‘Methanol a clean, cheaper fuel’

Nitin Gadkari

Road Transport and Highways Minister Nitin Gadkari on Monday held a high-level stakeholders meeting to deliberate upon a strategy to use methanol as an alternative fuel in automobiles. The Minister has asked government think-tank Niti Aayog to study the automobile standards developed in China to use methanol as an alternative fuel.

“Methanol economy will help India use its vast reserves of coal while driving import substitution. Research in converting carbon dioxide to methanol is promising and can be a game-changer for methanol economy,” Mr. Gadkari said after chairing the meeting. Petroleum and Natural Gas Minister Dharmendra Pradhan, New and Renewable Energy Minister Piyush Goyal along with former union minister and Nationalist Congress Party (NCP) chief Sharad Pawar were also present in the meeting.

“Mr. Gadkari stressed on the use of local or indigenous materials for production of fuel like making ethanol from agriculture produce or waste and from coal,” a Road Transport and Highways Ministry spokesperson said. In its presentation, Niti Aayog said methanol is a promising fuel for waterways as it is clean, cheaper than fossil fuels and a good substitute for heavy fuels. It suggested that ethanol could be made out of coal and informed that a pilot project was already underway in Talcher in Odisha.

India imports methanol from Saudi Arabia and Iran at present, the think-tank said, adding that it is working on a roadmap for conversion from coal to methanol.

The government think-tank also said that methanol can be produced from municipal waste as well.

“All stakeholders agreed that methanol is a promising fuel used in many parts of the world. While in most countries it is being made from natural gas, for India it makes much more economic sense to use locally available coal,” the spokesperson said.

The service is available in Bengaluru, Kolkata and Chennai, operating 500 bicycles

END

Projects worth Rs 425 crore approved by NMCG

The Executive Committee of National Mission for Clean Ganga in its 4th meeting held here today approved seven projects worth Rs 425 crore in the sector of sewage infrastructure, Ghat development and research.

In sewage sector, three projects each in Uttar Pradesh and Bihar have been approved. For Uttar Pradesh, interception, diversion and STP projects for Unnao, Shuklaganj and Ramnagar have been approved. These three projects aim at creation of sewage treatment capacity of 29 MLD (Unnao- 13 MLD, Shuklaganj- six MLD and Ramnagar- ten MLD) at a total cost of Rs 238.64 crore.

While in Bihar, three projects at Sultanganj, Naugachia and Mokama with total estimated cost of Rs 175 crore have been approved. These three projects will create additional sewage treatment capacity of 27 MLD (Sultanganj- ten MLD, Mokama- eight MLD and Naugachia- nine MLD).

All the six projects will be provided with Operation and Maintenance cost for 15 years by Central government and 100 per cent central assistance. It is also important to mention that Unnao and Sultanganj projects will be taken up under Hybrid Annuity based PPP model in which 60 per cent of the capital cost will be paid to the contractor who has constructed the STP, over a period of 15 years, on the basis of his work performance on the achievement of desired norms of treated waste water.

A research study to understand the non-putrefying properties of river Ganga in both water and sediment was also approved at an estimated cost of Rs 4.96 crore. The study will be an extension of a research carried out by National Environment Engineering Research Institute (NEERI) to identify the special properties of river’s waters. This research would focus on finding out the science behind these special properties in order to formulate a strategy to retain these characteristics.

Samir/JD/jk

END

At The Half-way Mark

India is midway into the Swachh Bharat Mission (SBM). Since its inception on October 2, 2014, the ministries of Urban Development and Drinking Water and Sanitation have been spearheading the programme, with implementation happening at the state level. The key differentiator with the SBM is the prime minister's ongoing focus which has percolated to district and block officials. It has also captured the imagination of the people of the country.

The SBM has witnessed several notable achievements in reducing open defecation thanks to the focus on behaviour change, need-based capacity building and constant measuring of outcomes. The last three years have seen an increase from 42 per cent to 65.02 per cent in national sanitation coverage. Five states, 149 districts and 2.08 lakh villages have already been declared Open Defecation Free (ODF). Nearly 22 per cent of the cities and towns have been declared ODF; 50 per cent of the urban wards have achieved 100 per cent door-to-door solid waste collection; and over 20,000 Swachhagrahi volunteers are working across urban local bodies, and over a lakh are working in rural India. The number of schools with separate toilet facilities for girls has increased from 0.4 million (37 per cent) to almost one million (91 per cent).

There have seen numerous analyses, discussions and conclusions about the SBM. One recent media report mentions that the government is not measuring ODF, and rather tracks funds spent on latrine construction while putting out numbers about sanitation. This is not entirely correct, as there have been efforts to measure ODF. Of course, the modalities for the same can be debated and there may well be scope for improvement in the measurement protocols. Several sectoral experts are members of the Empowered Working Group (EWG), which is responsible for examining the survey methodology and setting protocols for the government's upcoming national survey through the Independent Verification Agent (IVA) under the World Bank project.

One of the key differentiators of the SBM programme (and rightly so) is the decision by the government in November 2014 to make ODF the success parameter. It was made clear by the ministries concerned that progress will be tracked and evaluated only on this basis. This caused a paradigm shift in the thinking of the implementers as ODF measurement has a direct relationship with behaviour change. This policy shift led to ODF Monitoring Committees (or Nigrani Samitis) being formed at the village level, reflecting the community ownership of SBM. The monitoring committees' key tasks were not to count the number of toilets but to ensure that no individual from the village resorts to open defecation. Anecdotal information and feedback from NGOs and others in the field suggests good progress on this front.

Sanitation, in a diverse country like India, encompasses a number of factors which are important determinants for the success of the mission. It has a direct relationship to caste, creed, religion and gender. A successful sanitation programme needs to address such factors, which makes achievement of safe sanitation a very complex exercise. Additionally, India has a large number of disabled people whose needs require customised solutions. Despite these challenges, we have seen a marked improvement in sanitation coverage since the launch of SBM.

Achieving ODF status alone is not sufficient for the success of SBM. Attention to the complete sanitation cycle is required, where toilets not only need to be built and used but the waste generated also needs to be collected and treated properly. The India Sanitation Coalition advocates safe and sustainable sanitation including design, implementation and practice. This is evident in the tag line BUMT (Build, Use, Maintain and Treat) to complete the entire sanitation chain. .

Achieving ODF is the collective responsibility of the entire nation, not just the government. We

have now reached a stage where the need for BCC (Behaviour change communication) has been recognised.

Turning a large and populous country like India around is not an easy task. However, in less than three years we see that India is already course correcting and with the momentum building, the pace of change going forward will be much faster.

END

Cabinet approves MoU between India and BRICs countries to set up BRICS Agriculture Research Platform

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The Union Cabinet chaired by the Prime Minister Shri Narendra Modi has given its ex-post facto approval for a Memorandum of Understanding (MoU) signed among India and various BRICs countries for establishment of the BRICS Agriculture Research Platform (BRICS-ARP).

Background:

During the 7th BRICS Summit held on 9thJuly 2015 at Ufa in Russia, Prime Minister Shri Modi proposed to establish BRICS Agriculture Research Centre which will be a gift to the entire world. The Centre will promote sustainable agricultural development and poverty alleviation through strategic cooperation in agriculture to provide food security in the BRICS member countries.

In order to further intensify cooperation among BRICS countries in agricultural research policy, science and technology, innovation and capacity building, including technologies for small¬holder farming in the BRICS countries, an MoU on establishment of the Agricultural Research Platform was signed by the foreign Ministers of BRICS countries in the 8th BRICS Summit held on 16th October, 2016 at Goa.

BRICS-ARP will be the natural global platform for science-led agriculture-based sustainable development for addressing the issues of world hunger, under-nutrition, poverty and inequality, particularly between farmers' and non-farmers' income, and enhancing agricultural trade, bio-security and climate resilient agriculture.

AKT/VBA/SH

END

israel: Israel launches first environmental research satellite

Jerusalem, Aug 2 (IANS) Israel has successfully launched its first spatial environmental research vehicle designed for orbital monitoring of Earth's vegetation, the Israel Space Agency (ISA) said on Wednesday.

The Venus satellite (Vegetation and Environment Monitoring New Micro-Satellite) is an earth-observation micro-satellite designed jointly by Israel's agency and France's National Centre for Space Studies (CNES), Efe news reported.

Venus has a dual mission: one scientific and the other technological. The scientific mission will monitor Earth's vegetation using a camera capable of recording 12 narrow spectral bands.

