abatement measures in 102 cities across the country will be much more than what the government has budgeted for the next 15 months. NCAP is a national-level strategy to tackle increasing air pollution in a comprehensive and time-bound manner. The initial amount will be used to expand air quality monitoring capacity in states, set up a national emission inventory and conduct source apportionment studies in cities which are important to identify nationwide pollution hotspots, figuring out sources of pollution and conducting scientific studies on health effects of air pollution.

“NCAP has been finalised after consulting experts and stakeholders. It will soon be announced by environment minister Harsh Vardhan,” an official said, adding that the ministry has shared the key points with Parliament. The official said the announcement would be a formality as NCAP as a strategy document doesn’t need to be notified. “States have already been sensitised and asked to submit their city-specific action plans. Many states, including Maharashtra, have submitted their plans which are being scrutinised by a CPCB expert committee,” he said. Similarly, source apportionment (identification of emission sources and assessment of extent of contribution of these sources to ambient environment) studies have been initiated in six major cities — Delhi, Mumbai, Chennai, Bengaluru, Pune and Kanpur. These studies are concentrating on hazardous particulate matter (PM10 and PM2.5). Asked about allocation of just Rs 300
crore for such a gigantic task, the official said, “We should not overlook multiple measures, worth thousands of crores of rupees, being taken in different sectors (transport, highways, forests and renewable energy among others) to cut carbon footprint. All these will help in reducing air pollution in those 102 cities and elsewhere.” Under NCAP, there will be an apex committee (under the environment minister), steering committee (under the environment secretary) and national/state-level project implementation units comprising officials and scientists from central/state pollution control boards for implementation of the programme.

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विसर्जनों ने दिल्ली की यमुना को किया ‘अपवित्र’

पानी हटना खराब हो चुका है कि मर जाएंगी मछलियां

लोगों की आशा यमुना और उसमें रहनेवाले जीवों पर भारी पड़ रही है। दिल्ली में मूंग विसर्जन से यमुना को बहुत ज्यादा नुकसान हो रहा है। एनजीटी के निर्देश के बाद सीपीसीबी ने दिल्ली में गणेश प्रतिमा विसर्जन और दुर्गा प्रतिमा विसर्जन से होने वाले नुकसान की रिपोर्ट तैयार की है। रिपोर्ट में दिल्ली के 10 घाटों से सैंपल लेकर उनकी जांच की गई। हर घाट से 2 सैंपल लिए गए। गणेश चतुर्थी के सैंपल 11 और 24 सितंबर को लिए गए। रिपोर्ट बताती है कि 11 सितंबर के सैंपलों में 20 में से 13 सैंपलों में पानी में घुलनशील ऑक्सीजन की मात्रा तय मानक से बहुत कम थी। नदी में मछलियों के जिंदा रहने के लिए यह प्रति लीटर पर 5 एमजी होनी चाहिए, जबकि इससे कम थी। वहीं, मूंग विसर्जन के बाद यानी 24 सितंबर को घुलनशील ऑक्सीजन सभी जगहों पर मानक से कम थी। मपुर घाट पर तो यह सिर्फ 0.7 एमजी प्रति लीटर ही थी। विसर्जन से पहले यमुना में टीडीएस का लेवल सभी जगहों पर ठीक था। लेकिन विसर्जन के बाद टीडीएस का स्तर 6 लोकेशन पर मानक से अधिक मिला। इनमें कुदेशिया घाट की स्थिति सबसे खराब थी। विसर्जन से पहले सभी जगहों पर 5 हैवी मेटल का स्तर ठीक था। बाद में 4 मेटल की मात्रा बढ़ी हुई मिली। इनमें गैर कॉलोनी एयरिया से लेकर गैर सैंपल में कोयराम ज्यादा था। निकिल की मात्रा पाँच जगहों में श्याम घाट, सूर घाट, कुदेशिया घाट और हाथी घाट पर ज्यादा थी। लेकिन की मात्रा भी कई घाटों में ज्यादा मिली। दुर्गा पूजा के बाद भी यमुना खुब प्रभावित हुई। प्री सैंपल में 20 अक्टूबर को यमुना में 11 जगहों पर ड्रीओ (घुलनशील ऑक्सीजन) की मात्रा तय मानकों से कम थी। इनमें कुदेशिया घाट, गैर कॉलोनी घाट में इसकी मात्रा शुद्ध रही। विसर्जन के बाद 20 अक्टूबर को यमुना में 4 जगहों पर कोयराम की मात्रा बढ़ी मिली। इनमें सूर घाट, कुदेशिया घाट और कलिंग कुंज शामिल है। रिपोर्ट की मानें तो दुर्गा पूजा से अधिक प्रभावण यमुना में गणेश पूजा पर हुआ। इसकी वजह ज्यादा मूंगियों का विसर्जन भी हो सकता है। अक्टूबर में यमुना का अधिक बहाव और पानी की अधिक मात्रा भी इसमें एक वजह है।

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प्रदूषण का असर जानने के लिए बनाई जा रही रिपोर्ट

केएमपी चालू होने के बाद राजधानी के प्रदूषण पर पड़ने वाले असर को लेकर डीपीसी एक रिपोर्ट तैयार कर रहा है। इस अध्ययन रिपोर्ट के बाद ही पता चल पाएगा कि राजधानी में प्रदूषण पर कितना असर पड़ा है। केंद्रीय प्रदूषण नियंत्रण बोर्ड (सीपीबी) का कहना है कि केएमपी की वजह से दिल्ली के प्रदूषण स्तर में वैश्विक गिरावट दर्ज की गई है। लेकिन बिना किसी व्यवस्थित अध्ययन के यह कहना मुश्किल है कि इस वजह से प्रदूषण के स्तर में किस तरीके की गिरावट दर्ज की गई है।

वाहनों से होता है 40 फीसदी प्रदूषण : पृथ्वी विज्ञान मंत्रालय के अधीन संचालित सफर ने बीते महीने दिल्ली के प्रदूषण कारकों पर एक अध्ययन रिपोर्ट जारी की थी। इसमें दिल्ली में कुल प्रदूषण में 40 फीसदी इंसेंटिव वाहनों के प्रदूषण की दर्ज की गई थी।

दिल्ली की आवोधवाम में पीएम 2.5 का मात्रा बढ़ी : रिपोर्ट में कहा गया था कि वाहनों के प्रदूषण की वजह से दिल्ली की आवोधवाम में पीएम 2.5 माइक्रोग्राम/प्रति घन मीटर का मात्रा में लगातार बढ़ती दर्ज की गई है। इसके आधार पर इसके बाद से जुड़े एक वैज्ञानिक कहते हैं कि केएमपी की वजह से अगर दिल्ली में वाहनों का दबाव कम हुआ है, तो इससे दिल्ली की वायु गुणवता में सुधार होगा। इससे आम लोगों को राहत मिलेगी।

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यमुना को जहरीला बना रहे 52 हजार अवैध कारखाने

राजधानी की 52 हजार अवैध औद्योगिक इकाइयों यमुना नदी के पानी को जहरीला बना रही हैं। रिहायशी इलाकों में चल रही ये इकाइयों सीधे तौर पर नाले व सीवर के जरिए अपना खतरनाक रसायनिक कार्य यमुना में बह देती हैं। यहीं वजह है कि यमुना के कुल प्रदूषण का 76 फीसदी दिल्ली में है। इसके अलावा यह औद्योगिक इलाकों में चलने वाले कारखाने भी पानी को प्रभावित करते हैं जो भीमिका निभा रहे हैं। इसका खुलासा नेशनल ग्रीन ट्रस्ट के समक्ष यमुना नदी की निगरानी के लिए गठित समिति ने अपनी रिपोर्ट में की है। ट्रस्ट के अध्यक्ष जितेंद्र आ.के. गोयल की अपवाद वाली पीठ के समक्ष हाल ही में पेश इस रिपोर्ट में कहा गया है कि रिहायशी व गैर अधिकृत क्षेत्रों में चल रही 51 हजार 837 औद्योगिक इकाइयां पूरी तरह से अन्य रूप से निकलते दृष्टि नदी में हानिकारक रसायन, भारी खनिज व अन्य तत्त्व समाहित होते हैं। यह घरेलू सीवर में जाकर मिल जाता है। दिल्ली के पूर्व मुख्य संचालक राज德拉 चंद्रा व एनीजी के पूर्व विशेषज्ञ सदस्य की इस समिति ने कहा है कि उन्होंने से निकलने वाला प्रदूषण तकनीक घरेलू सीवर में मिलने के बाद काफी प्रायः के बाद भी सीवर ट्रांसमिट लांड (एसटी), में शोधित नहीं हो पाता। अंतः यह यमुना में चला जाता है। इसके अलावा दिल्ली के 11 औद्योगिक कारखाने की हजारों औद्योगिक इकाइयां भी अपने सीटीकों से नहीं जुड़ रही हैं। यह भी यमुना के प्रदूषण का एक बड़ा कारण है। रिपोर्ट में कहा है कि राजधानी की 11 सीटीकों की क्षमता 2120 लाख लीटर प्रतिदिन औद्योगिक कारखाने के प्रवाह को शोधित करने का क्षमता है, लेकिन सिर्फ 520 लाख लीटर का ही शोधन हो पाता है। औसतन यह 10 से 41 फीसदी तक अपने क्षमता के हिसाब से काम करता है।

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Your air purifier can fight PM2.5, but it may be a part of CO2 problem at home

With near-apocalyptic conditions outside, you won’t be faulted for thinking that you may be better off staying at home or in office. While your air purifier — if you have one — may take care of PM2.5 to some extent, it won’t be able to protect you from high carbon-dioxide levels, which can actually spike by over two times the safe limit in a poorly ventilated building. It can affect your concentration and also cause headache and nausea, affecting your overall productivity. A recent study by the Indian Pollution Control Association found that while PM2.5 was being controlled fairly well by purifiers in residential,
private and government buildings, CO2 levels were well past the safe limit of 1,000 parts per million. The readings, according to the study, were the highest in corporate offices with an average of 2,000 ppm; the same was around 1,560 ppm in movie theatres, owing to poor ventilation. The study showed the lowest average CO2 readings at residential places — around 960 ppm. Another study conducted by IPCA last year across 20 households in Delhi found that CO2 levels started rising after 11pm and touched close to 2,000 ppm by 5am, even at home. “Early mornings and late nights are the biggest problem periods. CO2 levels start rising even with an air purifier on due to the closed environment. In offices, the problem is worse due to the high number of people present under a single roof. Over a period of time, productivity levels start to drop if you are exposed to high CO2,” Priyanka Kulshreshtha, head, research and communication, IPCA, said. Experts say part of the solution lies in good ventilation, especially in offices where windows should be opened regularly. The use of indoor plants is recommended for households. “Air purifiers alone aren’t enough, as they deal only with PM2.5. Pollutants and gases like volatile organic compounds, bio-aerosols and CO2 remain a problem and indoor air-purifying plants can be used to balance the quality with an air purifier. Throwing open windows for brief periods is also a good solution as it allows the gases to escape,” Arun Sharma, professor at the University College of Medical Sciences, said. According to Dr Sandeep Nayar, director and head of respiratory medicine at BLK Super Specialty Hospital, pollution levels have worsened over the last few weeks after a brief spell of relatively clean air. “OPDs are flooded again with patients complaining about chronic cough, breathlessness and exacerbation of respiratory health issues, such as asthma and chronic obstructive pulmonary diseases,” Dr Nayar said. He added that, in many cases, admission is required to stabilise the symptoms. While acute effects of pollution, for example, difficulty in breathing or coughing, are immediately picked up, doctors say the chronic ones go unnoticed. “Long-term exposure to pollutants, such as CO2, affects the brain and the nervous system. It has been linked to memory loss, dementia and other degenerative diseases of the brain,” said Dr J D Mukherjee, director of neurology division at Max Hospital, Saket. He said proper ventilation and having plants at homes and offices could bring some relief, but long-term measures to tackle pollution in the city were a must. In terms of outdoor CO2
levels, experts say the process is largely regulated by the presence of good green cover, which is generally missing indoors. “For this very reason, indoor air quality is often more polluted than outdoor air. Outside, CO2 is regulated by trees and it’s a continuous process. However, there is no such regulation indoors,” Dipankar Saha, former head of CPCB’s air laboratory, said.

