

DAILY PT POINTERS

11 November, 2024



The Hindu-Environment(GSIII)-Page 10

On improving wind energy generation

What is Tamil Nadu's wind power capacity? What about national wind energy capacity? What does repowering and refurbishing of wind turbines mean? Why are wind energy generators opposing the new policy of the Tamil Nadu government?

EXPLAINER

M. Sundarika Preetha

The story so far:

Tamil Nadu, which is a pioneer in wind mill installations, has wind turbines that are over 30 years old. The Tamil Nadu government released the "Tamil Nadu Repowering, Refurbishment and Life Extension Policy for Wind Power Projects - 2024" in August this year. However, wind energy generators have opposed the policy, approached the Madras High Court and got a stay. They have demanded a policy that will "promote wind energy generation".

What is the wind energy capacity and potential in India?

The National Institute of Wind Energy (NIWE) says that India has wind power potential for 1,163.86 GW at 150 metres above ground level, and is ranked fourth in the world for installed wind energy capacity.

At 120 metres above ground level, which is the normal height of wind turbines now, the potential is 695.51 GW, including the 68.75 GW from Tamil Nadu. Only about 6.5% of this wind potential is used at the national level and nearly 15% in Tamil Nadu. Gujarat, Tamil Nadu, Karnataka, Maharashtra, Rajasthan, and Andhra Pradesh are the leading States for installed wind energy capacity, collectively contributing 93.37% of the country's wind power capacity installation. Tamil Nadu has seen the installation of wind turbines since the 1990s, and today it has the second largest installed wind energy capacity with 10,603.5 MW, according to data available with the Ministry of New and Renewable Energy (MNRE). Of the 20,000 wind turbines in the State, nearly 10,000 are of small capacities, that is less than one MW.



Powerhouse: Wind turbines along the Kanyakumari-Tirunelveli highway in Tamil Nadu. (PHOTO COURTESY OF NIWE)

old or have less than 2 MW capacity, can be completely replaced with new turbines, which is known as repowering. They can also be refurbished by increasing the height of the turbine, changing the blades, installing a higher capacity gear box, etc., to improve the energy generated. These can be done for standalone wind mills, or a group of wind mills owned by multiple generators. When wind energy generators take up safety measures in the old turbines and extend its life, it's called life extension.

The MNRE first came out with a "Policy for Repowering of the Wind Power Projects" in 2016 and based on consultations with stakeholders, released the "National Repowering & Life Extension Policy for Wind Power Projects - 2024". The NIWE estimates the

wind turbines of less than 2 MW capacity are taken into consideration.

What does repowering and refurbishing entail?

Wind energy generators say that when turbines were installed in the 1980s, potential wind sites were mapped and the mandatory gap required between two wind mills were determined based on the technology available then. All the turbines were in the sub one MW category. Over the years, the wind mill manufacturing sector has matured and technology has evolved. Habitations have come up between wind sites, posing new challenges, and wind energy evacuation and transmission infrastructure close to the wind sites needs to be strengthened to

point out that a 2 MW wind turbine is usually 120 metres high and requires 3.5 acres of land. It can generate upto 65 lakh units of power. A 2.5 MW turbine, which is available in the market now, is 140 metres high and can generate 80 lakh units. It requires five acres. So, when an existing wind turbine is to be repowered by replacing it with a high capacity turbine, more land is required.

Further, at Arakaimoili in Tamil Nadu, a high potential wind site, the 48 MW installed capacity now is made up of mostly 250 KW turbines and the potential at the site is for 100 MW. A project to have three sub-stations of 230 KVA each at 2800 crore was sanctioned six years ago and is yet to take off for multiple reasons. In Tamil Nadu, wind mills installed after 2008 do not have banking facility. When a turbine is repowered, it will be treated as a new installation and the generator cannot bank the energy generated. This impacts the financial viability of the project, say the sources.

What is the way forward?