The technological mission will test the operation of an innovative electric propulsion system based on the Israeli-designed Hall Effect Thrusters.

A Hall-effect thruster (HET) is a relatively low power device used to propel a spacecraft after entering orbit or farther out into space.

Venus' launch took place on board an Arianespace Vega launcher from Kourou, French Guyana, in a joint project between ISA and France's space agency CNES.

It will be inserted into a near polar sun-synchronous orbit at an altitude of 720 km with a two-day flyover revisiting time.

The microsatellite, which weighed 265 kg on launch, will send high-resolution photos to track climate change and aid efforts to tackle desertification, erosion, and pollution.

The first Israeli satellite will also be used for agricultural and environmental research with its innovative electric propulsion system allowing it to navigate more accurately than other satellites, according to ISA.

Venus will circle the planet 29 times every 48 hours and will remain in service for four and a half years, after which it will be parked into a lower orbit.

The first photos of the satellite are expected some five hours after the launch, but will only be available to researchers in November next year.

In addition, another Israeli-manufactured satellite was launched on Wednesday on a reconnaissance mission capable of taking very high-resolution images.

The ISA is part of the Israeli Ministry of Science and Technology which has invested around $1.3 billion in research projects related to this satellite.

--IANS

soni/mr

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soni/mr

END

After SC order, focus on chemicals in firecrackers

Aluminium powder, sulphur and potassium nitrate go into noise-making crackers, while barium nitrate (green) and strontium nitrate (red) emit light. | Photo Credit: AP

The Supreme Court ban on the use of antimony, lithium, mercury, arsenic and lead in the manufacture of firecrackers to prevent air pollution has turned the focus on what chemicals are used to produce spectacular visual effects and noise.

The Tamil Nadu Fireworks and Amorces Manufacturers' Association, which produces most of the fireworks in the country, says none of the specific products banned by the court are used.

A Supreme Court Bench of Justices Madan B. Lokur and Deepak Gupta had on July 31, in an order, directed that no firecrackers manufactured by the respondents shall contain the chemicals in any form, whatsoever. The court entrusted the Petroleum and Explosive Safety Organisation (PESO) with the responsibility of ensuring compliance particularly in Sivakasi. Over 90% of cracker production is done in Sivakasi.

Incidentally, the court also noted it appeared that no standards have been laid down by the Central Pollution Control Board (CPCB) with regard to air pollution caused by the bursting of firecrackers.

Supreme Court bans four toxic chemicals from crackers

However, cracker manufacturers in Sivakasi, who denied using the banned chemicals, said the sound and light show is produced by chemicals such as sulphur, aluminium powder and charcoal (used as fuel), besides potassium nitrate and barium nitrate (as oxidising agents), the industry says.

Aluminium powder, sulphur and potassium nitrate go into noise-making crackers, while barium nitrate (green) and strontium nitrate (red) emit light. Aluminium powder is used in sparklers. "A combination of barium nitrate and strontium nitrate in varying proportions produces different colours," Tamil Nadu Fireworks and Amorces Manufacturers' Association secretary K. Mariappan said.

Significantly, the Supreme Court, observed that there seems to be some doubt about strontium and its compound used in crackers, and has posted the case to August 23 to hear submissions about the use of strontium.

Mr. Mariappan said that phosphorous and chlorate are not allowed to be used in fireworks. Potassium chlorate and potassium perchlorate are friction-sensitive and accident-prone, if used in combination with sulphur. Hence, it is not a part of fireworks chemistry. "Chinese crackers, which use chlorate are, therefore, banned in India," the association's representative said. However, chlorate and phosphorus are used by Amorces manufacturers for making exploding 'caps' and rolls. Similarly, red phosphorous and pitch are used in making of 'snake eggs'.

"We were using red lead for crackers emitting red colour light. However, as per PESO's advise, we switched to bismuth oxide some 15 years ago, as we were told that red lead hangs in the atmosphere causing pollution," he said.

Where do the chemicals for the firecracker industry come from? Sources in the industry and the PESO claim that the chemicals are domestically procured. "Fireworks manufacturers are also involved in aluminium powder production and they supply the entire industry's requirement," he

added.

Plea to ban firecrackers: SC seeks manufacturers' response

But a PESO source said the procurement of raw materials for fireworks does not come under the purview of the Explosives Act. The PESO has been testing samples of crackers only for adherence to the sound limit of 125 decibels at a distance of four metres.

(With inputs from Delhi Bureau)

Says BJP will campaign against corruption, law and order problems and lack of development work in Himachal Pradesh

The process of holding the requisite Board Meetings and Shareholder Meetings has been completed in phases in September 2017.

Ruben George is staying at Ram Nath Kovind's house at Kalyanpur, near Kanpur

END

Putting the sun to work

Solar power panels installed on a rooftop in Vijayawada. File | Photo Credit: Ch. Vijaya Bhaskar

A consortium of 12 Indian and British universities, including Oxford and Cambridge, has received a £7 million grant from the U.K. government to build self-sufficient solar-powered buildings in remote Indian villages.

The grant is part of a new solar project called ‘SUNRISE’ aimed at developing printed photovoltaic cells and new manufacturing processes which can be used to make solar energy products in India.

These will then be integrated into buildings in at least five villages of India, allowing them to harness solar power to provide their own energy and go off-grid.

The programme is part of a project led by the Swansea University, which has plenty of experience in the field.

“The energy-positive classroom we built shows that this technology works, successfully turning buildings into power stations. This funding will enable us to export this model to support India’s plans to boost solar energy,” said Professor Dave Worsley of Swansea University, leader of the SUNRISE team.

Going off-grid

“Designed and built by the SPECIFIC project, the classroom can run off grid. Electricity is generated by a steel roof with integrated solar cells,” the university said in a statement.

Prof. Worsley said, “The Swansea team will be working closely with our partner universities in the U.K. and in India. Our hope is that if we can show this works on five villages in India, then it could be rolled out to other buildings in India and around the world.”

Swansea University says the project is in line with the Indian government’s plans to turn the country into a solar energy leader, leap-frogging fossil fuels. Some of the other universities that are part of the consortium are Oxford, Cambridge, Brunel and Imperial College London. The £7 million award comes from the U.K. government’s Global Challenges Research Fund (GCRF), which supports cutting-edge research that addresses issues faced by developing countries.

“From healthcare to green energy, the successful projects receiving funding highlight the strength of the U.K.’s research base and our leadership in helping developing countries tackle some of the greatest global issues of our time,” said Jo Johnson, U.K. Minister for Universities and Science.

An industrial strategy

“At a time when the pace of scientific discovery and innovation is quickening, we are placing science and research at the heart of our industrial strategy to build on our strengths and maintain our status as science powerhouse,” Mr. Johnson said.

One of the key aims of the SUNRISE project for India is to provide a real-life example which proves that this technology works and that it is appropriate within communities.

The plan is that it will encourage local industries to manufacture affordable prefabricated buildings, adapted for their environment, that can generate, store and release their own power.

Jaggi Vasudev’s Rally for Rivers claims they will, but this is not based on the most nuanced science

END

India ratifies 2nd commitment period of Kyoto Protocol

India has ratified the second commitment period of the Kyoto Protocol that commits countries to contain the emission of greenhouse gases, reaffirming its stand on climate action.

In a brief statement, India's Permanent Mission to the UN said that India deposited its Instrument of Acceptance of the Doha Amendment to the Kyoto Protocol under the UN Convention on Climate Change here yesterday. With this, India became the 80th country to accept the amendment relating to the second commitment period of the Kyoto Protocol, the international emissions reduction treaty.

"India's acceptance reaffirms our continued commitment to climate action," the Indian mission said in a statement. India's Permanent Representative to the UN Ambassador Syed Akbaruddin—who handed over India's Instrument—tweeted,"Maintaining momentum on Climate Change. India submits instrument of acceptance of Doha Amendment to Kyoto Protocol".

The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change (UNFCCC), which commits its Parties by setting internationally binding emission reduction targets.

The Kyoto Protocol was adopted in Kyoto, Japan, in December 1997 and entered into force in February 2005.

The first commitment period under the Kyoto Protocol was from 2008–2012. The Doha Amendment to the Kyoto Protocol was adopted in Qatar in December 2012. The amendment includes new commitments for parties to the Kyoto Protocol who agreed to take on commitments in a second commitment period from January 2013 to December 2020 and a revised list of greenhouse gases to be reported on by Parties in the second commitment period, according to the UNFCCC website.