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Why MNCs are looking inwards for ‘carbon pricing’

In a report published last October, IPCC experts stated that it will cost a staggering 2.4 trillion dollars annually until 2035 to prevent the planet from warming by more than 1.5 degrees Celsius in the next century. Some companies have already started to help pay this astronomical bill by buying CO2 emission quotas. But the quota system is unpopular, at least in Europe, where it is seen as a burden. However, a different measure has been quite successful since COP21: internal carbon pricing, or putting a price on one’s own carbon emissions. An increasing number of companies have shown their interest in adopting this entirely voluntary measure. According to the international organisation CDP, last year 782 major companies around the world claimed that they wanted to implement an internal carbon price, while 607 companies had already started doing so – eight times more than four years earlier. Necessity knows no law. Multinational companies understand the impact that climate change can have on their businesses, everywhere they operate. Investors are growing more and more concerned about the financial consequences of this risk, and are helping to raise awareness. “It is part of the conversation we have with asset managers and analysts,” says Claire Tutenuit, chief delegate of the French association Entreprises pour l’Environnement (Companies for the Environment, or EpE). Amundi, the leading French company in asset management, has made internal carbon pricing integral to its business. Fixing an internal carbon price, usually via a group rate, is also an opportunity for companies to respond to a range of existing or changing regulations and prices, wherever they do business. Today, 20 per cent of the world’s CO2 emissions are covered by fixed carbon prices, whether set by a state, a city, a province or a federation. But as far as companies are concerned, Sébastien Postic, project manager at the French think tank I4CE, reckons that “very few of them commit to this system with the primary objective of improving their performance.” He has identified several motivating factors for
corporate engagement. For banks and insurance companies, it’s mainly about “protecting themselves” vis-à-vis their clients, Postic says. On the other hand, industrial groups are “aiming to actively reduce their CO2 emissions,” he adds. “It’s about protecting themselves from the regulatory risk of possible adoptions or fluctuations of ‘external’ carbon prices – whether carbon markets or taxes – especially when they’re facing changing and heterogeneous international situations.” Their response, called “shadow pricing,” generally consists of adding the internal carbon price to the cost of their investments. Shadow pricing, or virtual carbon pricing, is a practice encouraged by major financial institutions such as the World Bank, EBRD and EIB. It allows companies to ensure their projects are sustainable by enhancing their energy efficiency in countries likely to set or increase a carbon price. In China, for instance, prices can vary from one to 10 dollars per tonne, from one region to the next. This price range is likely to grow, considering China’s ambitious plan to reduce its greenhouse gas emissions. Australia is another market where it pays to be cautious, since investments from foreign companies are just as large. There, carbon pricing depends on which political party is in power, and that changes frequently. Some companies in France bill internally for the carbon price they have adopted. The French bank La Banque Postale is doing so through its carbon funds, paid for by the monetisation of its carbon footprint at eight dollars per tonne of CO2. These funds finance internal initiatives to reduce CO2 emissions. There is a similar plan of action at Société Générale, where the internal carbon tax (11 dollars per tonne) finances internal initiatives to improve environmental efficiency. In its first three years, the system helped curb the company’s emissions by 1.4 per cent. Internal prices can vary drastically from one company to the next. According to CDP, they range from one dollar to $800 per tonne of CO2. Tutenuit explains, “Many things depend on the time horizon of each investment. The longer it is, the higher prices will be.” As a result, big companies that release massive amounts of CO2 into the atmosphere are the ones most eager to ride the wave. In France, 67 companies listed on the Paris stock exchange have adopted an internal carbon price. But the system has yet to catch on with SMEs, as their investments are not big enough and are rarely international.

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Air pollution linked to 12.4 L deaths in India in ’17: Report

In 2017, air pollution accounted for 12.4 lakh deaths in India, which included 6.7 lakh deaths due to outdoor particulate matter air pollution and 4.8 lakh deaths due to household air pollution, an ICMR report said. Over half of the deaths due to air pollution were in persons less than 70 years of age, the report said. With 18% of the global population, India suffered 26% of premature mortality and health loss attributable to air pollution globally. The report, published in the Lancet Planetary Health, assumes significance as it follows several such reports by the World Health Organisation, which has already detailed the major health risks posed by foul air in the country. A special report released by WHO on Wednesday at COP 24 said India can get massive health gains— up to $8 trillion by pursuing global warming limit of 1.5°C. The UN agency had recently also linked air pollution with increasing child mortality. In 2017, India witnessed 1.10 lakh premature deaths of children due to air pollution, highest in the world in the category of children under five years of age. The India State-Level Disease Burden, conducted jointly by ICMR along with Public Health Foundation of India (PHFI) and Institute for Health Metrics and Evaluation (IHME) in collaboration with the health ministry, shows a marked variation between states, with 12 times difference for ambient particulate matter pollution and 43 times difference for household air pollution.

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To protect our future, new infrastructure must be low-carbon, sustainable

For emerging economies like India — represented at the 24th annual United Nations climate change negotiations (COP24) happening now in Poland — climate change is not just an environmental issue, it’s also a development one. Over the next 10 to 15 years, the world is expected to invest about US$90 trillion in infrastructure — more than the cost of the existing value. In India alone, 70-80% of the infrastructure needed by 2030 is yet to be built. At the same time, we are already grappling with the impacts of climate change. In just the last few months, extreme rainfall and severe flooding, consistent with the
weather pattern we expect from climate change, took the lives of nearly 400 people in Kerala. To protect our future, new infrastructure must be low-carbon, sustainable and resilient; from its design and the materials it uses to its location and the way it serves people’s needs. The good news is that ambitious climate action, consistent with the goals of the Paris Climate Agreement, could deliver US$26 trillion in economic benefits up to 2030 — and this is a conservative estimate. In 2030, this kind of climate action could also prevent over 700,000 premature deaths from air pollution annually. Given that India is home to 14 of the world’s 20 most polluted cities, and that the poor air quality causes 1.6 million premature deaths in the country each year, the health benefits are priceless. Our cities face serious infrastructure and health challenges but they are also places of great hope for economic opportunity and development. By 2030, India’s urban population is projected to grow to 590 million, double the 285 million city residents counted in the 2001 census. Also by 2030, nearly 70% of India’s national income and its new jobs are expected to come from cities — even if it is business as usual. Research shows that better and smarter urban growth could be an even bigger economic opportunity for India, worth up to six per cent of GDP by mid-century. If cities are built in more compact, connected and coordinated ways, they can improve residents’ access to jobs, services and amenities while increasing carbon efficiency. By avoiding the costs — congestion, pollution and inefficiency — of urban sprawl, city dwellers gain significant savings. Globally, filling gaps in finance for infrastructure — much of which is urban — will require roughly US$2-3 trillion per year between 2015 and 2030. However, better designed and compact cities can more than recoup much of this investment by saving up to US$17 trillion from now by 2050. Industry also has a crucial role to play in shaping India’s path to sustainable development. Cement and steel are the building blocks of modern infrastructure, and the two industries account for roughly 10% of global greenhouse gas emissions. However, Indian cement and steel companies are already taking steps to shrink their environmental footprint. For example, Mahindra Sanyo Special Steel has committed to reducing their emissions by 35% per tonne of steel produced from 2016 to 2030. In 2015-2016, Dalmia Bharat Cement’s use of ‘blended’ cement made from industrial waste products helped the company increase its earnings by 70% and cut costs by 27%. Governments and international institutions can help companies and cities accelerate this transition to sustainable infrastructure. For one thing, multilateral development banks need to double their collective investment in
infrastructure and vet projects for sustainability, aiming to invest at least US$100 billion per year by 2020. Sovereign wealth funds, green bonds, and other domestic sources can also provide finance for much needed infrastructure. India’s National Investment and Infrastructure Fund could boost capital market financing for infrastructure projects and seize a valuable opportunity to steer the country’s growth path to sustainability. The national green bond market, started in 2015, has been tremendously successful already, having raised and issued US$6.5 billion so far to renewable energy, transport, water and climate adaptation efforts. Infrastructure should serve the needs of people and promote our health and wellbeing rather than harm them. We also need to build and grow in ways that fall within the planet’s limits in order to ensure a livable and prosperous world for generations to come. The latest report from the Intergovernmental Panel on Climate Change issued a stark warning — climate change beyond 1.5 degree Celsius could have calamitous impacts ranging from sea level rise and increased flooding to lower crop yields, degraded fisheries, and millions more exposed to extreme heat. India has started to move in the right direction, but the government, our companies and investors should pick up the pace of progress before we lose today’s unique opportunity to shape and protect the country’s future.

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Is pollution taking a toll on flamingos in Najafgarh?

The Greater flamingo, which arrived a few years ago and settled in the Najafgarh drain, may be under serious threat from pollution. A research by students of Ambedkar University suggests that the birds are consuming insects and other sources of food (algae, molluscs and crustaceans) that have turned toxic by the polluted water, which may eventually lead to a complete decline in their population. Experts said there are enough examples of birds, both domestic and migratory, that have disappeared due to the high levels of pollution and the threat on flamingos should be taken seriously. Researchers from AUD’s Centre for Urban Ecology and Sustainability (CUES) visited Najafgarh jheel and marshland areas earlier this year to conduct a census of the birds. They found 565 Greater flamingos there. However, they also found the waterbody highly prone to pollution from industrial waste. Over the last few years, the Greater Flamingo flocks have started skipping their traditional stop-
overs, Okhla and Sultanpur bird sanctuaries. However, the AUD research mentions that the shift of location may not be good for these aquatic birds as the Najafgarh drain is polluted. Suresh Babu, ecologist at CUES, said, “The drain is heavily polluted as it receives industrial effluents from Haryana and other adjoining areas. This may affect their food habits and eventually their health.” Ecologist Faiyaz Khudsar said that the birds may have shifted from Okhla to the drain looking for their food source which they only find in shallow waters. The AUD research students are currently monitoring the birds at the site and their movement and habits, while also looking for possible effects of pollution. However, other experts like birder Anand Arya said that though heavy metal present in waterbodies can be harmful for birds, since flamingos feed mostly on algae the impact of pollution may be minimal on them. “The flamingos should still be looked with seriousness as many birds, especially singing birds, have been affected by the high pollution at Okhla sanctuary,” he added.

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India to present its climate report card at Poland meet

India will release its second Biennial Update Report (BUR), containing its national greenhouse gas inventory, at the ongoing UN climate conference in Katowice, Poland, stating that the country is well on track to meet its voluntary pre-2020 targets and eventually its 2021-2030 goals under the Paris Agreement ahead of schedule. Maintaining an inventory of GHG (sector-wise and overall emissions) is crucial to any nation’s climate policy, showing whether its actions are actually in sync with its targets. The report will be submitted to the United Nations Framework Convention on Climate Change (UNFCCC) towards fulfilment of reporting obligation. As per the provisions, all countries are required to periodically provide information in the form of their national communication. India had made a voluntary pledge in 2009 to reduce its emission intensity (emission per unit of the GDP) by 20-25% from 2005 levels by 2020 (excluding emissions from agriculture). The country later enhanced its climate action targets in 2015 outlining its goals for 2021-2030, including reduction of the emission intensity of its GDP by 33-35% from 2005 levels by 2030. It also pledged to create additional ‘carbon sink’ of 2.5 to 3 billion tonnes of Co2 India had pledged in 2009 to create an additional ‘carbon sink’, partly by increasing its share of non-fossil fuel in the total energy mix to about 40% by
2030 Equivalent through additional forest and tree cover and increase its share of non-fossil fuel in the total energy mix to about 40% by 2030. Officials familiar with the basic points of the country’s second BUR noted that India would certainly meet its Paris Agreement targets ahead of the 2030 deadline. India’s first BUR, submitted to the UNFCCC in January 2016, showed that a slew of policy measures to promote low carbon strategies have resulted in a decline of emission intensity by 12% between 2005 and 2010.

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India could gain $8tn with climate battle

India can get massive health benefits worth $3- $8 trillion by making efforts to limit global warming to 1.5°C by the end this century, says a special report by the World Health Organisation (WHO) released at the UN climate conference in Poland. The assessment shows over 1 million lives can be saved every year worldwide from air pollution alone by 2050 by meeting the goals of the 2015 Paris Agreement. The value of the health gains is estimated to be around twice the cost of the policies, while the largest gains would be expected in China and India. China is expected to gain $0.27-2.31 trillion by pursuing the 1.5°C global warming target. “The most recent evidence indicates that the gains for health to be derived from scenarios that meet the Paris goal for reduced climate warming would more than cover the financial cost of mitigation at global level and would cover it several times over in countries such as China and India,” the report, titled ‘Health & Climate Change’ said. Over two million deaths occur prematurely in India due to pollution, accounting for 25% of the global deaths due to air pollution. India is closely followed by China, registering around 1.8 million pollution-related deaths. WHO has also linked India’s toxic air to the premature deaths of 1,10,000 children, highest in the world in the category of children under five years of age, attributed to their exposure to ambient air pollution of particulate matter 2.5. Globally, exposure to air pollution causes seven million deaths every year, resulting in $5.11 trillion in welfare losses globally, nearly doubling the losses in 1990, the latest assessment shows. Climate change can affect human health both directly and indirectly.