Among the wind energy generating States, the repowering potential is the highest in Tamil Nadu with over 7,000 MW of installed capacity that can be replaced or refurbished. If the small turbines are repowered or refurbished, the contribution of wind energy to total energy consumed during the peak wind seasons can go up easily by 25%, says wind energy consultant A.D. Thirunoorthy.

While there have been generators which have replaced turbines in the past without government support, the policy itself does not promote wind energy generation, claim the generators. It should look at challenges on the field and consider how the wind energy potential can be harnessed fully by the generators. "No industry or energy generator will want to invest in a project that is not financially viable. The repowering policy is not commercially beneficial," said a

THE GIST

▼ The National Institute of Wind Energy (NIWE) says that India has wind power potential for 1,163.86 GW at 150 metres above ground level, and is ranked fourth in the world for installed wind energy capacity.

▼ Among the wind energy generating States, the repowering potential is the highest in Tamil Nadu with over 7,000 MW of installed capacity that can be replaced or refurbished.

▼ Wind turbines that are more than 15 years old or have less than 2 MW capacity, can be completely replaced with new turbines, which is known as repowering.

- Tamil Nadu, a pioneer in wind mill installations, has turbines over 30 years old.
- In August 2024, the state released the "Tamil Nadu Repowering, Refurbishment and Life Extension Policy for Wind Power Projects - 2024".
- Wind energy generators opposed the policy, approached the Madras High Court, and got a stay, demanding a policy that promotes wind energy generation.
- **Wind Energy Capacity and Potential in India:** India has wind power potential of 1,163.86 GW at 150 meters above ground, ranking fourth globally. Only about 6.5% of this potential is utilized nationally and 15% in Tamil Nadu. Leading states: Gujarat, Tamil Nadu, Karnataka, Maharashtra, Rajasthan, and Andhra Pradesh, together contributing 93.37% of the country's wind power capacity. Tamil Nadu has the second largest installed capacity with 10,603.5 MW, but many turbines are less than 1 MW.

HEADLINES OF THE DAY



The Hindu-Geography(GSI)-Page 11



Purple skies: Lightning strikes above the city skyline in Mumbai on October 14. ENMANJAL YOGINI

How do lightning rods prevent lightning strikes from reaching people?

While a lightning strike occurs between a cloud and an object on or near the ground, it takes the path of least resistance, which means it moves towards the closest object with the highest electric potential

- Climate change is making lightning strikes around the world more common and deadlier. Every year, around 24,000 people around the world are killed by such strikes; in India, lightning strikes killed 2,887 people in 2022. There have been petitions to declare this phenomenon a natural disaster in India so that its survivors can access institutional mechanisms for protection. Against this backdrop, lightning rods are important for their ability to keep lightning away from people.
- Lightning is an electrical discharge between charged particles in a cloud and the ground. Objects can be classified as electrical conductors or insulators, but this depends on the electrical energy acting on the object. For example, the air around us is an electrical insulator: it doesn't transport electric charges. But if it is subjected to a high voltage of around 3 million V/m, its insulating properties break down and it can transport a current. While a lightning strike occurs between a cloud and an object on or near the ground, it takes the path of least resistance, which means it moves towards the closest object with the highest electric potential.

The Hindu-Defense(GSIII)-Page 12

France evaluating India's Pinaka rocket system for its use

Dinakar Peri
NEW DELHI

France is considering India's Pinaka multi-barrel rocket launch (MBRL) system for its requirements and is soon going to carry out a detailed evaluation of the system, according to a senior French Army officer.

"Indians presented to my Chief of Army Staff last February the Pinaka. It is very interesting for us. We are organising evaluation of three or four best providers of this system, India being among them," Brigadier-General Stenhane Ri-



Parading Pinaka: The Pinaka rocket system during the 75th Republic Day parade in Delhi. SHIV KUMAR PUSHPAKAR

France has announced plans to replace its M270 Lance-Roquettes Unitaire (LRU) rocket systems in service. The French Army has 13 upgraded M270 systems and since the beginning of the war in Ukraine, six systems have been transferred to Ukraine.