The Cabinet chaired by Prime Minister Narendra Modi had in January given its approval to ratify the second commitment period of the international treaty.

Progress achieved in spite of the state's overarching presence in economic activity »

Experts believe local brands will become international ones in due course »

Vagaries of climate and shrinking landholdings continue to be challenges »

Policy flipflops notwithstanding, aviation sector has come a long way »

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Aeroplanes may be affecting ozone layer

Black carbon particles exist upto 18 km into the stratosphere

Aeroplanes may be ejecting significant amounts of black carbon (BC) — a pollutant known to aggravate breathing disorders, upset the monsoon and quicken glacier melt — and may be depleting the ozone layer, according to a study by climate researchers from multiple institutions in the country.

Though airborne, BC is known to dissipate and settle down in a few months under the influence of rain and wind and is unlikely to travel upward of 4 km. However, a group of scientists — including from the Indian Institute of Science and ISRO's Vikram Sarabhai Space Centre — say they now have evidence of such particles existing up to 18 km into the stratosphere and there are about 10,000 of them in every cubic centimetre.

Given the shape and location of these particles, they argue, it could only derive from emissions from aviation fuel and they pose a problem because these black carbon particles can linger long enough to provide a fertile ground for other chemical reactions that can deplete the ozone layer.

"This is the first time that any group in the world has shown that black carbon from aircraft can go to the stratosphere and affect the ozone layer," said S.K. Satheesh, chairman, Divecha Centre for Climate Change, Indian Institute of Science. He was among the authors associated with the study, published in the peer-reviewed *Atmospheric Chemistry and Physics.*

The stratosphere is a stable region of the atmosphere and because BC particles absorb heat, they warm the surrounding air, become lighter and rise to greater heights by a process called 'self lift' and persist in the air.

The sheer volume of air travel means that the black carbon count only continues to increase.

Because BC particles strongly absorb solar and terrestrial radiation and heats up the atmosphere it can upset the monsoon system. If deposited on snow, it could accelerate the heating of snow and quicken the melting of glaciers.

Moreover, when BC particles are located above highly reflective surfaces (snow or clouds), their absorption efficiency is amplified. It's known to be one-fourth as potent as carbon dioxide in whetting global warming and ways and means to curb its emissions are increasingly part of international climate discussions.

Last year the Indian Meteorological Department (IMD) launched a System of Aerosol Monitoring and Research (SAMAR) to study the concentration of black carbon in the atmosphere due to air pollution and its impact on climate. "At those heights, it is unlikely that BC would directly influence the monsoon, though it can indirectly affect it by modifying high altitude clouds," said K. Krishna Moorthy, a co-author, also at IISc.

Correction: The original headline had wrongly stated that aeroplanes affect the monsoon. It has been amended

Jaggi Vasudev's Rally for Rivers claims they will, but this is not based on the most nuanced science

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India signs Global Environment Facility (GEF) Grant Agreement with the World Bank for USD 24.64 Million for “Ecosystems Service Improvement Project”.

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A Grant Agreement from the Global Environment Facility (GEF) of the World Bank of USD 24.64 million for “Ecosystem Service Improvement Project” was signed here today by Shri Sameer Kumar Khare, Joint Secretary (MI), Department of Economic Affairs (DEA), Ministry of Finance on behalf of the Government of India and Mr. Hisham Abdo Kahin, Acting Country Director for India on behalf of the World Bank. The Project Agreements were signed by Dr Neelu Gera, DDG (Research) on behalf of the Indian Council of Forestry Research & Education (ICFRE), Shri Amitabh Agnihotri, Additional Principal Chief Conservator of Forests on behalf of Madhya Pradesh Government and Shri R.B.P. Sinha, Additional Principal Chief Conservator of Forests on behalf of Chhattisgarh Government with the Acting Country Director for India, World Bank.

The size of Project is USD 24.64 million which entirely will be financed by the World Bank out of its GEF Trust Fund. The project’s duration is 05 years.

Ministry of Environment, Forest and Climate Change (MoEF&CC) will implement the Project in the States of Chhattisgarh and Madhya Pradesh through Indian Council of Forestry Research & Education under the National Mission for Green India. The objective of the Project is to strengthen the institutional capacity of the Departments of Forestry and Community Organisations to enhance forest ecosystem services and improve the livelihoods of forest dependent communities in Central Indian Highlands.

DSM/SBS/KA

END

EESL and IOCL, BPCL & HPCL sign MOUs for distribution of Energy Efficient appliances

UJALA scheme to be rolled out at petroleum retail outlets in a phased manner

Consumers can Purchase LED Bulb at Rs.70/-; LED Tubelight at Rs.220; 5-star Ceiling Fan at Rs.1200/-

Energy Efficiency Services Limited (EESL), under the Ministry of Power, today signed a Memorandum of Understanding (MoU) with Oil Marketing Companies (OMCs) under the Ministry of Petroleum and Natural Gas (MoPNG) for distribution of energy efficient appliances under the flagship ***Unnat Jeevan by Affordable LEDs and appliances for All (UJALA)*** scheme. According to the agreement, Oil Marketing Companies- IOCL, BPCL and HPCL will take up distribution of LED Bulbs, LED Tubelights and energy efficient Fans from select retail outlets across the country. The distribution of these energy efficient appliances will be conducted in a phased manner across these select outlets. In the first phase, distribution will commence from the states of Uttar Pradesh and Maharashtra.

The MoUs were signed with Indian Oil Corporation Limited (IOCL), Hindustan Petroleum Corporation Limited (HPCL) and Bharat Petroleum Corporation Limited (BPCL) in the august presence of **Shri Piyush Goyal**, Minister of State (IC) for Power, Coal, New & Renewable Energy and Mines, and **Shri Dharmendra Pradhan**, Minister of State (IC) for Petroleum and Natural Gas here.

As part of the MoUs with the OMCs, EESL will make the entire upfront investment for ensuring availability of the products at the outlets and no upfront capital cost will be borne by the OMCs barring manpower and space.

The consumer can purchase high quality 9W LED Bulbs for Rs 70, 20W LED Tubelight for Rs 220 and Five-Star Rated Ceiling Fan for Rs 1,200/-.

Addressing the occasion, **Shri. Piyush Goyal**, Minister of State (IC) for Power, Coal, New & Renewable Energy and Mines, said “It is worth noting that two important ministries of the Government of India have come together to realise Hon’ble Prime Minister Narendra Modi’s vision of every citizen having access to energy efficient appliances. The marketing network of the three oil marketing companies is unparalleled and this tie-up will only accelerate and scale up the distribution of energy efficient appliances across the length and breadth of the country.”

In his speech, **Shri. Dharmendra Pradhan**, Minister of State (IC) for Petroleum, and Natural Gas, said “It is the vision of the Government of India to reduce our dependence on import of energy by upto 10%. The petrol pumps owned by the three oil marketing companies can boast of a very high footfall. It is a great opportunity for the two departments to come together and utilise this network for ensuring LED bulbs and tubelights reach every corner of our country. Sh. Pradhan said that the ecosystem of non-fuel retail business around the retail outlets will not only help drive the non-fuel business but will also lead to customer convenience in their own vicinity.”

The three Public Sector Oil Marketing Companies, Indian Oil, Hindustan Petroleum and Bharat Petroleum together have a vast network of over 54,500 petroleum Retail Outlets spanning the length and breadth of the country. These Outlets not only meet the growing fuelling needs of our rapidly developing nation but also offer a bouquet of allied services like ATMs, Service Stations, Convenience Stores and PUC facilities to enhance value and convenience to customers across the urban, highway and rural markets. The unmatched network of these mega petroleum companies will significantly boost the distribution and marketing reach of EESL and extend the availability of energy efficient products to all corners of India.

Currently, over 25.5 crore LED Bulbs, over 30.6 lakh LED Tubelights and around 11.5 lakh energy efficient fans have been distributed in the country under the UJALA scheme. This is leading to an annual energy savings of over 3,340 crore kWh and resulting in avoidance of over 6,725 MW of peak demand. Through the scheme the estimated cumulative cost reduction in bills of consumers annually, is over INR 13,346 crore and is leading to reduction of approximately 2.7 crore tonnes of CO2 every year.

RM/VM

END

Navika Sagar Parikrama - Tarini Enters Fremantle

INSV Tarini entered Fremantle (Australia) port today during it's maiden voyage to circumnavigate the globe. This is the first-ever Indian circumnavigation of the globe by an all-women crew. The vessel is skippered by Lieutenant Commander Vartika Joshi, and the crew comprises Lieutenant Commanders Pratibha Jamwal, P Swathi, and Lieutenants S Vijaya Devi, B Aishwarya and Payal Gupta.