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India’s CO2 Emissions Forecast to Increase by 6.3% This Year

Aggressive push for renewable energy and other low-carbon technologies notwithstanding, India’s carbon dioxide emissions are projected to rise by as much as 6.3% in 2018. The 2018 Global Carbon Project report attributes this increase to strong economic growth of around 8% per year. The government will need to step up its climate policy if it is to slowdown growth in emissions while maintaining economic growth. Global carbon dioxide emissions, according to the report, are on track to rise by more than 2% in 2018 on the back of renewed use of coal and continued growth in oil and gas use. Other top emitters—the US and China—have also registered an increase in carbon dioxide emissions—2.5% and 4.7%, respectively. While the European Union, the third-largest emitter, is projected to register a small -0.7% fall in 2018. However, that is well below the declines of -2% per year sustained in the decade up to 2014. “Slowdown in emissions growth from 2014 to 2016 was always a delicate balance, and 1.6% increase in 2017 and growth in excess of 2% in 2018, clearly demonstrates that more needs to be done to reduce emissions,” said Robbie Andrew, a senior researcher at CICERO (Center for International Climate Research) in Oslo. While the growth in carbon dioxide emissions is not good news, the rather steep rise over last year, while accounting for the lower emissions intensity for every dollar of GDP and rapid deployment of low-carbon technologies, indicates that the Indian economy has bounced back. In 2017, India’s emissions were projected to rise by 2%. According to the report, this was not just a reflection of aggressive and proactive interventions by government and rapid progress in installation of solar energy capacity. The massive drop in amount of carbon dioxide emissions produced, the 2017 report said, was also a reflection of reduced exports, declining share of industrial and agricultural production in GDP, reduced consumer demand, and a sudden fall in money circulation attributable to demonetisation late in 2016 and introduction of GST in 2017. The report authors attribute the increase in India’s emissions to two broad factors. First, India’s economy continues to grow strongly, with the first two quarters of 2018 averaging 8%. Second, despite aggressive installations of renewables, coal consumption continues to increase as mining outputs grow to supply existing power stations that have been operating well short of capacity. The report authors say that despite the rapid deployment of low-carbon
technologies in India, coal is still the mainstay of the Indian economy. “The continued growth in emissions simply indicates that climate policies are insufficient to overcome the continual upward march of energy use, driven both by the need to develop and the desire to consume ever more”, said Andrew.

This ‘green stove’ saves lives – and the environment

Femi Oye was only nine years old when he lost his grandmother, who was also his guardian, to lung cancer, a disease she likely developed after cooking with charcoal and firewood all her life in Nigeria. He says the loss was a turning point for him, and he decided he would do something about it when he grew up. In 2010, at 32, Oye founded Green Energy Biofuels (GEB), a company that manufactures and distributes an innovative, smoke-free cook stove. It uses ethanol gel as fuel, a clean energy source made from biomass. He says it took him and his team two years of research and development to come up with two viable products — the stove and the gel —, which they launched in 2012. The Kike Green Cook stove is a portable, reinforced, enamel-coated metallic stove with a safety regulator and a steel bowl in the middle that serves as a tank for the cooking gel. The gel is 100 percent organic and made from renewable energy sources – water hyacinth, sawdust, grass, food and agricultural waste.
According to GEB, it is safer, cleaner, and burns more efficiently than liquefied petroleum gas, kerosene, firewood or charcoal, which are the popular cooking fuels in Nigeria. Close to four million people die prematurely each year from illnesses attributable to household air pollution, which contributes to a range of chronic diseases such as lung cancer. But aside from air pollution and its detrimental effect on health, the burning of fossil fuels has a huge impact on the environment. Along with industrial processes, it represents roughly 65 percent of the global greenhouse gases that we release into the atmosphere, one of the leading causes of global warming. Businesses like GEB are aiming to fight climate change. Oye says that his green cook stoves have reduced CO2 emissions by more than 600,000 tonnes so far, by replacing harmful fossil fuels, such as kerosene, with more than 10 million litres of biofuel cooking gel equivalent. “We have to continue innovating in a way that can create a cleaner, safer and healthier alternative to conventional energy. That’s why we’ve developed a formula that can genetically modify enzymes that have the potential to break down cellulose in plants or biomass,” says Oye. “Fossil fuels are hazardous, producing soot, particulate matter, nitrite oxide and other gases that are harmful to personal health and the environment. But ethanol emits less CO2 and its other by-products are oxygen and water. These come with no health or environmental risk.” By using waste as a resource, GEB promotes a system of functional and sustainable waste management, participating in the development of a circular economy in line with the United Nations’ Sustainable Development Goals. The ethanol gel is sold in recycled plastic bottles, which the company buys at a minimal cost. GEB’s marketing model operates through an open, mentor-driven network. It distributes its products to final consumers through more than 27,000 agents and distributors who earn commissions on each sale. The company has also franchised distribution shops called Green Centres. This social marketing model provides income to independent distributors while helping the business to grow on a local scale. “GEB has empowered some 38,000 women entrepreneurs across its 28 distribution centres, created 1,054 direct jobs and some 45,000 indirect jobs,” says Oye. However, cost can be an issue. Akinbode Odunlami, owner of a Green Centre in Lagos and a GEB distributor for the past six years, says the company has raised prices over the years, affecting his sales and profits. “Initially, the single
burner stove cost 3,500 naira (about USD 10), while the double one was 5,500 naira. But now the single burner costs over 4,500 naira and the double one sells for over 9,000 naira,” he notes. “The gel has also increased. There is no money in town now, due to Nigeria’s present economic situation; [GEB] should lower the price of the products so more people can afford them.” Odunlami’s concern is understandable. A litre of GEB’s biogel costs about 360 naira while a litre of kerosene sells for 220 naira. Liquefied petroleum gas is even cheaper. Considering the price difference, convincing the average Nigerian to opt for biogel instead of conventional fossil fuels will be difficult. Although the company’s business appears to be booming, Odunlami also believes it could benefit from improving its marketing and advertising strategies. “Many people do not know about [the products] so I have to make flyers and posters,” he says. “But those who use it say it’s life-saving. It doesn’t explode like gas and it doesn’t release smoke like conventional stoves.” With a production of 50,000 biogel litres per day, a factory in Lagos, and a business presence in six African countries including Ghana, Togo and Senegal, GEB aims to become the preferred energy source for the future in Africa.

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**दिल्ली की खराब आबोहवा से आपका खून भी प्रदूषित**

प्रदूषण का जहर दिल्लीवालों की रगरों में भी घुस रहा है। विशेषज्ञों की माने तो बेहद महीन प्रदूषक कण पीएम 1 सांस के जरिए रक्तप्रवाह तक में शामिल हो जाते हैं। आमतौर पर प्रदूषण का स्तर पीएम 10 और पीएम 2.5 के जरिए मापा जाता है। तेजस्वी सरकार की संस्था सफर पीएम 1 कणों के प्रभावों पर भी अलग से अध्ययन की शुरुआत करने जा रही है। दिल्ली में होने वाले 40 फीसदी तक प्रदूषण के लिए वाहनों से निकलने वाले उत्सजजन को जिम्मेदार माना जाता है। निर्माण और ध्वस्तीकरण से निकलने वाले रेत-धूल और सीमेंट के कण व सड़कों पर उड़ने वाली धूल भी प्रदूषण का बड़ा कारण माना जाता है। विशेषज्ञों का मानना है कि आमतौर पर निर्माण और ध्वस्तीकरण से निकलने वाला प्रदूषण और सड़क पर उड़ने वाले धूल कणों का आकार बढ़ा होता है और इन्हें पीएम 10 कहा जाता है। विशेषज्ञ अब इससे भी छोटे प्रदूषक कणों यानी पीएम 1 के प्रभावों का प्रभाव कर रहे हैं।

क्या है पीएम 1 कण- 10 माइक्रोमीटर तक आकार वाले कणों को पीएम 10 कहा जाता है। जबकि, 2.5 माइक्रोमीटर तक आकार वाले कणों की पीएम 2.5 में शामिल किया जाता है। हवा में इनका स्तर 60 तक रहने पर उसे साफ सुधार माना जाता है। जबकि, इससे भी छोटे कणों को पीएम 1 में शामिल किया जाता है।
उत्सर्जन मानक लागू होते तो टल जाती 76 हजार मौतें

कोयला बिजलीघरों के लिए तीन साल पहले जारी उत्सर्जन मानक लागू हुए होते तो करीब 76 हजार मौतें कम की जा सकती थी। ऐसे जीवाश्म के विश्लेषण में यह बात सामने आई है। बिजली संयंत्रों के लिए उत्सर्जन अधिसूचना जारी होने की तीव्र सालगिरह के मौके पर ग्रीनपीस ने कोयला बिजलीघरों के उत्सर्जन एवं उनके प्रभावों को लेकर रिपोर्ट जारी की है। पर्यावरण मंत्रालय ने तीन साल पहले मानक जारी किए थे जो आज तक लागू नहीं हो पाए।

कितनी कमी संभव थी : ग्रीनपीस का कहना है कि यदि इन मानकों को लागू किया जाता तो विमान एक साल के दौरान संघर्ष डाईऑक्साइड में 48, नाइट्रोजन डाईऑक्साइड में 48 और पीएम उत्सर्जन में 40 फ्रेश्टी होती की कमी की जा सकती थी। रिपोर्ट के अनुसार इन मानकों के अनुपालन में पांच साल का देरी हुई तो उससे 3.8 लाख मौतों हो सकती है। जबकि सिर्फ नाइट्रोजन डाईऑक्साइड के उत्सर्जन में कमी से 1.4 लाख मौतों से बचा जा सकता है। इस अनुमान के कोयला आधारित बिजली संयंत्रों के नए उपकरणों को शामिल नहीं किया गया है।

कितनी कमी संभव थी- ग्रीनपीस के विशेषज्ञ सूरीनाथ डहीरा ने कहा कि धर्म वातावरण प्लांट के लिए उत्सर्जन मानकों को लागू करना पिछले कुछ दशक से लटका हुआ है। यह दुर्भाग्यपूर्ण है कि उर्जा मंत्रालय और कोयला पापर कंपनी इन मानकों को लागू करने से बच रही है। भारत में वायु प्रदूषण से लोगों का सामान्य संकट में है और धर्म वातावरण प्लांट से निकलने वाला उत्सर्जन इसकी बढ़ी वजहों में से एक है। भारत का तक्ताल उत्सर्जन मानकों को पुरा करने और नये दफ्तर आधारित बिजली संयंत्रों को रोक कर अधिक उर्जा की तरफ बढ़ने की जरूरत है।

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हमारे दिमाग की धार को कुंड कर रहा वायु प्रदूषण

हमारे वातावरण में बढ़ता प्रदूषण न सिफर हमें बीमार बना रहा है बल्कि बीमार भी बना रहा है। वैज्ञानिकों ने शोध में पाया है कि ग्रीनहाउस गैसों की बढ़ती मात्रा की वजह से लोगों की धर्माण भी हो रही है। इसका वातावरण में दर्ज तथा अन्य कार्बनरहों पर क्रियाओं की क्रिया करता डाई ऑक्साइड की बढ़ती मात्रा से जोड़कर देखा जा रहा है। वैज्ञानिकों ने पाया है कि जिन दफ्तरों में स्थान हवा के अने के लिए प्राप्त व्यवस्था नहीं होती, वहां कार्बन डाई ऑक्साइड का स्तर बहुत उच्च होता है। इसका वजह से कमी धर्मनालगिन महसूस करते हैं। हालांकि ऐसा नहीं है कि बढ़ते सीओ2 का प्रभाव सिफर कमियों तक ही सीमित है बल्कि वैज्ञानिकों ने आशा जताई है कि सदी के अंत तक समस्या दूरिया ही इसकी चेपेट में होगी। यूनिवर्सिटी कॉलेज लेडा के वैज्ञानिकों ने अपने शोध के माध्यम से ग्रीनहाउस गैसों के दुष्प्रभाव के प्रति चेतावनी दी है। जीवाश्म ईधन के जलाने से कार्बन डाई ऑक्साइड का स्तर बढ़ हुआ है। तेल, कोयला और प्रकृतिक गैसों के जलाने से वातावरण में कार्बन उत्सर्जन बढ़ता है, जिसके जलायु भरन्तर्भ की समय पैदा होती है। एक शोध पत्र में लिखा गया है, 'सीओ2 के बढ़ते स्तर की वजह से इंसानों में संज्ञानसम्म प्रदर्शन गिर रहा है।' इसकी वजह से लोगों की प्राप्ति और धार्मिक लगन तक की व्यक्ति भी प्रभावित हो रही।

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Air pollution exposures in India constitute a major public health threat. To prevent a full-blown national health crisis, our policy conversations and actions need to first acknowledge, and then respond to, the enormity and severity of the problem. A significant part of the Indian population is exposed to air quality that is considerably worse than nationally and internationally accepted guidelines. What is the nature of this health crisis, how much do we know, and is there enough evidence to act? We need to engage with these questions as we demand action against air pollution. Impacts of air pollution on health in India are severe and prevalent across all states and sociodemographic groups. These impacts, whether estimated through mortality or morbidity rates, or through measuring reduction in life expectancy – are all growing at a significant rate. As a risk factor for disease burden in the country, air pollution is second only to child and maternal malnutrition, and ranks higher than unsafe water and unsanitary conditions – conditions we have long associated with poor health in India. As the previous article in this series showed, the annual mean ambient levels of PM2.5 are multiple times both Indian and WHO norms.
Health-damaging air pollution exposures are an everyday reality for both urban and rural populations in India. And it is not only ambient air pollution. Household air pollution – primarily caused by burning solid fuels such as wood and dung for cooking, has significant health impacts as well, and 56% of India’s population, largely in the rural areas, continues to rely on solid fuels, with the highest numbers in the states of Bihar, Jharkhand and Odisha. The most recent India State-Level Disease Burden estimates, released by an initiative coordinated by the Indian Council for Medical Research and the Public Health Foundation of India, and published in The Lancet Planetary Health, show that ambient and household air pollution contributes nearly equally to health impacts. In 2017, air pollution is estimated to have contributed to one in eight deaths in India for a total of 1.24 million deaths according to estimates published in the Lancet study mentioned above. The impact goes beyond mortality; air pollution significantly reduces quality of life by increasing the incidence of a range of illnesses. Health literature uses a metric called Disability Adjusted Life Years (DALYs), which includes both the years of life lost due to premature death and the number of years lived with less than ideal health. The Lancet study found that air pollution contributed to more than 38 million years of healthy life lost in India. The impact of air pollution on newborn babies and infants under the age of five years is particularly alarming. According to a recent WHO report, in 2016, 100,000 children under the age of five die annually due to exposure to air pollution – the highest in the world in this age bracket. This number is particularly astonishing, when compared to the overall under 5 years mortality in India in 2016 which stands at just under 10 lakh. Therefore, 10% of Indian children under 5 years are dying due to air pollution, a problem against which we continue to move at a glacial pace. Air pollution is also emerging as the single largest risk factor for non-communicable diseases. This is especially the case for women. Air pollution is the single largest risk factor for women for chronic respiratory diseases, while for men, smoking and other occupational risks are also important contributory factors. A similar profile is emerging for cardiovascular disease and diabetes. We are still discovering the scale and range of damage air pollution causes on our health. Cardio-respiratory diseases and lung cancer in adults, and acute lower respiratory infections in children are the more commonly known impacts of air pollution. However, emerging
epidemiological research indicate a much wider range of health impacts of air pollution such as on birthweight, child growth and cognitive abilities, obesity and bladder cancer. For instance, recent studies in Tamil Nadu have provided convincing evidence for impacts of ambient and household PM2.5 exposures on birthweight. These impacts are not currently included in the burden of disease estimates, and therefore the totality of impacts of air pollution in India is likely grossly underestimated. While there are not many epidemiological studies on long-term mortality in low and middle income countries including India, there is evidence that adverse effects of exposure to air pollution seen in other parts of the world are also occurring in India. While further studies are critical for our understanding, we need not wait for these to act, particularly since pollution levels in India are higher than anywhere else. Changes in daily rates of mortality associated with short-term exposure to particulates in India are similar to those reported in multicity studies conducted in China, South Korea, Japan, Europe, and North America. Several Indian studies have contributed to the pool of studies included in meta-analyses for estimating relative risks of Chronic Obstructive Pulmonary Diseases and cataracts in relation to household air pollution exposure. Arguments about lack of India-specific studies of air pollution on health do not hold water. The evidence we have now sends a loud and clear message – there is a health crisis unfolding in India. Commissioning additional studies on emissions and impacts will undoubtedly help guide future policy actions. But currently available information and knowledge on health effects and exposure attribution to sources is more than sufficient to move us into ‘mission’ mode. Reasons not to make this move, whether political, financial, legal, or technical, while perhaps compelling, pale in comparison to the following reality: we are consciously subjecting the current and future generations to conditions that increase the burden of non-communicable diseases, impact child mortality, reduce life expectancy, impair cognitive skills, adversely impact pregnant women and their unborn children, and create lifelong medical dependencies. We can no longer afford a lackadaisical response to a risk factor that is eroding rural and urban health, across every state in India.

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Reliance to boost capacity of SEZ refinery in Jamnagar by 5.8 mt.

Mukesh Ambani-led Reliance Industries Ltd is seeking to expand the installed capacity of its export-oriented oil refinery in the Special Economic Zone (SEZ) at Jamnagar, Gujarat by 8.5 per cent or 5.8 million tonnes (mt). In 1998, Reliance built its first refinery at Jamnagar with an installed capacity of 660,000 bpd or 33 mt. This refinery sells most of its petroleum products in the local market. When the SEZ plant was added in 2008, the Jamnagar complex became the world’s largest oil processing hub. Most of the products from the SEZ plant are sold overseas. The SEZ refinery currently has the capacity to process 35.2 mt of crude. The proposal to expand its installed capacity to 41 mt will be discussed by the Ministry of Environment, Forest and Climate Change’s Expert Appraisal Committee (EAC) on December 19, according to documents filed with the EAC. The planned expansion will increase the installed capacity of the Jamnagar refinery complex to 74 mt. However, the details of the expansion including the investment involved were not available. The Jamnagar refinery processed 69.8 mt of crude in FY18, exceeding its installed capacity of 68.2 mt. Higher refinery utilisation helped cater to growing demand for transportation fuels. India has emerged as a major refiner, having the fourth largest refining capacity in the world following the US, China and Russia. With 23 refineries having a combined capacity of 247.6 mt, India not only serves its domestic demand of 195.7 mt (2017-18), but also supplies petroleum products to other Asian countries. According to the International Energy Agency (IEA), the demand for petroleum products is expected to more than double to 458 million tonnes by 2040.

**Boosting production**- Indian refiners are adding more capacity to meet the growing demand from India, the world’s fastest growing major oil consuming country. These include a planned 60 mt Greenfield refinery at Ratnagiri in Maharashtra by a consortium of Saudi Arabian Oil Co (Saudi Aramco), Abu Dhabi National Oil Company (ADNOC), Indian Oil Corporation, Bharat Petroleum Corporation and Hindustan Petroleum Corporation. Russian oil major Rosneft PJSC-backed Nayara Energy Limited, which runs India’s second largest single site refinery at Vadinar, Gujarat with a capacity of 20 mt, has applied for environment clearance to boost capacity to 46 mt. Bharat Oman
Refineries Ltd (BORL) which runs a 7.8 mt refinery at Bina in Madhya Pradesh, is working on a blue print to double the capacity to 15.5 mt. BORL is an equal joint venture between India’s state-run oil refiner Bharat Petroleum Corporation Ltd (BPCL) and Oman Oil Company. State-owned Hindustan Petroleum Corporation is building a 9 mt Greenfield refinery at Barmer in Rajasthan.

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Crude likely to hover around $60/barrel in 2019

The year 2018 was a yo-yo market for crude oil with prices showing wild swings. At the beginning of the year, the output cut strategy of OPEC under Saudi Arabia’s lead and Russia appeared to have delivered results for major producers. Threat of sanctions on Iran and supply-related problems in Venezuela tightened the market fundamentals, pushing prices higher. Large inflow of speculative funds exaggerated the price impact. But as months wore on, the euphoria gradually evaporated. Taking advantage of rising prices, the US stepped up its shale oil output, becoming the world’s largest crude oil producer and a significant exporter. Also, the rigour of sanctions on Iran was whittled down to an extent.

Bearish sentiments- From a high of $86 a barrel early October, Brent has plunged by a massive $30 in about ten weeks. Suddenly, the market finds itself in a state of surplus, especially with concerns over global economic growth prospects escalating. No wonder, speculative long position holders are exiting the market in droves. Now, with Brent prices having slumped below the mid-50s level and WTI $10 cheaper (multi-month low), market participants are beginning to wonder if oil has overshot to the downside, Christmas holidays and US government shut-down
notwithstanding. The latest declines are driven more by bearish investor sentiment than fundamentals. The agreed 1.2 million barrels a day production cut is expected to take effect from January 2019. Interestingly, the OPEC+ group has announced that production quota for each producer country will be set and published. While the producer group is struggling to stop the market from sliding, to what extent and how long each constituent of the cartel abides by the agreed supply cut remains to be seen. Meanwhile, the latest financial market upheaval has raised concerns over global growth in 2019. The world’s largest importer-guzzler of crude oil China is already slowing.

**Demand to take a hit-** Expectation that from the second half of the year the US, too, could begin to slow down is gaining ground. After all, the positive effects of stimulus package are fading. The rate hike cycle of the Federal Reserve may be paused and the dollar may reverse its strong run. Given the scenario — world’s two largest economies slowing — crude oil demand is sure to take a hit, and this is surely a threat to oil prices. Softer growth in demand may negate the positive effect of the recent supply cut decision, and may force the producers to examine larger cuts. In other words, while the market may be more or less balanced in the first half of 2019, there are early signs that the second half may see inventories rising.

**US, China factors-** While crude oil market is likely to continue to remain under pressure in the months ahead, there are two risk factors that deserve attention. At the current prices, the anticipated expansion of US production may not materialise. Even a couple of months ago, it was asserted that the US output would reach 1.4 million barrels per day in 2019. At the same time, exports out of the US are likely to gather momentum as a result of which the present differential of $10 between WTI and Brent may narrow to $5. China could turn out to be a known unknown. There is the possibility of the Asian major announcing a major stimulus package to reverse the slowdown. In the event, the sentiment can undergo a change. Otherwise, on current reckoning, crude is most likely to stay under pressure and hover around $60 a barrel in 2019.

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Govt hastens to finish giving 10 mn free LPG connections

The Bharatiya Janata Party-led National Democratic Alliance government has literally stepped on the gas with an ambitious plan to dole out 10 million free cooking gas connections under its Ujjwala scheme in the remaining four-five months of the government with the hope of reaping the associated political dividend in the general election in 2019. “We will achieve 60 million connections by this month-end and add another 10 million in the next four months,’’ Petroleum and Natural Gas Minister Dharmendra Pradhan told HT.

According to government officials, who asked not to be named, the current pace of adding connections under the scheme is about 1 million poor households per month, which needs to be ramped up to 2.5 million. The scheme, which was launched by Prime Minister Narendra Modi in Ballia, Uttar Pradesh, on May 1, 2016, about nine months ahead of the Uttar Pradesh assembly elections, has played a central part in the party’s subsequent election campaigns. Pradhan added that the scheme is pursued as part of the government’s goal to uplift living conditions of the poor (and not with an eye on votes) and that the political dividend is its “natural” outcome. In order to make cooking gas more affordable, the ministry has provided option for the scheme beneficiaries to switch over from regular 14.2 kg cylinders to 5 kg mini cylinders. While a regular cylinder without subsidy in Delhi costs Rs 809.50, a scheme beneficiary gets it for Rs 500.90. While the beneficiary pays the market price of the refill, a cash subsidy amount of Rs 308.6 is directly credited to her Aadhaar-linked bank account. Price of mini LPG cylinders is proportionately low and, therefore, affordable for the poor beneficiary, officials said.

The oil ministry is using over 3 lakh Common Service Centres (CSCs) to ensure distribution of LPG cylinders in villages and remote areas, officials said. CSCs are kiosks for delivery of government services. The government has already paid ₹7,680 crore subsidy to provide connections to over 58 million households so far and has funds sanctioned to take this number to 80 million, officials said. It plans to reach this target by March 2020 and for that it has made the scheme more inclusive, officials said. The Cabinet on Monday extended the deposit-free cooking gas connections to poor households which could not avail the scheme because they were neither enlisted in the Socio-Economic Caste Census (SECC) nor figured in the seven other categories eligible for the subsidy. The Pradhan
Mantri Ujjwala Yojana (PMUY) provides a subsidy of Rs 1,600 for a deposit-free LPG connection to the eligible poor household, besides an interest-free loan to purchase stove and refill. Out of the 58 million beneficiaries so far, 48% belonged to the scheduled caste and scheduled tribe categories, officials said. Deepak Mahurkar, partner and leader (oil and gas), PwC India, said: “The initiative is indeed laudable for making the refined fuel available to as many households in the country as possible. The next action to focus on is to make sure that those who are availing LPG facility for the first time are educated about its benefits and making them avoid using the agro waste which leads to health hazards.”