Smt Nirmala Sitharaman, Hon'ble Raksha Mantri had flagged-off INSV Tarini from Goa on 10 Sep 17. The vessel has covered 4800 Nautical miles from Goa, crossing the Equator on 25 Sep 17 and the Tropic of Capricorn on 06 Oct 17.

The indigenously-built INSV Tarini is a 56-foot sailing vessel, which was inducted in the Indian Navy earlier this year, and showcases the 'Make in India' initiative on the International forum.

The expedition titled 'Navika Sagar Parikrama', is in consonance with the National policy to empower women to attain their full potential. It also aims to showcase 'Nari Shakti' on the world platform and help revolutionise societal attitudes and mindset towards women in India by raising visibility of their participation in challenging environs.

The vessel would return to Goa in April 2018, on completion of the voyage. The expedition is being covered in five legs, with stop-overs at 4 ports: Fremantle (Australia), Lyttleton (New Zealand), Port Stanley (Falklands), and Cape Town (South Africa).

The crew has also been collating and updating meteorological, ocean and wave data on a regular basis for accurate weather forecast by India Meteorological Department (IMD), as also monitoring marine pollution on the high seas. They would interact extensively with the local populace, especially children, during the port halt to promote Ocean sailing and the spirit of adventure.

The vessel is likely to depart Fremantle on 05 Nov 17.

DKS/GY

END

Can’t Mekedatu be used to address T.N.’s needs, asks SC

The Supreme Court on Thursday asked why the Mekedatu dam project cannot be envisioned as a facility to store excess water from Karnataka, which can be released to Tamil Nadu.

The suggestion was mooted by a three-judge Special Bench, led by Justice Dipak Misra, during the hearing of appeals in the Cauvery case.

The discussion touched upon the Mekedatu project when Karnataka provided statistics of Cauvery water released to Tamil Nadu from 2007, post the tribunal award. Karnataka submitted that except for two drought-ridden years, the water released had never decreased below the 192 tmc ordered by the tribunal.

Tamil Nadu retorted, saying only excess water was released by Karnataka.

‘Can be storage facility’

At this point, Karnataka submitted that the Mekedatu dam project could be used as storage facility for excess water, to be released whenever Tamil Nadu required so.

Tamil Nadu indicated that it was agreeable to the proposition, provided that such an arrangement was under the control and supervision of an independent third party. The court also said that it may not be feasible to construct a new dam for storage in Tamil Nadu, and asked both States to put the proposition before the Centre when it begins its arguments in the Cauvery case next week.

In 2015, Karnataka had termed the challenge posed by Tamil Nadu to the construction of Shivasamudram and Mekedatu hydro power projects as “misconceived, obstructive and factually baseless”.

The Karnataka government told the Supreme Court that the two reservoirs would neither diminish nor reduce the river’s downstream flow.

First instalment, an adaptation of first two chapters, released

END

Getting charged up - OPINION

Piyush Goyal, Union Minister of State with Independent Charge for Power, Coal, New & Renewable Energy and Mines, recently announced that only electric vehicles (EVs) will be sold in India from 2030. The current National Electric Mobility Mission Plan (NEMMP) has set a sales target of only 5-7 million EVs and hybrid electric vehicles annually by 2020. On the other hand, the Indian automobile market, which includes two-, three- and four-wheelers, is expected to clock an annual sales figure of around 23 million by 2030. Replacing these with EVs would require a significant push as far as vehicle-charging infrastructure and batteries are concerned.

Vast opportunities

The transition would require a battery capacity of about 400 GWh (gigawatt hours) each year, equivalent to increasing the current global EV battery production by a factor of five, just to cater to the Indian EV market. This gigantic demand for batteries is an ideal opportunity for the domestic manufacturing industry and job creation. However, India has missed many such opportunities to be integrated in the global value chain for solar cells and wafers and electronics manufacturing due to a lack of suitable policy support. This has led to an ever-increasing import bill for electronics products, currently the highest after oil and gold. The annual EV battery market is expected to be around $30-55 billion and India cannot afford to fulfil the demand solely through imports.

Different variants of lithium-ion batteries are predominantly used in electric vehicles. Manufacturing lithium-ion batteries would require critical minerals such as cobalt, graphite, lithium and phosphate. Among them, lithium is of particular importance.

The resource endowment is limited to only nine countries and 95% of global lithium production comes from Argentina, Australia, Chile and China. The recent demand surge in the electric mobility market has already resulted in a twofold increase in lithium prices from $4,390 per tonne (in 2013) to $9,100 per tonne currently. It is estimated that India would require about 40,000 tonnes of lithium to manufacture EV batteries in 2030, considerably higher than the current annual global lithium production of 32,000 tonnes. To meet India’s demands amid a global surge in electric vehicle demand, the entire mineral supply chain needs to be overhauled and expanded.

China and U.S. in the lead

China and the U.S., which have ambitious electric mobility targets, are way ahead in the race to secure lithium supplies. China, with the second largest reserves of lithium, is making strategic moves to control the majority of international lithium mining assets. China’s Tianqi Lithium holds a majority share in the expansion of the Talison Lithium plant in Australia, which would make it the single largest producer of lithium globally upon completion. Also, its equity investors are planning to buy stakes in Chile’s lithium mining companies.

Similarly, U.S.-based lithium mining companies have already secured mines in Chile and also hold significant shares in several upcoming mining projects in Australia. Tesla, which plans to manufacture half a million EVs annually by 2020, is investing in R&D to reduce supply risks. It has partnered with Pure Energy Minerals to extract high-purity metal from Nevada, using radically different and cost-efficient production technology.

In order to avoid a scenario like the one that played during the oil crises of the 1970s and the price shocks of 1980s and 2000s, it is imperative that India secure mineral supplies for its domestic industry by acquisition of overseas assets such as mineral reserves and the associated production.

India has long-term trade relations with lithium-producing countries in Latin America through preferential trade agreements (PTAs). A recent extension of the PTA with Chile provides India some tariff concessions for lithium carbonate imports. India needs to further diversify the supply risk by including lithium in existing PTAs or establishing new PTAs with other lithium-producing countries. However, the move will only enable and not ensure risk-free mineral supplies to India.

Trade links, R&D, recycling

There is a need to formulate policies incentivising domestic public and private mining companies to invest in overseas lithium mining assets.

Simultaneously, India must focus on creating a vibrant battery research and development ecosystem domestically. Currently, the domestic battery market is largely dominated by lead-acid battery technologies. Research should focus on developing alternative technologies containing minerals with low supply risks and battery recycling techniques to recover associated minerals and materials. Recycling lithium batteries present in the waste stream will significantly reduce the burden in procuring fresh resources.

Mr. Goyal has repeatedly highlighted ‘fuel security’ as a key driver in the push for electric vehicles. However, given India’s limited hold on critical lithium reserves and concentration of production in the hands of a few, fuel security concerns could still be the same with ‘white gold’ lithium, replacing ‘black gold’. Policies that incentivise domestic manufacturing, address the need for virgin resources and recycling of used batteries, while constantly pushing R&D for substitutes and alternatives are vital to secure electric mobility.

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PM reviews progress of Soil Health Cards and PMFBY

The Prime Minister, Shri Narendra Modi, today reviewed the progress of two key schemes related to the agriculture sector - Soil Health Cards; and Pradhan Mantri Fasal Bima Yojana.

The Prime Minister was informed that 16 States/UTs have completed the first cycle of Soil Health Cards distribution, and the remaining States are likely to complete the same within weeks.

Reviewing the progress, the Prime Minister said that appropriate checks should be undertaken for variation, both within a sampling grid, and across different soil testing labs. This would help ensure quality in the reports, he added.

The Prime Minister also emphasized that soil health cards should be printed in the local dialect of the area, so that the farmers are able to read and understand them easily.

Encouraging the rapid adoption of latest technology, the Prime Minister said that soil testing should eventually be possible through hand-held devices. He urged officials to explore the possibility of involving start-ups and entrepreneurs in this exercise.

On Pradhan Mantri Fasal Bima Yojana, the Prime Minister was informed that in the Kharif season of 2016, and Rabi season of 2016-17, claims of over Rs. 7700 crore have already been paid, and over 90 lakh farmers have been benefited.

Officials also said that latest technology including smartphones, remote sensing, satellite data and drones are being used for speedy data collection with regard to crop insurance claims.