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उत्तर प्रदेश में अब मेथेनॉल से चूल्हा जलेगा

उत्तर प्रदेि में अब एलपीजी की जगह वेकल्पक ई१न मेथेनॉल का खाना पकने में इसेमाल होगा। गोरखपुर से इसकी शुरुआत की जाएगी, जहां के लोगों को अगले दो-तीन महीने में मेथेनॉल से जलने वाले कुकिंग स्टोव मिलने शुरू हो जाएंगे। नीति आयोग राज्य सरकार और देश में मेथेनॉल बनाने वाली कंपनियों के साथ मिलकर इस योजना को पायलट प्रोजेक्ट के तौर पर शुरू करेगा। यह योजना पूरी उत्तर प्रदेश के उन इलाकों में खास तौर पर आगे बढ़ाई जाएगी, जहां एलपीजी अभी नहीं नहीं पहुँची है। नीति आयोग के सदस्य वी.के. सारस्वत ने ‘हिन्दुस्तान’ को बताया कि ‘मेथेनॉल कुकिंग स्टोव’ और उसके कनसूटर पर लंबे समय से काम चल रहा था। अब दो-तीन महीने में योजना की शुरुआत हो जाएगी। इसे उत्तर प्रदेश के गोरखपुर से शुरू किया जाएगा। प्रदेश सरकार के साथ तत्कालीन औपचारिकताएं पूरी कर ली गई है। उन्होंने कहा, पायलट प्रोजेक्ट की सफलता को देखने के बाद यह योजना राज्य के बाकी हिस्सों में लागू की जाएगी।

पहला पायलट अध्ययन असम में- मेथेनॉल पर पहला पायलट अध्ययन असम में किया गया और उसके नतीजे सकारात्मक रहे। असम पेट्रोकेमिकल्स ने अपने कर्मचारियों के 500 घरों को मेथेनॉल स्टोव दिया, जहां इसका सफलतापूर्वक इसेमाल किया जा रहा है। असम सरकार उत्तरप्रदेश स्कीम के तहत 20,000 घरों में एलपीजी की जगह मेथेनॉल कुकिंग ईधन देने का मन बना रही है। (स्रोत : एजेंसिया, आंकड़े अनुमानित)

कहां से मिलेगा-

- देश में मौजूद कंपनियां करेंगी आपूर्ति।
- गुजरात नगदी वैली फॅटिलाइजर कोरियेशन।
- राष्ट्रीय केमिकल एंड फॅटिलाइजर।
- असम पेट्रोकेमिकल।

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Poor to Get Cooking Gas without Deposit

All poor families can now get deposit-free cooking gas connection under Ujjwala scheme, which would further enhance access to the fuel that has already reached about 90% of households. The Cabinet Committee on Economic Affairs has approved a proposal to give away the subsidised cooking gas connection to poor families who had so far missed it because their names were not covered either in the Socio-Economic Caste Census (SECC) list or the seven identified categories. For awarding gas subscription, state oil companies began with the SECC list and later included SC/ST households, beneficiaries of the Pradhan Mantri Awas Yojana (Gramin), Antyodaya Anna Yojana (AAY), forest dwellers, Most Backward Classes (MBC), tea and tea garden former tribes and people residing on islands. “This step will help make access to cleaner fuel universal,” said oil minister Dharmendra Pradhan. The poor family will have to provide an affidavit in a 14-point format for availing benefit. “Considering several representations, now, poor families who could not get LPG connection under Pradhan Mantri Ujjwala Yojna are now eligible to get a connection subject to fulfilling the eligibility norms and furnishing required documents,” an official statement said. About 5.86 crore connections have been released under Ujjwala scheme.

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Premier think tank Niti Aayog has proposed a move to transform the way food is prepared in India, reducing the massive import bill and worsening pollution. The Aayog has prepared a comprehensive plan advocating adoption of methanol as the preferred cooking fuel in households as well as commercially. It’s a cleaner fuel and will reduce dependence on imported gas too, said people aware of the matter. A plant each would be set up in Bengaluru and Assam for manufacturing methanol cooking stoves based on a technology sourced from Sweden. Larger stoves for commercial use will be imported till technology is developed locally. Methanol is being produced by the Gujarat Narmada Valley Fertilizers & Chemicals, Rashtriya Chemicals & Fertilizers and Assam Petrochemicals. Methanol cooking fuel is being made available in canisters of 1.2 kg, to be priced at ₹32. Around 18 canisters would be equivalent to a conventional domestic LPG cylinder. A senior government official told ET work is on full swing to introduce methanol-run cooking stoves. “After Assam, we are eyeing Uttar Pradesh and then Maharashtra to provide such stoves in households. Simultaneously, we have tied up with some hotels in Bengaluru to use methanol stoves,” said the official, requesting not to be identified. “Next in line would be big temples, gurdwaras and ashrams where cooking is done on a massive scale daily.” There was a pilot launch of methanol stoves in Assam in October. According to the official, the Bengaluru plant will be set up by a private
player while the one in Assam may be government-owned. The Aayog has been aggressively pushing for adoption of methanol as cooking as well as transportation fuel. It estimates that even partial use of methanol could help reduce India’s import bill $100 billion and pollution 40%. In terms of heat value, a 14-kg LPG cylinder is equivalent to about 20 kg of methanol. But estimates show methanol is 30% cheaper and saving on an equivalent quantity of LPG is expected to be ₹350. In contrast to the present cooking fuel, which is used in liquefied gas form, the methanol fuel will come in vapour form. Unlike LPG, which can explode if it combusts, the methanol canister will burn without explosion and will be safer. India’s LPG consumption stands at nearly 2 million tonnes per month and has been growing consistently in the past 56 months on the back of the government’s push for increasing access to LPG through the Pradhan Mantri Ujjwala Yojana. More than 70% of India’s demand is met through imports.

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Delhi air quality may suffer as state yet to allow more ethanol storage

Delhi will run out of environment-friendly ethanol supplies for blending with petrol in the next few days as the capital’s local government is not allowing oil firms to store adequate quantities, raising the risk of vehicular emissions in an already-polluted capital. Delhi has experienced severe air pollution spells this year with thick smog covering the city because of fumes from agricultural fires along with industrial and vehicular pollution that has taken air quality to hazardous levels, which puts the health of citizens at risk. Blending ethanol in petrol is considered a measure that could partly help curb air pollution. State oil companies blend 10% ethanol in petrol in Delhi — blending percentage differs based on the biofuel’s availability. India has officially mandated fuel retailers to blend ethanol to cut emissions and reduce dependence on import of fossil fuel. Oil companies need state permission to store ethanol in Delhi and are given an annual quantity limit, which will exhaust this week, state oil companies have told the oil ministry. Attempts by companies to get permission from the Delhi government to enhance storage limit have failed so far. If the
state government doesn’t quickly grant companies’ requests for additional storage, oil companies will be forced to sell petrol in the capital without blending it with ethanol, the oil ministry told the Delhi government recently. The ministry has also warned that sale of petrol without ethanol blending would likely raise vehicular pollution levels and further deteriorate air quality in Delhi.

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LPG cylinder now used by 89% households

Nine out of 10 Indian homes now use cleaner cooking gas, a record improvement over just about five in 10 homes four years ago, as a result of the Modi government’s relentless effort at popularizing cleaner fuel and subsidising subscription to poor families. State oil companies, pushed by the oil ministry, have added record 10 crore consumers since April 2015, expanding the active consumer base by two-thirds. This has increased access to cooking gas, or liquefied petroleum gas (LPG), to 89% of the country’s households by October end, a sharp jump from 56.2% on April 1, 2015. The increased LPG coverage has primarily been driven by the government’s determination to take cleaner fuel to more and more homes, which forced state oil companies to reach out to potential customers and simplify subscription process. A subsidy for fresh LPG connection to poor families helped fuel demand. Rural areas still have untapped potential with more than half of all consumers, or about 13.6 crore, residing in urban areas. India has a total of 24.9 crore active customers, of which 22.9 crore receive subsidy. Those with double cylinders comprise barely half of the consumer universe—one reason why new customers do not entirely give up polluting fuels as they are forced to fall back on their traditional fuel while refill is on way. Companies are beefing up distribution infrastructure, which has been slow to expand compared with the consumer base, becoming another hurdle in smooth delivery of services. Northern states have the highest 99.9% LPG coverage ratio, with Punjab (136%) and Delhi (126%) leading the table. Chandigarh, Haryana, Himachal Pradesh, J&K, and Uttarakhand have recorded more than 100% subscription while Uttar Pradesh (89.7%) and Rajasthan (95.4%) have lower Coverage.

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Is costlier petrol/diesel in Delhi defeating the very purpose of cleaner fuels?

The National Capital Territory of Delhi has been getting BS-VI grade auto fuels well before the rest of the country to ensure that the national Capital can breathe cleaner air. But the very purpose of offering better fuel was seen to be getting defeated as petrol and diesel prices in neighbouring Nodia were cheaper than in Delhi. In October, lower grade auto fuel in Noida was cheaper by ₹2.50 a litre, prompting consumers to fill up their tanks there. The disparity in prices also resulted in fuel sales to drop in Delhi. Though with the fall in global crude oil prices, the rates at the retail-end have come down, the fuel is still 50 paise cheaper in Noida. According to the Ministry of Earth Sciences, vehicular pollution contributes to 41 per cent of all air pollution. While announcing the rolling out of BS-VI in Delhi from April 2018 after taking stock of the alarming pollution situation in the Capital in winter, the Minister for Petroleum and Natural Gas Dharmendra Pradhan, had said that this fuel will bring down the sulphur by five times from the current BS-IV levels — this is, an 80 per cent reduction, which makes it extremely clean.

How does one check this? - According to Vivek Chattopadhyay, Senior Programme Manager, Centre for Science and Environment, “The Centre must first move to remove the disparity between petrol and diesel tax rates. The incentive for using more pollutant diesel must be removed. It is a responsibility of the Centre that the cleaner fuel (like BS-VI) should be priced cheaper than more pollutant fuels.” However, not all residents of Delhi would be going to adjoining territories to fill up their tanks, he said. “This (exodus for cheaper fuel) must be happening in the border areas,” he added. But, according to Chattopadhyay, there is a silver: “Due to a combination of various steps, the number of severe air quality days has reduced this year compared to the previous years. Though the acceptable air quality is either good or very good, every incremental improvement should be appreciated.” One reason why auto fuels are more expensive in Delhi than neighbouring territories is because of local levies. Ajay Bansal of All India Petroleum Dealers’ Association is hopeful of this situation changing. “The price of petrol may fall by nearly ₹1.10 a litre and diesel by ₹1.32 a litre in Delhi in the next seven days seeing the international trend. This fall will be higher in Delhi compared to the neighbouring States because of the way the State government’s tax fuel. Uttar Pradesh has a fixed rate, while Delhi has an ad-valorem system,” Bansal said.