Senior officials from Ministry of Agriculture, NITI Aayog and PMO were present during the review meeting.

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Dogged by delays, but cloud seeding project is finally up and cruising

A special fitted aircraft which will spray chemical to induce rainfall, as part of the cloud seeding project "Varshadhari", taking off from Jakkur airfield, after the inauguration, in Bengaluru on August 21, 2017. The cloud seeding project, taken up by Rural Development and Panchayat Raj (RDPR) department at three places including Bengaluru, Gadag and Yadgir, at the cost of state's exchequer a whopping Rs 35 crore. Photo: K. Murali Kumar | Photo Credit: K_MURALI_KUMAR

While the Goods and Services Tax (GST) regime and Central clearances delayed Project Varshadhari, a cloud seeding initiative, by at least 10 days, a government ceremony and the frills accompanying it saw a weather modification aircraft miss its date with the clouds.

On Monday, the 60-day, 35-crore programme was launched at Jakkur Aerodrome with the hope of seeding clouds in a 20-sq. km area at Magadi. Though the modified flight was scheduled to take off at 2.45 p.m., by the time the photo-ops were done and the last-minute decision to flag off with the ‘Kannada’ flag fulfilled, the aircraft — carrying three State Ministers — had lost its clearance window for take-off.

It then had to wait for more than an hour until trainee aircraft from the nearby Air Force base at Yelahanka finished their sorties.

According to members of the project monitoring committee, Magadi was chosen as there was an expectation of conducive cloud formation on Monday afternoon. But it was only at 4.50 p.m. that the flight took off, and most of the clouds had passed by then. In the end, three flares of chemicals were fired and two clouds seeded.

“The best time for seeding is generally between 1 p.m. and 4 p.m. With the function and the delays, the clouds dissipated. But this was just an experimental flight to show how the system works,” an official said.

Behind schedule

Over the next 60 days, a small plane will spray chemicals on ‘growing clouds’ in the hope of condensing water particles and increasing precipitation.

Though the project has been launched to capitalise on monsoons clouds, H.K. Patil, Minister for Rural Development and Panchayat Raj, said it was 10 days behind schedule. “There were delays in getting Central clearances and because of GST,” he said.

As reported by *The Hindu*, three weather-monitoring radars were stuck at the Kempegowda International Airport for over a week because of confusion over GST. The aircraft and radars were being imported from the United States and this required clearance from numerous Central agencies.

However, Mr. Patil said there was still enough time to increase rains in the seeded areas by 15-20%.

Full system within a week

With the weather-monitoring radars still being commissioned, cloud seeding will commence fully within the next four days, said H.P. Prakash Kumar, chief engineer, Rural Development and Panchayat Raj Department, and project in-charge. “For the next few days, we will try to seed

clouds in southern Karnataka, based on where rain-bearing clouds are and if the areas to benefit are rain-deprived. Once the radars are set up, we will extend this to the three basins," he said.

Better equipment

It was in 2003 that Project Varuna, a cloud seeding project, was launched by the then Minister for Water Resources H.K. Patil. While the results of that project have been subject to debate, this time around the monitoring committee of meteorologists and cloud physicists expects better results. "The radars and the aircraft are more sophisticated and whether clouds are seeded can be assessed within 10 or 15 minutes. This will increase the success rate of seeding," said Ram Sagar, senior scientist at the Indian Institute of Astrophysics.

Mature sandalwood trees in Bengaluru to have anti-theft sensors to alert guards

Local magistrate has remanded Siddalinga Swamy in judicial custody for 10 days

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2,855 villages in U.P. under water, toll touches 82

The flood situation in Uttar Pradesh remained alarming on Tuesday with reports of 10 more deaths, taking the toll to 82 in the current wave of floods in the State.

“As many as 2,855 villages in 25 districts are inundated affecting a population of over 22 lakh,” the Relief Commissioner’s office said here, citing a flood report as on Monday.

Around 50,000 people had taken shelter in camps in eastern U.P. where there was no let-up in flood fury as the raging waters of rivers emanating in Nepal caused havoc in vast areas, it said.

Bihar reported 37 more deaths on Tuesday, taking the toll to 341. Prime Minister Narendra Modi will make an aerial survey of the flood-affected districts of Bihar on August 26, said Deputy Chief Minister Sushil Kumar Modi. Army choppers, the NDRF and PAC (flood) jawans continued rescue operations. Incessant rain and swollen rivers impeded rescue work and evacuation of people to safer areas, reports said.

The flood situation in Assam improved further on Tuesday with water receding from human habitations and fields. No fresh deaths were reported in the State and the toll stood at 70, an Assam State Disaster Management Authority report here said. In the wave of floods this year, 2.83 lakh big and 1.71 lakh small animals, besides 4.73 lakh poultry have been affected. Infrastructure such as roads, bridges, embankments and culverts have been damaged by the floods in Barpeta, Kokrajhar, Dhemaji, Dhhubri, Nagaon and Dibrugarh districts.

In Himachal Pradesh, one man is feared to have drowned in the swollen Govind Sagar Lake in Bilaspur district. Thirteen houses were damaged following heavy rain.

A new committee will find a lasting solution to the flooding and erosion in Assam

Sarbananda Sonowal

Assam Chief Minister

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Moss serves as a cheap pollution monitor

Delicate mosses found on rocks and trees in cities around the world could prove a low-cost way to monitor urban pollution | Photo Credit: S.S. Kumar

Delicate mosses found on rocks and trees in cities around the world can be used to measure the impact of atmospheric change and could prove a low-cost way to monitor urban pollution, according to Japanese scientists.

The “bioindicator” responds to pollution or drought-stress by changing shape, density or disappearing, allowing scientists to calculate atmospheric alterations, said Yoshitaka Oishi, associate professor at Fukui Prefectural University.

“This method is very cost effective and important for getting information about atmospheric conditions,” Oishi told the Thomson Reuters Foundation by telephone.

“Mosses are a common plant in all cities so we can use this method in many countries ... they have a big potential to be bioindicators,” said Oishi, who analysed nearly 50 types of moss for the study.

Oishi said humid cities where moss thrives could benefit most from using bryophytes – a collective term for mosses, hornworts and liverworts – as bioindicators, adding moss could be monitored in its natural environment or cultivated for analysis.

Effect of nitrogen pollution

In a research paper published in the Landscape and Urban Planning journal, Oishi and a colleague described how they studied the effect of nitrogen pollution, air quality and drought-stress on moss found over a 3km square (1.9 mile) area in Hachioji City in northwestern Tokyo.

The study showed severe drought-stress tended to occur in areas with high levels of nitrogen pollution, which it said raised concerns over the impact on health and biodiversity.

However, the scientists could not effectively measure air purity which affects the number of moss types as pollution levels in the sample area were not high enough, said Oishi.

“If the air pollution is severe, the purity is also evaluated by moss ... the change of the moss is very diverse according to the environmental problem,” said Oishi.

Bioindicators such as mosses - which generally absorb water and nutrients from their immediate environments - were often cheaper to use than other methods of environmental evaluation, and can also reflect changes to ecosystems, said the scientists.

Jaggi Vasudev’s Rally for Rivers claims they will, but this is not based on the most nuanced science

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A new score in waste management

Rich source Cotton stalks are first treated to breakdown the complex organic polymers present in it. | Photo Credit: K_Ananthan

Scientists from CSIR's National Institute for Interdisciplinary Science and Technology (CSIR-NIIST), Thiruvananthapuram have been able to turn waste into wealth. They have produced ethanol from discarded cotton-stalks by using a combination of chemical and biological techniques. India has about 9.4 million hectares under cotton cultivation and every hectare generates 2 million tonnes of cotton stalk wastes. The results were published in *Bioresource Technology.*

The stalks were first treated with an acid, alkali and different enzymes to breakdown the complex organic polymers of the stalk. "The agro-residues are tough in nature and we need chemical pre-treatment to break down the complex structure of the stalk," explains Meera Christopher, research scholar at NIIST and first author of the paper.

The acid helps to remove hemicellulose, a polymer of the cell wall and the alkali extracts lignin, a binding matrix in the cell wall, made of complex phenolics. These treatments expose cellulose, the major component made of glucose to the action of enzymes.

The cellulose was further treated using enzymes to convert it into glucose.