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US, oil-rich nations do not welcome 1.5-degree global warming report

The United States and oil- and gas-rich nations such as Saudi Arabia, Russia and Kuwait have not endorsed a report that warned of devastating consequences of global warming, casting a shadow on a climate meet in Poland that experts view as a make-or-break moment for the planet. At the Katowice climate change conference (COP24), these countries decided only to “take note”, and not “welcome”, the crucial Intergovernmental Panel on Climate Change (IPCC) report released in South Korea in October. The report said countries will have to make unprecedented transitions in all sectors to keep global warming within 1.5 degrees Celsius above pre-industrial levels this century. It also said mega cities in India were going to experience severe heat-stress and air pollution if that was not the case. The US and the other countries were part of the deliberations in Incheon when the report was released, but their stand in Poland appeared to be a setback to scientists and activists who say urgent action is needed to fight climate change. In fact, IPCC scientists have predicted that a 1.5 degrees Celsius rise in global temperature is likely as early as in the 2030s. In Poland, 195 nations, part of the Paris Agreement in 2015, are holding two-week talks, which aim to flesh out the promises agreed three years ago. Under the Paris pact, richer nations — responsible for the majority of historic greenhouse gas emissions — are expected to contribute funding that developing nations can access to make their economies greener. But negotiations under way in Katowice to evolve the rulebook for enforcing the Paris Agreement have made little headway a week into their duration amid persisting differences over key issues such as climate finance. Delegates to COP24, as the 24th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) is known, are discussing a 307-page draft rulebook that will spell out how various provisions of the agreement kick in to force. Professor NH Ravindranath of Indian Institute of Science, who was a co-author of IPCC’s fifth assessment report, said Saudi Arabia was a hard negotiator that hired the best people to protect the interests of oil-exporting countries. “The world will have to start cutting down on coal and oil consumption very soon...Climate change concerns will surely lead to increased
use of electric cars, rails, metros, biofuels, improved efficiency...All this will lead to decline in demand for oil. So surely Saudis will not be happy,” he said. Joyashree Roy, a professor of economics at Jadavpur University (on lien) and one of the Indian authors of the IPCC report titled ‘Global Warming of 1.5 Degrees’, said, “The special report was published on October 8, 2018, after it was approved by all countries. The Paris agreement was adopted by 195 nations at the 21st Conference of the Parties to the UNFCCC in December 2015...So, there is no question of further approval or acceptance...” Aarti Khosla of Climate Trends, a research and communications organisation, said the approach by Saudi, the US and Russia on the report could certainly serve short-term interests, but it would take the wind from the sails for several small and least developed countries, which are facing the worst impacts of global warming. “Limiting the worst impacts of climate change requires strong political will. At a time when extreme events continue to build, if nations go back and question fundamentals, there will be less hope for global collective climate action,” she said. A senior official of the Union environment ministry said the US was present in Incheon when the report was approved and released. “I don’t think this can be taken as a rejection of the IPCC report...They have decided not to welcome the report and applied Rule 16, which means the matter will be discussed again at the next COP. Let’s see how the rest of the Paris rule book comes up and how soon.” Developing nations and least developed countries have been asking developed nations, particularly the US, to take historical and moral responsibility for being one of the largest greenhouse gas emitters. Smaller nations have asked for equity in CO2 emission cuts to curb global warming, a time frame and funding from developed nations for climate change mitigation and adaptation efforts. The US has been resisting large cuts in CO2 emissions

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तेल का खेत अभी और चलेगा

तेल विश्व की राजनीति को सबसे व्यापक प्रभावित करने वाली वस्तु है। इसकी वजह भी है, तेल अर्थव्यवस्था के लिए जरुरी है, इसका अपना सैन्य महत्व है और कुछ इलाकों में ही इसके भंडार समितियाँ हैं। यह अनुमान लगावा मुश्किल है कि आपने वाले दिनों में तेल की कीमत कितनी होगी? क्योंकि तेल की दुनिया में अनिश्चित ही निश्चित है। भू-राजनीति और भू-अर्थव्यवस्था के तेल का अवलंब तथ्य है। इसका सामाजिक महत्व भी है। यह अपने बुरो सुनिया के तमाम देशों की अर्थव्यवस्था, भू-राजनीति और आंतरिक राजनीति में उत्तर-पूर्व मध्य भाग सकता है। क्रांति के दौरे से काफी उफान पर उठा गया है। एफ़ा की सरकार ने पेट्रोल और डीजल पर अधिक रक्षा कर लगाकर इसकी कीमत बढ़ा दी। महागात्र के कारण जीवन-यापन में आ रही मुश्किलों से बाहर होने के लिए एक बड़ी कीमत हो गई। नजरिया का रखा तेल और डीजल के रखने के लिए भी विरेक्ष है। क्रांति सरकार की मांग, तो यह सब वैश्विक तापमान और जलवायु परिवर्तन पर अंकुश लगाने के उद्देश्य से किया गया था। सरकार की सोच थी कि जीवनशैली इलाकों में कमी लाकर कार्बन फुटप्रिंट को कम करने का काम किया जा सकता है। इसके लिए, तेल की कीमत में बढ़ाने से धीरे-धीरे भाग भी निश्चित किया गया है। इसके बाद दो नए मार्ग जनरेट के लिए अपने अधिक मूल्य के मार्ग बनाये गए।

तेल के दौरे पर दोनों दुनियाँ हैं, एक वैश्विक और दूसरी स्व-सहीत। अफ्रीका और एशिया ने अपने मान्यता और रिक्षा को मंगल में अपने सामयिक विवादों के रूप में देखा है। इसकी उन्नति के लिए, इसे भारत और अरब के विचार करते हुए तेल की कीमत में बढ़ाने का फैसला किया गया है। 1973 में, अफ्रीका राजनीति की सिद्धियों की शुरुआत हुई। इस दौरे के तेल के लिए, इसे भारतीय और अरब स्व-सेवक विवाद का समाधान करने का पहला बड़ा कारण है। यह जीवनशैली परिवर्तन के रूप में अपने सामयिक हितों की रक्षा के लिए बहुत विवाद अपनी सत्ता को मजबूर करने के लिए जीवनशैली राजनीति की नजर रखा है। इस दौरे के लिए, इसे भारतीय और अरब स्व-सेवक विवाद का समाधान करने का पहला बड़ा कारण है। यह जीवनशैली परिवर्तन के रूप में अपने सामयिक हितों की रक्षा के लिए बहुत विवाद अपनी सत्ता को मजबूर करने के लिए जीवनशैली राजनीति की नजर रखा है। इस दौरे के लिए, इसे भारतीय और अरब स्व-सेवक विवाद का समाधान करने का पहला बड़ा कारण है। यह जीवनशैली परिवर्तन के रूप में अपने सामयिक हितों की रक्षा के लिए बहुत विवाद अपनी सत्ता को मजबूर करने के लिए जीवनशैली राजनीति की नजर रखा है। इस दौरे के लिए, इसे भारतीय और अरब स्व-सेवक विवाद का समाधान करने का पहला बड़ा कारण है। यह जीवनशैली परिवर्तन के रूप में अपने सामयिक हितों की रक्षा के लिए बहुत विवाद अपनी सत्ता को मजबूर करने के लिए जीवनशैली राजनीति की नजर रखा है।
पर पढ़ें। भारत इन तमाम घटनाक्रमों से सीधा-सीधा प्रभावित होगा। पिछले कुछ महीनों में देश में तेल के बहते दामों से स्थिति चुनौतीपूर्ण हो गई थी। हालांकि अभी तेल की कीमतों में मिसावट से लोगों को राहत मिली है। लेकिन तेल के अंतरराष्ट्रीय मूल्यों को प्रभावित करने की भारत की क्षमता फिलहाल नागरिक है। ऐसे में, हमारी अपेक्षा होगी कि अंतर्राष्ट्रीय वस्तु विश्व अर्थव्यवस्था पर तेल के मूल्यों के दूरगामी असर को ध्यान में रखकर एक संतुलित फैसला ले। खासकर, जब इन सब फैसलों का असर लोकसभा चुनावों पर पड़ सकता है, तो जरूरी है कि इस अवधि के दौरान केंद्र सरकार जो भी फैसला करे, वह घरेलू अर्थव्यवस्था की स्थिति और राजकीय घटे को निर्दिष्ट रूप से रखने के दृढ़ संकल्प के साथ लिया जाए। क्या ऐसा ही संकेता है।

(ये लेखक के अपने बिचार है)
सौरभ चंद्र
पूर्व पेट्रोलियम सचिव

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सबसे तेज ट्रेन के साथ ही मुंबई से यूएई जाएगा पानी, वहां से तेल आएगा।

संयुक्त अरब अमीरात (यूएई) ने अपने फुजाइरा शहर से भारत के मुंबई शहर तक समुद्र के अंदर अत्यधिक तेज रफ्तार ट्रेन चलाने खाली तेल वाले किया है। इस ट्रेन के साथ दो पाइपलाइन जुड़ी होंगी। एक में मुंबई से पानी यूएई पहुँचेगा, दूसरी लागू में वहां से तेल आएगा। इस तरह यह ट्रेन दोनों देशों के व्यापारिक हितों के मद्देनजर फायदेमंद होंगी। मुंबई की फुजाइरा शहर से तेज रफ्तार रेलमार्ग (अल्ट्रा स्पीड रेल नेटवर्क) से जोड़ने का खाली यूएई की सलाहकार फर्म 'नेशनल एडवाइजर्स' बर्बर लिमिटेड ने तेल प्रस्तुत किया है। फर्म ने वीडियो जारी करके जानाया कि क्या मुंबई व फुजाइरा के स्तर कैसे होंगे। समुद्र के अंदर रेल नेटवर्क कैसा होगा आदि। फर्म के संस्थापक अल्ट्री है कि इस तेज रफ्तार रेल नेटवर्क को पास होने के लिए कई परीक्षणों से जुड़ता होगा।

ट्यूब जैसी सुरंगों से गुजरेगी--:

- मुंबई व फुजाइरा रेलमार्ग के बीच समुद्र के अंदर सैकड़ों मीटर दूरी पर ‘टावर डोम’ बनाए जाएगे। वे समुद्र के ऊपर जहाँ को आसानी से दिखाई देंगे। डोम के जरिये रेल मार्ग में संचार प्रणाली व सुविधाएं पहुँचने में मदद मिलेगी।
- मुंबई की तरह कार्बनी भी समुद्री रेल नेटवर्क के जरिये फुजाइरा से जुड़ेगा। मुंबई-फुजाइरा रेलमार्ग के बीच में ही कार्बनी का रेलमार्ग जोड़ा जाएगा। पानी एक तरह का जलकंप समुद्र के अंदर बनेगा।
- यह परियोजना दोनों देशों के व्यावसायिक हित पूरे करेगी। यूएई सरकार अधिक पेयजल हासिल करने व अन्य टूल बेचने के उद्देश्य से इस परियोजना के प्रति गहरी है।
- पानी के अंदर यह रेलमार्ग ट्यूब जैसी दो तेजी सुरंगों पर आधारित होगा। इन दो सुरंगों से पानी व तेल की पाइपलाइनें भी जुड़ी गईं। इसके जरिये मुंबई से यूएई को लाने की संभावना बढ़ी। इसी तरह वहां से स्क्री के तेल उत्पादन शुरू होगा।

कई देशों में चल रहा है काम- जमीन के बाद अब दुनिया के कई देश अंदरवातर रेल नेटवर्क पर काम कर रहे हैं। इनमें चीन, रूस, कनाडा और अमेरिका प्रमुख हैं।

- 1848 किलोमीटर दूर है फुजाइरा से दुबई।
- 1848 किलोमीटर दूर है मुंबई से फुजाइरा।
- 168 किलोमीटर प्रतिघंटा होगी ट्रेन की रफ्तार।

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In a first, Rlys converts diesel locomotive into electric

In a first, the Indian Railways has converted a diesel locomotive into an electric one, as part of its efforts to completely electrify the broad gauge network. The conversion has also enhanced the power of the locomotive from 2600 horsepower (hp) to 5000 horsepower.

2-month mission- The work on the project began on December 22, 2017 and the new locomotive was dispatched on February 28, 2018. From conceptualisation to the execution; the Indian Railways said that the conversion of the diesel locomotive to electric was carried out within 69 days. “In keeping with the Indian Railways’ Mission 100 per cent electrification and de-carbonization agenda, Diesel Locomotive Works, Varanasi has developed a new prototype electric locomotive converted from diesel locomotive. After its mandatory trials, the locomotive was launched from Varanasi to Ludhiana,” railways said. The Indian Railways has planned to discontinue mid-life rehabilitation of diesel locomotives and has decided to convert them to electric locomotive and utilise them till their codal life.

Advantages- “While mid-life rehabilitation of diesel locomotives, at a cost of around Rs 5-6 crore, is inescapable and unavoidable for running of the diesel locos beyond 18 years. Only 50 per cent of this expenditure will be used for conversion of diesel locomotive to electric locomotive. Once converted, the loco will have 5000 horse power as compared to the 2700 horse power diesel locos,” it said.

Cost saving- The project is a step towards saving of traction energy costs. This will in turn reduce the railways’ fuel bill and also reduce carbon emissions. “This is a unique product of the Indian Railways and has been produced without incurring any extra expenses. It is the first of its kind in the world,” the statement from railways said. Consequent upon requisite trials, the sanction for commercial services was communicated by the Railway Board on November 27. During its first run on December 3, the converted locomotive hauled a 5200 tonnes load cruising at a maximum permissible speed of 75 kilometres per hour (kmph).

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Nine States have achieved complete household electrification under the Saubhagya scheme, according to the Ministry of Power. They are Madhya Pradesh, Tripura, Bihar, Jammu and Kashmir, Uttarakhand, Mizoram, Sikkim, Telangana and West Bengal, a Power Ministry statement said. The Ministry had recently lowered the household electrification target by around 10 million homes, or about one-fourth of the earlier goal.

**Year-end deadline**- This was because some users have opted out of the electrification programme while some houses are not regularly occupied. With this, 16 States in the country now have 100 per cent household electrification. “Many more States such as Maharashtra, Manipur, Arunachal Pradesh, and Chhattisgarh among others are left with a small number of non-electrified households and are expected to achieve saturation any time... The country is expected to achieve 100 per cent household electrification by December 31, 2018,” the statement added. The Power Ministry also said that 31.68 crore LED bulbs have been distributed under the Unnat Jyoti by Affordable LED for All (UJALA) scheme resulting in estimated cost saving of ₹16,457 crore per year. The estimated energy savings stand at 41.14 billion kWh per year with the avoided peak demand of 8,237 MW and Green House Gas (GHG) emission reduction of 33.32 million tonne of CO2 a year.

**LED lighting**- The Power Ministry also aims to to replace 1.34 crore conventional streetlights with smart and energy efficient LED lights by March, 2019. Till now 74.79 lakh LED Street lights have been installed resulting in estimated energy savings of 5.02 billion kWh per year with avoided peak demand of 837 MW and GHG emission reduction of 3.46 million tonne of CO2 a year.
पटना के 'पेड' से रोशन होंगे बिना बिजली वाले गांव

आईआईटी पटना के इलेक्ट्रिकल विभाग के शिक्षकों और छात्रों की टीम ने ऐसा सोलर टी (सौर क्षेत्र) विकसित किया है, जिससे गांव बिना किसी व्यवसाय अर्थ जीवन के चीनियों घंटों हर मौसम में रोशन किए जा सकेंगे।

इसी बिजली से सिचाई भी हो सकेगी। यह देश में अब तक विकसित सभी सोलर टी से डिवाइस और स्मार्ट है। अब इसके डिजाइन, स्मार्ट कंट्रोलिंग व मेटारिंग तकनीक का पेटेंट करने की तैयारी चल रही है।

इलेक्ट्रिकल विभाग के अध्यक्ष और सोलर टी विकसित करने वाली टीम के अध्यक्ष और छात्रों की टीम इसकी रचना की है, जिसे सौर वृक्ष (सौर बिजली) के रूप में आता है।

इसकी रचना से कभी कभी भी हर समय में रोशनी हो सकती है। यह इस देश में अब तक तीन बार बड़े बारिश दिनों के साथ रोशनी बनाने के लिए उपयोग हो सकती है।

एक बार चार्ज होने पर 10 दिन तक कम करेगा- एक बार चार्ज होने पर 10 दिनों तक धूप नहीं आने के बावजूद सोलर टी के पैनल काम करते रहेंगे। स्मार्ट सिस्टम भी स्मार्ट है। लाइट की उपलब्धता के आधार पर रोशनी कम और ज्यादा करना अथवा सिस्टम स्वच्छ आफ करना भी स्वतः हो जाएगा।

दूर से ही गड़बड़ों का पता चल जाएगा- सोलर टी में ऐसा स्मार्ट डिवाइस लगा है, जो आईआईटी के कंट्रोल रूप अथवा किसी मोबाइल से जुड़ सकेगा हमें दूर से भी तरह-तरह की गड़बड़ी होने पर तककिल पता चल जाएगा।

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सोलर कृकिंग सिस्टम किस्त पर मिलेगा

रसोई गैस कनेक्शन और मुफ्त बिजली कनेक्शन देने के बाद केंद्र सरकार अब किसी पर 50 हज़ार रुपये वाला सोलर पीवी कृकिंग सिस्टम देने की तैयारी में है। लोकसभा चुनाव से पहले सरकार आसान किस्तों पर सभी को सोलर कृकिंग सिस्टम देने की ध्येय झगड़ा कर सकती है। इस सोलर कृकिंग सिस्टम पर केंद्र सरकार 30 फीसदी की सब्सिडी भी मुहैया कराएगी। नवीन और नवीकरणीय ऊर्जा (एमएनआई) मंत्रालय ने सोलर कृकिंग सिस्टम योजना को अलग रूप दे दिया है। एमएनआई मंत्रालय कृकिंग सिस्टम पर तीस फीसदी की सब्सिडी मुहैया कराएगी। राज्य सरकार भी अपनी तरफ से सोलर कृकिंग सिस्टम लेने वालों
Powering agriculture via solar feeders

Two-thirds of the total irrigated area in India uses groundwater pumping, powered by more than two crore electric and 75 lakh diesel pumps. Access to groundwater depends on reliable and affordable electricity supply. This is an important issue as it concerns livelihoods of the rural poor and food security of the country. Agriculture is a major consumer of electricity, accounting for one-fourth or one-third of consumption in many States. Since the 1970s, agriculture...
in many States has been receiving electricity at either low tariffs or for free. Much of this supply is un-metered. Due to the lower tariff and poor revenue collection, agricultural sales are often seen as a major reason for the financial losses of distribution companies (discoms). Part of this loss is then recovered through higher tariffs for other consumers like industry and commercial (called cross-subsidy), and the remaining through direct subsidy from the State governments. Because it is seen as a loss-making sector, agriculture often gets poor quality supply leading to problems such as frequent pump burn-outs and power failures. Restoring supply takes a lot of time and so does getting new connections. Further, the supply is unreliable and often available during late nights. All these factors make farmers distrustful of discoms. Electricity demand for agriculture is expected to double in the next 10 years and as the average cost of supply keeps increasing, the problem of agriculture subsidies will become worse. Unless new ideas are tried out, the quality of electricity supply to agriculture will worsen. Any solution must first provide reliable, adequate day-time electricity supply to farmers at reasonable tariff, leading to a gradual increase in the mutual trust between the discom and the farmer. This should also reduce the subsidy requirement for it to be truly scalable across the country. Three ongoing developments allow for an exciting possibility. One, low cost electricity from solar, at ₹2.75-3/unit and at a fixed price contract for 25 years due to absence of any fuels is already a reality. Second, States have to exponentially increase their solar procurement to fulfil the national objective of increasing the use of solar power. Finally, the grid has reached every village in India and agriculture feeder separation, where lines carrying electricity to pumps and villages are physically separated, has progressed significantly, with nearly two-third of the target completed.

**Innovative scheme**- An innovative programme taking advantage of these developments has started in Maharashtra under the aegis of the ‘Chief Minister’s solar agriculture feeder programme’. A solar agriculture feeder is essentially a 1-10 MW community scale solar PV power plant, which is interconnected to the 33/11 kV sub-station. A 1 MW solar plant can support around 350, 5 hp pumps and requires around 5 acres of land to set up. The plant can be set up in few months and there is no change at the farmer’s end. Pumps need not be changed and farmers do not have to take responsibility of
installation and operation. All the pumps connected to the separated agriculture feeder will be given reliable day-time electricity for 8-10 hours between 8 am and 6 pm. When solar generation is low, maybe due to cloud cover, balance electricity can be drawn from the discom. Alternatively, when pumping demand is low, maybe during rains, excess solar electricity will flow back to the discom. This allows for optimal sizing of the power plants. Project developers are selected through a competitive-bidding process and the entire electricity would be bought by the discom through a 25-year contract. The discom would continue to distribute the electricity to farmers on concerned feeders. The major advantages of this approach are that apart from ensuring day-time reliable power for the farmers, it requires no capital subsidy from the government. Rather, it is cost-effective, thereby enabling reduction in subsidy. Additionally, no new large transmission lines are needed, which has become a bottleneck for various large scale wind and solar power tenders. Deployment is possible under the existing regulatory framework, and the generation also qualifies for Solar RPO of the participating discom. Finally, this approach can also provide distributed jobs to local youth in construction, operation and maintenance of the plant. After demonstrating benefits of this approach, future programmes could link deployment of such solar feeders to: reduce unauthorised use/connections, improve metering and tariff recovery, energy efficient pumps, water saving approaches, etc.

**Building capacity**—Currently, solar plants with overall capacity of around 2,000-3,000 MW are under various stages of tendering and implementation under this scheme in Maharashtra. This is equivalent to supplying solar power to 7.5 lakh pumps, or 20 per cent of the pumps in Maharashtra. As of December 2018, nearly 10,000 farmers are already getting reliable daytime power under this scheme and the discom is planning to scale this significantly beyond initial target of 7.5 lakh in next three to five years. While the cost of supplying power from the State discom is about ₹5/unit and rising each year, the price for solar power is about ₹3/unit, fixed for 25 years. This saving of about ₹2/unit translates to an annual saving of ₹10,000/five hp pump. For a typical feeder with 500 pumps, this would save ₹4.5 crore (in net present value terms) over 20 years. The Centre has proposed a similar scheme at the national level, namely, KUSUM, with a 10,000 MW target. The availability of the electricity grid
in every village coupled with the national feeder separation programme makes this cost-effective and rapidly scalable approach imminently feasible across the nation. The urgent need for providing agriculture with reliable and affordable daytime electricity makes it imperative for the sector to adopt such an approach. This policy framework, a win-win-win situation for the farmers, government and discoms, offers a much needed farmer-centric yet fiscally prudent pathway for the power sector.

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**Mahindra Electric joins hands with Smart-E to provide last-mile connectivity**

Mahindra Electric has entered into a partnership with Smart-E in which the company plans to deploy 10,000 electric three-wheelers across India by 2020. Smart-E is a Delhi-based company that provides shared electric mobility services across the country and has plans to bring over one-lakh vehicles on its platform by 2022. Under the partnership between the two companies, the first 1,000 Mahindra Treo and Treo Yaari electric three wheelers will be deployed in Delhi-NCR by March for the last-mile connectivity. “India is witnessing rapid urbanisation and metros are driving the multi-modal mobility needs of the large working population in urban cities. Our Treo range of three-wheelers will address the demand for first and last mile connectivity and transform the way urban India travels,” Mahesh Babu, Chief Executive Officer, Mahindra Electric, told reporters here. To start with, Smart-E has already taken 50 Treo range of electric three-wheelers and the plan is to deploy 1,000 such vehicles in Delhi-NCR by March, he said. Mahindra Electric had last month launched its first lithium-ion electric three-wheeler range Treo and Treo Yaari with price starting at ₹1.36 lakh (ex-showroom Bengaluru). The company will be utilising Smart-E’s network to expand its sales of electric three-wheelers. Smart-E has already built captive EV charging network for 800 vehicles concurrently and will be ramping it up further to support 1,000 vehicles in Delhi-NCR. With the additional vehicles, the company will cross 2,000 mark by March 2019 and would help ferry two-lakh commuters per day, Goldie Srivastava, Co-Founder and CEO, Smart-E, said.

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Swedish entrepreneur Henrik Johansson has his task cut out for him. The brain behind an innovative solar-based water distribution system that is capable of delivering the right quantity of water for irrigating fields may first have to work on the minds of Indian farmers who normally think flooding is the best way to water their farm. The solar-powered pump that Johansson’s team developed through a decade-long research and development has some unique features that make it ideal for small farmers; the pump runs on solar, it’s portable, weighs only 15 kg and, more importantly, it helps conserve water, helping not just the farmer, but the world. “Excess withdrawal of water for irrigation has been leading to the dwindling of the groundwater table in most parts of the world. It’s time we found a way to deal with this. Ours is an attempt towards this goal,” says Johansson, who was in the Capital last week to participate in an event, ‘Sustainability by Sweden – Showroom India’. Johansson is the CEO of a start-up firm called Spowdi, which stands for Solar Powered Water Distribution. The system that the firm has developed uses a small, foldable, solar panel to generate sufficient electricity (70 watt) to run a proprietary power management box which, in turn, operates a specially-designed submersible pump. “This pump, which costs around $500, is capable of pumping 25,000 litres of water on a bright sunny day, which is actually good enough for small-family farmers who own up to one acre of land,” remarks Johansson. In India, there are about 125 million one-acre-family farmers. But not all of them will find this unique water distribution system useful, admits the Swedish entrepreneur. One limitation of the product is that it can draw water only from a depth of up to 10 metres. “This is a limitation, which makes it unsuitable for
nearly 70 per cent of Indian farmers. But it is very useful for the other 30 per cent farmers, which is roughly 40 million farmers. It is this set of farmers we want to target,” he says. “A small Indian farmer who uses diesel pumps spends about $300 for irrigating the field for each crop. If he or she takes three crops a year, it costs around $900 for just watering the farm. In other words, the farmer can recover the cost of Spowdi in less than a year,” Johansson observes.