Fermentation

To convert the glucose into ethanol, fermentation using a novel yeast strain was carried out. "We isolated the yeast-*Saccharomyces cerevisiae*-RRP-03N, from a rotting wild fruit we found in the Silent Valley National Park in Palakkad, Kerala. In spite of several inhibitors of microbial growth produced during chemical treatment, the yeast performed better than distiller's yeast strains in fermenting the cotton stalk hydrolysate," says Dr. Rajeev K Sukumaran, Head of the Biofuels and Biorefineries Section, at NIIST and the corresponding author of the paper.

The yeast showed a glucose conversion efficiency of 76% and the entire glucose was utilised by the yeast in just 24 hours and converted into alcohol. This performance was superior to any other organism reported for fermentation of cotton stalk. The final alcohol obtained can be made to fuel grade bioethanol (>99% purity), after distillation and dehydration using molecular sieves, which is an existing technology practised in the distilleries.

Bioethanol

Bioethanol has a number of advantages over conventional fuels as it comes from a renewable resource. It is mandatory to blend 10% ethanol with petrol. Bioethanol presently in use is obtained by fermentation of sugar cane molasses which is a byproduct of sugar production, and has food value. Most of this first generation ethanol finds its way into consumer applications, primarily as liquor. Converting the agro-residues to ethanol reduces the food vs fuel competition," explains Meera.

Further studies should be carried out for commercial viability and large-scale production.

A study of nearly 300 people living in different parts of India found that nine single-base variants (single-nucleotide polymorphisms or SNPs) account

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Study linking temperature, farm suicides challenged

Some academics have challenged a recent study that said that “temperature during India’s main agricultural-growing season has a strong positive effect on annual suicide rates”.

The paper, titled “Climate change and agricultural suicides in India” and authored by Tamma A. Carleton, has been published in the *PNAS* journal (Proceedings of the National Academy Sciences of the United States).

The study had used State-level data from 1967 to 2013 to suggest that an increase in temperature by a degree Celsius a day can cause 70 suicides.

The evidence, it said, leads to the conclusion that crop damage by extreme temperatures leads to economic hardship and suicide.

In a press note, T. Jayaraman and Kamal Kumar Murari of the Tata Institute of Social Sciences and Madhura Swaminathan of Indian Statistical Institute said they considered these claims to be baseless. “These claims are a consequence of the uncritical use of data, bad assumptions, flawed analysis and unacceptable neglect of the existing literature on global warming and Indian agriculture as well as farmer suicides,” they said.

Wrong premise

The academics noted that the author incorrectly used suicide data, wrongly identified extreme temperatures for crop production, took only kharif as the relevant agricultural season to consider extreme temperatures, and wrongly identified the relevant crops.

As a result, the meaning of the correlation that the author claimed to find between extreme temperatures and suicides was unclear.

They said the paper used State-level data on suicides, both urban and rural. “How can urban suicides be included in an analysis of agricultural suicides,” they asked.

The paper ignored the fact that the suicide data, taken from the National Crime Records Bureau, had separated farmer suicides from those of other occupational categories only after 1995.

The author did not analyse individual crops but only considered a few such as rice, wheat, sorghum, sugar, maize and millet.

Cotton, closely associated with farmer suicides, was a notable omission as are a host of other cash crops. The author also ignored the Rabi season.

The paper considered temperatures above 20 degrees Celsius as extreme temperatures.

This was flatly contradicted by what was known of the temperature dependence of crop production, the academics noted.

Jaggi Vasudev’s Rally for Rivers claims they will, but this is not based on the most nuanced science

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Ocean forecasting system unveiled

The Indian National Centre for Ocean Information Services (INCOIS) of the Ministry of Earth Sciences here inaugurated the Ocean Forecasting System for Comoros, Madagascar, and Mozambique at the third Ministerial Meeting of Regional Integrated Multi-Hazard Early Warning System for Asia and Africa (RIMES), held at Port Moresby, Papua New Guinea, on Friday.

The ocean forecast and early warming information on high wave, currents, winds, tides, sub-surface ocean conditions cater to users like fishermen, coastal population, tourism sector, coastal defence officials, marine police, port authorities, research institutions and offshore industries of these countries.

Safety at sea

These ocean services are aimed towards safety at the sea.

The system would offer oil spill advisory services, high wave alerts, port warnings, forecast along the ship routes in addition to tsunami and storm surge warnings and help in search and rescue operations.

New system launched

M. Rajeevan, Secretary, Ministry of Earth Sciences, and Chair, RIMES Council, launched the system for operational use in the presence of David Grimms, President of World Meteorological Organization (WMO); Wesley Nukund, Minister for Disaster Management, Papua New Guinea; Soulaimana Kaambi, Deputy Minister, Comoros; Abdullahi Majeed, Minister of Disaster Management, Maldives; Anura Priyadharshana Yapa Yapa, Minister of Disaster Management, Sri Lanka; Subbaiah, Director of RIMES; Balakrishnan Nair, Head, ISG, INCOIS and Director General of Metrology and Disaster Management of 48 countries of Indian and pacific ocean region.

The INCOIS has already been providing these operational services to the Maldives, Sri Lanka and Seychelles.

The Ministerial council and the WMO lauded and placed on record the initiatives of INCOIS/India in providing the ocean forecast and early warning services to the Indian Ocean countries and taking a leadership in ocean services in the Indian Ocean region.

Real-time data

“The Ocean Forecast System developed for the Indian Ocean countries and the real-time data from their territories also help to improve the ocean forecast and early warning system for the Indian coast too,” said Balakrishnan Nair, Head, Ocean Science and Information Services, Hyderabad.

Wave surge (*kallkadal*) and coastal flooding that occurred from July 28 to August 3 in 2016 along Kerala and West Bengal were well predicted and real-time data from Seychelles were highly beneficial for predicting these incidents, as many of these remotely forced waves originated from the southern and western Indian Ocean, he added.

The ocean forecast and early warning services were most essential for safe navigation and operations at sea and the blue economic growth of many of these Indian Ocean rim countries and island nations.

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Why does the 2022 target for rooftop solar seem ambitious?

The government has set itself a target of 100 GW of solar power by 2022, of which 60 GW is to come from utilities and 40 GW from rooftop solar installations. While the 60 GW target seems achievable, the country is lagging behind on the target set for rooftop solar.

What is rooftop solar?

Rooftop solar installations — as opposed to large-scale solar power generation plants — can be installed on the roofs of buildings. As such, they fall under two brackets: commercial and residential. This simply has to do with whether the solar panels are being installed on top of commercial buildings or residential complexes.

What are the benefits?

Rooftop solar provides companies and residential areas the option of an alternative source of electricity to that provided by the grid. While the main benefit of this is to the environment, since it reduces the dependence on fossil-fuel generated electricity, solar power can also augment the grid supply in places where it is erratic.

Rooftop solar also has the great benefit of being able to provide electricity to those areas that are not yet connected to the grid — remote locations and areas where the terrain makes it difficult to set up power stations and lay power lines.

What is the potential for rooftop solar in India?

The Ministry of New and Renewable Energy has pegged the market potential for rooftop solar at 124 GW. However, only 1,247 MW of capacity had been installed as of December 31, 2016. That is a little more than 3% of the target for 2022, and 1% of the potential.

Why is it not being adopted widely?

One of the major problems with rooftop solar — and what affects solar energy generation in general — is the variability in supply. Not only can the efficiency of the solar panels vary on any given day depending on how bright the sunlight is, but the solar panels also produce no electricity during the night. Arguably, night is when off-grid locations most need alternative sources of electricity.

The solution to this is storage. Storage technology for electricity, however, is still underdeveloped and storage solutions are expensive. So, while some companies will be able to afford storage solutions for the solar energy they produce, most residential customers will find the cost of installing both rooftop solar panels and storage facilities prohibitive. Residential areas also come with the associated issues of use restrictions of the roof — if the roof is being used for solar generation, then it cannot be used for anything else.

Another major reason why rooftop solar is not becoming popular is that the current electricity tariff structure renders it an unviable option.

Many states have adopted a net metering policy, which allows disaggregated power producers to sell excess electricity to the grid. However, the subsidised tariffs charged to residential customers undermine the economic viability of installing rooftop solar panels. The potential profit simply does not outweigh the costs.

That said, imports of cheap solar panels are continuously placing a downward pressure on prices and so this scenario could change in the future. Commercial applications of rooftop solar are already viable in most states.

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MNRE & GIZ Signs Agreement to Improve Framework Conditions for Grid Integration of Renewable Energies

MNRE & GIZ Signs Agreement to Improve Framework Conditions for Grid Integration of Renewable Energies

The Ministry of New and Renewable Energy (MNRE), Government of India and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH India on behalf of the Government of the Federal Republic of Germany signed an agreement on technical cooperation under the “Indo-German Energy Programme – Green Energy Corridors (IGEN-GEC)” here today . The main objective of this programme component is to improve the sector framework and conditions for grid integration of renewable energies.

In the distinguished presence of Minister of State (IC) for Power, Coal, New & Renewable Energy and Mines Shri Piyush Goyal and the German Ambassador to India, H.E. Dr. Martin Ney, the agreement was signed by Dr. Wolfgang Hannig, Country Director, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH India and Mr. A.N. Sharan, Joint Secretary, Ministry of New and Renewable Energy (MNRE).

Speaking on the occasion, Shri Goyal said “ am delighted that this relationship between GIZ and India will result in improve market mechanisms and regulations, help us train manpower, to ensure grid stability & integration of renewables into grid and ensure safer & secure grid and a grid which can take cyber challenges” . Shri Goyal further added that Germany is a very reliable partner country and has been supporting India in achieving its goal for sustainable development through bilateral cooperation for almost six decade now.

Dr. Ney added “When in July 2012 Power Grid Corporation of India submitted a comprehensive and well elaborated “Transmission Plan for Envisaged Renewable Capacity” to MNRE it paved the way for India’s ambitious goals to transform its power system by significantly increasing the share of renewable energies in the energy mix. Also in Germany’s “Energiewende” the evacuation and grid integration of renewable energy plays a pivotal role with major technological and fiscal challenges. Both the countries have very constructive dialogue under the Indo-German Energy Forum (IGEF).

Being committed to this objective, GIZ and MNRE will work on improving market mechanisms and regulations for integration of Renewable Energies; advancing technical and institutional conditions in specified target states, regions and on a national level; adding human capacities to handle systemic (strategic, managerial, financial, technical) Renewable Energies integration in an efficient and effective manner.

The IGEN-GEC programme is commissioned by the Federal Ministry for Economic Cooperation

and Development (BMZ) and jointly implemented by Ministry of New and Renewable Resources (MNRE), Ministry of Power (MoP), Government of India and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). This programme component supports the implementation of the Renewable Energy Management Centre (REMCs), Green Energy Corridors scheme of the Government of India which is a prerequisite for large scale grid integration of renewable energy thus contributing to achieve the 175 GW target of the Government of India for renewable energy generation capacity by 2022.

Based on the Indo-German Consultations held on 11th April 2013 in Berlin, both countries confirmed collaboration on the Green Energy Corridors. In the subsequent bilateral development cooperation negotiations, it was agreed that Germany will provide concessional loans of up to 1 billion Euros through KfW (German Development Bank) and up to 10 million Euros under technical assistance in forecasting, balancing, market design, network management and demand side energy efficiency, implemented by GIZ. These contributions have been further increased in 2015 and 2016 by concessional loans up to 400 million Euros for transmission infrastructure and up to 7 million Euros for training activities in the photovoltaic solar rooftop sector and energy efficiency in residential buildings under technical assistance through GIZ.

It was added that India & Germany will further benefit each other in the journey towards sustainable development. Economic growth and a cleaner world with successful continuation of cooperation & fruitful exchange.

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Why the Centre must stop targeting the NGT

The National Green Tribunal (NGT)'s journey since its inception in 2010-11 has been far from easy: Despite being a body constituted by an Act of Parliament, the Supreme Court in the initial years had to intervene to ensure necessary administrative arrangements were made by the government for the tribunal to become fully functional. The NGT, however, has emerged as a critical player in environmental regulation, passing strict orders on issues ranging from pollution to deforestation to waste management. These issues more often than not come in conflict with what is known as the development agenda of successive governments, which tend to be extremely short-sighted. Unsurprisingly, they are not really supportive of the tribunal and always look for opportunities to clip its wings.

That the NGT's problems are for real became evident when the Delhi High Court aimed a barb at the Centre last week. "Would you like to wind up the National Green Tribunal?" the Delhi High Court asked the Centre, while hearing a plea seeking directions to authorities to fill the vacant posts of judicial and expert members in the tribunal. "It is perhaps because of red-tapism in the bureaucracy that the NGT is headed towards a premature death," said the plea, adding the court could issue directions to fill vacant posts. The matter has now been listed for September 14.

That the government has been targeting the NGT was clear in July when the Centre modified the process of appointments to the Tribunal, bringing in clauses that experts said will considerably weaken the country's environmental watchdog. The new rules do away with a condition that the NGT can only be headed by a former Supreme Court judge or the chief justice of a high court, and takes away the judiciary's control on the process to appoint the Tribunal's members. Opposition parties and constitutional experts said such a move chips away at the independence of these institutions.

This desire to control autonomous bodies such as the NGT will be a great disservice to the nation; we need an independent body that can control the executive, which does not seem to think that long-term sustainability of a country is as important as short term economic gains.

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Harvey makes landfall in Louisiana

At sea:A home surrounded by flood waters in Houston; and, right, the Interstate 10 highway, which was closed due to flooding.APDavid J. Phillip

After pouring record rains on Texas, Tropical Storm Harvey made a second landfall on Wednesday to strike Louisiana, a State that still bears deep scars from 2005's Hurricane Katrina.

The second hit comes five days after the monster storm slammed onshore as a Category Four hurricane, pummelling the U.S. Gulf coast with torrential rains that turned neighbourhoods into lakes in America's fourth largest city, Houston.

Harvey made its second landfall just west of the town of Cameron, the National Hurricane Center said, with "flooding rains" drenching parts of southeastern Texas and neighbouring southwestern Louisiana.

Louisiana residents braced for Harvey's ferocious maximum sustained winds nearing 45 miles (72 km) per hour, with forecasters predicting another five to 10 inches (13 to 25 cm) of rain could pour on the region.

They expected Harvey will gradually weaken to a tropical depression by Wednesday night, meaning maximum sustained winds should slow. But low-lying New Orleans was still girding for the storm, just a day after the 12-year anniversary of Katrina, which ravaged the vulnerable city famous for its jazz music and cuisine.

The New Orleans branch of the National Weather Service said a heavy rain threat remained over southeast Louisiana and southern Mississippi through Thursday, when relatively drier weather is finally slated to arrive. One night prior to the second landfall, New Orleans Mayor Mitch Landrieu tweeted to "remind #NOLA that we are not yet in the clear", urging residents to "remain vigilant and cautious".

In Texas emergency crews were still struggling to reach hundreds of stranded people in a massive round-the-clock rescue operation — but the National Weather Service tweeted that weather conditions there were to at last improve. The storm had transformed roads into rivers in America's fourth-largest city, driving more than 8,000 people into emergency shelters.

Houstonians woke up on Wednesday from a night-time curfew declared by Mayor Sylvester Turner aimed at aiding search efforts and thwarting potential looting in the flood-ravaged city. U.S. media reports indicated the death toll could have risen to 30, and authorities feared confirming more once the worst had past and search teams could again travel roads.

Six million impacted

The National Weather Service said over six million Texans have been impacted by 30 inches or more of rain since Friday.

President Donald Trump toured the Harvey disaster zone in Texas on Tuesday.

The National Weather Service tweeted that Harvey appears to have broken a U.S. record for most rain from a single tropical cyclone, with nearly 52 inches (132 cm) recorded in the town of Cedar Bayou.

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Managing embankments

Life had come to a standstill in the Ganga-Brahmaputra floodplains where large tracts of land were reeling under floods. Everywhere there were submerged houses, broken bridges, and wasted railway tracks. The fury of the waters in the Kishanganj and Katihar districts of Bihar had cut off the road and rail services in north Bengal, and consequently Northeast India's connectivity by rail with the rest of India. On such occassions, schools routinely turn into relief centres and schoolchildren are forced to take a "flood vacation". Access to water and sanitation is difficult. Open defecation is common, and the use of contaminated water leads to a peak in water-borne diseases. Agricultural land is either covered with sand or remains waterlogged.

Further accentuating the misery is the failure of embankments — the gold standard for flood protection. An embankment is an uplifted earthen structure constructed along the river channel to artificially reduce the size of the floodplains by constricting floodwaters to a narrow stretch. The land outside the embankment is supposed to be safe from floods. However, embankment breach resulting in flooding the "safe" areas is routine. We need a paradigm shift in the way these embankments are managed. It is important to involve the community that is close to the embankment in its management. Only then can we break the build-and-forget mentality that currently rules the bureaucracy.