**Up and running**- The cost would come down much further for most Indian farmers as there is a subsidy scheme for those using solar pumps in which the government pays back nearly 80 per cent of the cost. Spowdi has already demonstrated the effectiveness of its system by installing one solar pump in an inaccessible island near Patna in Bihar. “We installed it in June this year. It works wonderfully well despite the hostile conditions,” says Johansson, who joined hands with a Bengaluru-based firm, Emvee Photovoltaic Power Private Ltd, last week, to manufacture these solar pumps in India.

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**Renewables cross one-fifth of India’s total energy capacity** With the rapid growth in capacity addition on the back of strong government push, the renewable sector now accounts for more than one-fifth of the country’s overall installed power capacity, a significant achievement in the clean energy push. As of October 30 this year, the total installed energy capacity in the country stood at 347.37 GW. Renewables had a share of 21.12 per cent in it, with a total installed capacity of 73.35 GW, up from 15 per cent (46.33 GW) two years ago, according to government data.

**Capacity addition**- Of the 73.35 GW of renewable capacity, wind had a share of 34.98 GW, followed by solar at 24.33 GW, bio-power at 9.54 GW and small hydro power at 4.5 GW. Though new capacity addition has slowed in the conventional segment, thermal power remains the largest with 63.84 per cent share (221.76 GW), followed by hydro power that had 13.09 per cent share with an installed capacity of 45.48 GW. During the first seven months of this fiscal, thermal and hydro added 810 MW of new capacity to the grid. But the renewable sector added 3,568 MW of new capacity, which is about 23 per cent of the target (15,602 MW) set for 2018-19. In Q3 and Q4, the renewable sector is expected to add significant capacity, while the outlook is remains bleak for
the conventional segment. In the renewable sector, projects aggregating 21.55 GW (13.8 GW in solar and 7.02 GW in wind) are under implementation, while 25.2 GW (22.8 GW of solar and 2.4 GW of wind) have been tendered out. In the last four and half years (2014-15 to 2018-19), the renewable sector has added 37.84 GW of new capacity including 21.7 GW of solar, 13.98 GW of wind, 0.7 GW from small hydro power, and 1.5 GW from bio-power.

**Solar market size**- With 24.33 GW, India is now the fifth largest solar market in the world in terms of installed capacity. In wind power, India ranks fourth with a total installed capacity of 34.98 GW as of October. Tariff continues to stay at low levels with the registered lowest ever solar tariff of ₹ 2.44 per unit in reverse auctions carried out by Solar Energy Corporation of India (SECI) in July for a 600 MW project. Also, the wind segment registered the lowest ever tariff of ₹2.43 per unit in a tender for a 500 MW project by the Gujarat Government a year ago.

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**Multiple consumers can benefit from a single solar plant at one location**

To promote electricity generation from renewable sources, Delhi Electricity Regulatory Commission (DERC) has come out with a draft framework for group net metering and virtual net metering wherein multiple consumers can be beneficiaries of a single solar plant at one location. After the Delhi solar policy was issued in 2016, the power watchdog constituted a committee for developing the framework and has now issued the draft guidelines under DERC (Net Metering for Renewable Energy) Regulations 2014. Outlining how both options will work in the city, the commission has asked stakeholders to submit their suggestions/comments/objections on the guidelines by January 19, 2019. The 2016 policy considers solar power to be the most viable form of green energy in Delhi, which has the potential of lowering the state’s expenditure on energy, strengthening its energy security, and reducing its reliance on unsustainable fossil fuels, said an official. The current move focuses on how more than one consumer can benefit from a single solar plant, either through surplus solar energy for selfconsumption or pro-rata credit in the electricity bill
by their respective discoms. While as per group net metering, surplus energy exported to the grid from a solar plant can be adjusted in any other (one or more) electricity service connection(s) of the consumer within Delhi, virtual net metering will allow multiple consumers to be joint beneficial owners of a collectively owned solar panel wherein all energy produced by it will be fed into the grid and any surplus energy will lead to pro-rata credit in their electricity bills. As both options are relatively new in Delhi, the guidelines say these will be first made applicable in government entities. Under group net metering, different connections in the name of individuals of different departments/organisations in a discom area will be treated as one consumer. If the capacity of a plant is more than the sanctioned load of the premises on which it is installed, the consumer will pay the differential amount of service line-cum-development (SLD) charges. Discoms will pay for installing smart meters at generation points and show, separately, the energy units exported and imported, the net energy units billed and/or the energy units carried forward, if any, in consumers’ bills. During any billing cycle, the discom will raise the bill only after adjusting the unadjusted energy credits of the previous billing cycle(s), says the guidelines. Under virtual net metering, consumers can collectively own a solar system, but the adjustment of energy generated from a solar plant will be credited in the bill of each participating consumer on the basis of the share of the beneficial ownership in the plant at the time of application for connectivity under the framework. If during any billing period, the export of electricity units exceeds the import of units consumed, such surplus units will be carried forward to the next billing period as energy credit and adjusted against the energy consumed in subsequent billing periods, says the guidelines.

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हवा से पीने लायक पानी बनाने का उपकरण खोजा

वैज्ञानिकों ने एक ऐसा खास उपकरण विकसित किया है, जो हवा से पानी सोख सकता है और धूप की गर्मी से इसे छोड़ सकता है। अनुसंधानकर्ताओं ने कहा कि यह खोज सुदूर बंजर इलाकों में पेयजल का नया सुरक्षित स्रोत प्रदान कर सकती है। दुनियाभर में पृथ्वी के वायुमंडल की हवा में करीब 13 हजार अरब टन पानी है। इस पानी को हासिल करने के लिए कई उपकरण विकसित किए गए, लेकिन वे या तो
On the fast track to the future

Giovanni De Lisi was a 20-year-old railway maintenance and installation worker near Palermo, Italy, when he had his revolutionary idea in 2005. Working under the Mediterranean sun, he had an intuition that could shake up a century-old railway system and drive it towards a sustainable future. At the start of the 20th
century, concrete railway sleepers started to replace the older wooden ones, and have since remained the industry standard around the world. De Lisi’s idea was simple: cover the concrete sleepers with a blend of plastic and rubber from used tyres to improve their efficiency. Six years ago, the idea led to the creation of Greenrail, a Milan-based startup supported by Polihub, a business incubator at the Polytechnic University of Milan. Secondary raw materials – a mix of recycled plastic and rubber from end-of-life tyres collected by the Italian association EcoPneus – became the basis for a system that could turn an old, inanimate railway network into a living infrastructure capable of producing energy, recording and sending data, and detecting potential issues with trains. "The concrete core maintains the same mechanical properties as traditional sleepers," Greenrail CEO and founder De Lisi explains. "But the plastic and recycled rubber cover helps to reduce the grinding of the track ballast, to absorb vibrations, curb the rails’ lateral displacement, and bolster the load capacity by 40 percent." In turn, it lowers network maintenance costs by 50 percent, and causes the sleepers to last up to 50 years longer than their traditional 40-year lifespan. More important, the new sleepers re-use up to 35 tonnes of highly polluting end-of-life tyres, traditionally difficult to recycle, per kilometre of railroad. Now that the research and development phase is complete, Greenrail is gearing up to start production and enter a global market in which 120 to 140 million sleepers are replaced every year for ordinary maintenance. "Every market has its own local producers," says De Lisi. "We offer a global innovation covered by 85 patents across the world." He highlights that Greenrail’s sleepers offer "highly customisable products, depending on the local operators’ network, gauge, load capacity, and technical requirements." The marketing plan was launched last year in the United States, where Greenrail has signed licensing agreements in five states thanks to a 75-million-euro deal with American company SafePower1, which will commercialise the product locally. The Italian company is currently raising funds to build a dedicated production plant for the US market. De Lisi, who owns nearly 90 percent of the company’s shares while his original partners control the rest, is also looking for funds to build a production plant in Italy, which he expects to be fully functional by 2019. For the first three years, Greenrail’s investments were channelled into research and development through its partner companies
and some 30 researchers from the Polytechnic University of Milan working alongside the company’s 14 employees. Now it will start the operative phase. Aside from its activity in the US, Greenrail is currently negotiating an expansion into high-potential markets such as India, Australia, Brazil, Russia, Uganda and Kazakhstan. Meanwhile, research continues. Railway sleepers still play an essentially passive role and are inactive 90 to 95 percent of the time. They will now have the potential to become active and "smart." Greenrail’s solar version turns a railway network into a solar power station by integrating 35-45-megawatt hours per year photovoltaic modules into the sleepers, allowing them to power the train network, stations, switches and traffic lights, and to send electricity to the general power grid. Each kilometre of Greenrail’s solar sleepers can produce enough power to sustain 10 households’ annual electricity needs. Another model, called LinkBox, can record and send data, building a live interconnected system for diagnostics, safety and predictive maintenance. To develop this model, Greenrail signed an agreement with Spanish technology and consulting giant Indra to build a smart control unit able to collect data on the status of railways and trains and to send it live to traffic control centres. The system uses high precision sensors and machine learning to continuously improve its accuracy and prevent serious issues. "Our goal is to keep working to improve the efficiency of materials and entire networks," says De Lisi. Since September, his company’s new generation smart sleepers have been used in a pilot section of the Italian line Reggio Emilia, in the Emilia Romagna region, exploring new frontiers of big data and smart connectivity. De Lisi’s brilliant idea has turned into a sustainable, safer and more energy-efficient journey.
लगते हैं। पहले आसपास रहने वाले उनपर पागल और समय बरबाद करने जैसे तंग करते थे, लेकिन अब सब उनके काम में हाथ बंटते हैं।

बीतने है नवी: बारिश से पहले जब मई-जून में निवासी पेड़ से गिरती हैं तो गौरव उन्हें जगह-जगह जाकर एकत्रित करते हैं। बारिश से पहले वह उन्हें खाद में दबा देते हैं। वह जब फूट जाती हैं तो उन्हें बांटने का काम होता है। इसमें वह दोस्तों, पड़ोसियों व आसपास के बच्चों की मदद लेते हैं। पिछले दो साल से वह ऐसा कर रहे हैं। अब तक करीब 1000 से ज्यादा पौधे बांट चुके हैं। वह खाद से ही घर के पास स्थित पार्क में खाद बनाते हैं।

‘टीम नीम’ के नाम से जाने जा रहे : सड़कों पर नीम के पीछे लगाते देख उन्हें और उनकी टीम के लोगों ने ‘टीम नीम’ नाम दे दिया। बाद में 2014 में उन्होंने दोस्तों व पड़ोसियों की एक ‘टीम नीम’ बनाई। उन्हें देखकर आसपास के लोगों ने भी अपने घर, सड़कों व डिवाइडरों पर पेड़ों के आसपास से कुड़ा हटाने व पानी ढालने का काम शुरू कर दिया है। उन्हें पार्क या सड़कों पर अंकला सफाई करते देख पहले जो लोग उन्हें पागल कहते थे, अब वही साथ मिलकर काम करते हैं।

बदहाल पार्क ने दी राह : गौरव इस्ट ऑफ लोनी रोड, आलाइंजी में रहते हैं। उनके घर के पास नाग नील आ के एक पार्क बदहाल पड़ा था। इस बात वर्ष 2010 की है। एक दिन वह घर से पेचक और बाली में पानी लेकर पार्क पहुंचे। वहां बाजार से ला कर नीम के पीछे लगाने लगे। वह उनकी देखभाल करने लगे। धीरे-धीरे लोग उनसे जुड़ने लगे। चार साल बाद तक उनके साथ कई लोग जुड़ गए। अब पार्क में सफाई रहने लगी।

- गौरव आसपास के घरों से दूर की तैलियां हटकर उन्हें खाद भरने के लिए तैयार करते हैं। जब उनमें पीठ तैयार रहते हैं तो आसपास उन्हें लगा आते हैं।
- उन्होंने पार्क में देश का नक़्शा बनाया है। उसमें उपर गेहूं रंग और नीचे हरी पास लगाई है। बीच में सफेद रंग के लिए बजरी ढाली गई है। इसी पार्क में वह खाद से सुखे पत्ते व कचरे से खाद बनाते हैं। छुट्टि के दिन सड़क किनारे व डिवाइडरों पर लगे पेड़ों को पानी व खाद देने का काम करते हैं।
- गौरव बताते हैं कि पिछले आठ सालों में कई मौके ऐसे आए जब उनकी हिमाल जवाब दे गई। लेकिन प्रकृति के प्रति प्रेम और कचरे से कुछ नया करने की लगन ने उन्हें आज इस जगह लाकर खड़ा कर दिया है। वह बताते हैं कि युग्म में अंकला ही पार्क में सफाई और पेड़ों का ध्यान रखते थे। जब पार्क खाती मैदान था तो कई बार नशेदार वहां आ जाते थे। पौधों को वहां खेलने वाले बच्चों से भी बचाव में पड़ता था।

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