Bihar floods: when home is a highway

Our study of over 100 villages in the Ganga-Brahmaputra floodplains found that villages in these areas are exposed to diverse water-related hazards depending on their location vis-a-vis an embankment. Those located inside the embankment are vulnerable to floods and riverbank erosion, and those outside, in the "safe" areas, are prone to extended periods of inundation. This takes place when the construction of an embankment causes the drainage lines to be blocked, the regulators in the embankments become dysfunctional, or when there is a backflow of the larger river in spate. The people in these "safe" areas suffer from a perennial fear of embankment breach, which is not entirely unfounded. In Bihar in 2008, there was a colossal embankment breach in the Kosi river basin. This year too, in parts of Assam, Bihar and West Bengal breaches have caused flooding. Only in a few cases have newly constructed embankments been able to protect villages located outside them from floods. Despite this, in flood-prone areas with no embankments, people still articulate the need for embankments.

Till now, embankments have been managed by irrigation or flood-control departments. However, the communities near the embankments are best positioned to take care of them. The responsibility of embankment management could be devolved to the community, while the ownership right resides with the state. But this task of decentralisation will not be easy when society is fractured along the lines of caste, class, and religion. We must remember then that disaster is non-discriminatory and affects all.

To incentivise collective action from the community, the state has to create an enabling institutional environment. The community-based organisations (embankment management committees) should be empowered to earn revenue from the embankments through levying tolls (as most embankments are also used as roads), and undertake plantation activities (and sale of the harvest). In areas where villages exist both inside and outside the embankment, their interests conflict. In such cases, efforts could be made to ensure that the former has a greater share of the revenue. This will dissuade them from causing a breach. While the irrigation or flood-control departments might issue tenders for periodic maintenance activity, the committees could act as a partner to partly implement the same, or act as a monitoring agency. Payment to contractors could be conditioned upon a joint inspection by the irrigation department and the embankment

management committees.

Promoting decentralised management systems is yet to be tested for embankment management, even as participatory irrigation and joint forest management are established practices. But if the past teaches us something, it is that build-and-forget cannot be an option for embankments. If we have to shift from reactive flood protection to year-round flood governance, we must design ways of embankment management in flood-prone areas. Participatory embankment management could be the way forward.

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The new U.S. Fed Chairman is unlikely to opt for policies that might upset the President’s plan

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Powering aspirational India

How much electricity is needed by India? To answer this, one approach is to follow a top-down econometric model whereby one examines growth in the economy, looks at the relationship between **economic growth and energy requirements**, and incorporates influence of technological and policy changes exogenously. The alternative is a bottom-up approach, whereby one estimates demand based on equipment saturations, efficiencies and usage.

A simple method is to look around and draw conclusions. As per data for 2014 published by the International Energy Agency, average global per capita electricity consumption is 3030 kWh (kWh is colloquially known as a unit). The corresponding figure for India is about 805 units, and for developed countries of the OECD, it is 8,028. A majority of the OECD countries are in the temperate climate zone. Therefore, let us examine the scene around India: the corresponding figure for Singapore is 8,844, for Malaysia 4,646 and for Thailand 2,566. The projected global average per capita consumption by the middle of the century is 7,500 units. We can use this data to set a target which India can aim at.

An emphasis on energy conservation and improvement in energy efficiency of industry and household gadgets will help in reducing electricity consumption, but bringing it down to below 5,000 units per annum to enjoy a standard of living enjoyed by citizens of OECD countries seems difficult. Assuming India's population by the middle of century will be about 1.6 billion and transmission and distribution losses will come down to the lowest technically feasible value of about 7%, India must plan to generate about 8,600 Billion Units (BU) to provide 5,000 units per capita per annum to its citizens.

Many don't have power in 'power-surplus India'

The cumulative average growth rate of electricity generation in India for the period 2006-07 to 2015-16 was close to 6%. In 2016-17 generation by utilities was 1,242 BU. Data for generation from non-utilities is not yet available, but one can assume it to be around the same as in 2015-16, i.e. 168 BU. The total generation was thus 1,410 BU. Assuming a population of 1.3 billion, it translates to a per capita generation of 1,100 units. Thus, electricity generation projected for 2050 is six times the total generation in 2016-17 and in terms of per capita generation, it is about 4.5 times. India has a long way to go.

The target of per capita availability of 5,000 units per annum is very modest because of several reasons. The percentage share of electricity in total energy consumption is increasing. As per estimates by the International Atomic Energy Agency, this share was 34.8% in 2015 for Middle East and South Asia, and is projected to increase to 52% in 2050. The Government of India has announced policy initiatives such as electricity and housing for all, accelerated infrastructure development, Make in India, electrification of transport, etc. which call for more electricity and on a reliable basis.

Many have opined that we should return to a frugal way of living and consume less electricity. Can one expect the young in India to do that when electricity consumption is continuously rising elsewhere in the world? Aspirational India has a desire to work and live in air-conditioned spaces, reduce the drudgery of home work by using electrical appliances, entertain itself by deploying the best theatre system, commute in comfort in non-polluting transport and so on. Once basic amenities are available, an ordinary Indian will become an aspirational Indian.

Human lives have become more productive because of electrical lighting and indoor climate control. Indoor heating for climate control increased productivity in countries in colder regions of

the world and air-conditioning is doing that now in tropical countries, including India.

Given this backdrop, we must maximise the use of low-carbon energy sources, i.e. hydropower, variable renewable energy (VRE), and nuclear power. Last year hydroelectricity generation was 122 BU; exploiting the additional potential will take time.

A NITI Aayog report says India's solar and wind energy potential is greater than 750 GW and 302 GW respectively. Assuming a load factor of 20%, this could generate 1,840 BU. All these numbers are rough estimates, but make it clear that the total possible generation from hydropower and VRE can at best be about a quarter of the projected requirement of 8,600 BU.

Wherefrom will India get the rest of electricity? The share of electricity generated by nuclear power must be ramped up as soon as possible and large investments must be made in research and development in electricity storage technologies to derive full benefit from VRE sources. Until installed capacity based on low-carbon sources picks up, fossil fuels have to continue playing their role. Recent moves such as the Cabinet nod to the construction of 10 indigenous pressurised heavy water reactors, taking further steps for the construction of units 3-6 at Kudankulam, and completing all steps towards operationalisation of the nuclear cooperation agreement with Japan are all steps in the right direction.

R.B. Grover is Homi Bhabha Chair, Department of Atomic Energy and a Member of the Atomic Energy Commission

The new U.S. Fed Chairman is unlikely to opt for policies that might upset the President's plan

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Navodaya Vidyalayas to go Solar

Minister of Human Resource Development Shri Prakash Javadekar today directed the Navodaya Vidyalaya Samiti (NVS) to take measure for adoption of solar energy in all Navodaya Vidyalayas. Chairing the 35th Meeting of Executive Committee of Navodaya Vidyalaya Samiti in New Delhi today, he asked the Samiti to seek the guidance of Ministry of Power to speed up the process.

He applauded the performance of the Navodaya Vidyalaya students in 10th and 12th Board and particularly the impressive performance of NV students in IIT-JEE Advance and NEET. He noted with satisfaction that out of the 14183 NV students who appeared in NEET, 11875 qualified in the examination of which 7000+ already placed in various good medical colleges. Navodaya Vidyalayas have already become a brand for quality education and the recent successes have further enhanced its brand.

Acknowledging the important role being played by some of the NVS alumni in guiding students voluntarily to prepare for competitive examinations, Shri Javadekar directed the NVS to use social media network to connect with more such NVS alumni. This, he said, would broad-base the voluntary involvement of alumni and have a positive impact on the progress of Vidyalayas. He also appealed to NV alumni to come forward in a big way to support their Alma matter.

Shri Javadekar also desired that the teachers who are deputed for training abroad through scholarship should be asked to share a report on their learning and its utility for the system.

He also directed that water and solar energy harvesting should form part of proposals in the new building plans and explore the possibility of having water harvesting and Bio-Gas plants in existing campuses.

While reviewing the functioning of NVS, the Minister directed the Samiti to conduct study of positive impact of: 1) Student-Teacher living together 2) Teachers living together in school campus and 3) Health improvement of students.

The minister appreciated the efforts of the Samiti in filling up all posts of teachers in North Eastern region.

Hon’ble Minister of State of Human Resource Development Shri Upendra Kushwaha, Secretary School Education Shri Anil Swarup, Joint Secretaries and Financial Advisor of MHRD and NVS Commissioner, other Members and senior officials from the Samiti were also present.

GG/AK/RK

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