Armenia first customer
Armenia became the first export customer for the indigenously developed Pinaka with interest expressed by several countries for the system.

The Indian Army has four Pinaka regiments in service and six more are on

in the final stages which would increase the range to over 75 km. Eventually, the plan is to increase the range to 120 km and then to 300 km.

While noting that land cooperation is not as visible as the Air Force and Navy cooperation, the visiting officer said what they are looking for is not visibility but for partnership. "Lot of things are converging to make us strengthen our ties," Brigadier-General Richou stated.

The seventh edition of the bilateral Army exercise Shakti was held in Meghalaya in May. He said the

education, information and training; equipment; and understanding between the senior leadership.

On the global geopolitical situation and the discussions over that, he said they spanned various issues and with a reference to the United Nations Interim Force In Lebanon (UNIFIL) said, "France is one of the most important countries, and I have colleagues from the Army, we are standing between Lebanon, Hezbollah and Israel and we stay there... the international law has to be respected... We are near

- France is evaluating India's Pinaka multi-barrel rocket launcher (MBRL) system for its own defense needs. Armenia became the first export customer for the Pinaka system.
- The Indian Army operates four Pinaka regiments and has six more on order.
- The Pinaka Mk1 has a range of 38 km, and extended range versions (up to 75 km) are nearing trials. Future plans aim to extend the range to 120 km, and eventually 300 km.
- India-France Geopolitical and Defense Alignment: The bilateral Army exercise Shakti was held in Meghalaya, with the next edition focusing on high-altitude warfare.

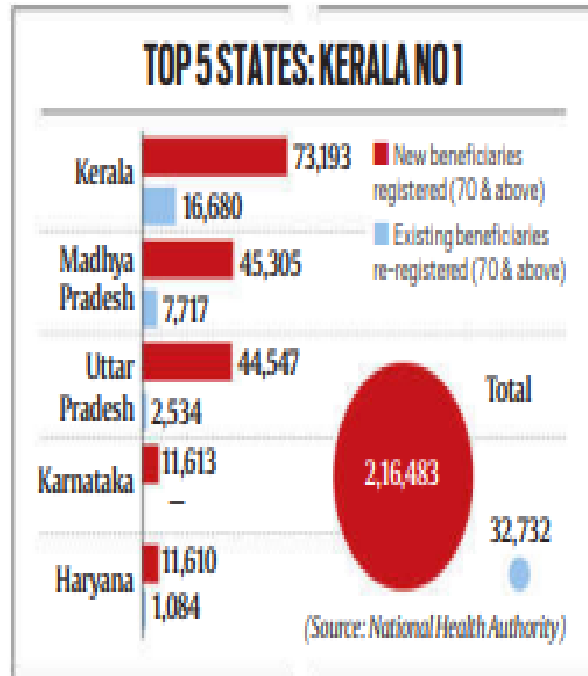
Indian Express – Health(GSII)-Page 1

Ayushman expanded: Over 2 lakh elderly join in week after rollout

ANONNA DUTT
NEW DELHI, NOVEMBER 10

OVER 2.16 lakh new beneficiaries above the age of 70 received cards under the Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) within the first week of Prime Minister Narendra Modi rolling out the expanded version of the flagship health insurance scheme to cover all elderly, according to the latest official data.

The data also shows that
CONTINUED ON PAGE 2



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- PM-JAY is the world's largest health insurance/ assurance scheme fully financed by the government.
- It provides a cover of Rs. 5 lakhs per family per year for secondary and tertiary care hospitalization across public and private empanelled hospitals in India.
- Over 12 crore poor and vulnerable entitled families (approximately 55 crore beneficiaries) are eligible for these benefits.
- PM-JAY provides cashless access to health care services for the beneficiary at the point of service, that is, the hospital.
- PM-JAY envisions to help mitigate catastrophic expenditure on medical treatment which pushes nearly 6 crore Indians into poverty each year.

Indian Express – Health(GSII)-Page 11

WHY INDIA HAS LAUNCHED PROJECT TO MONITOR ANIMAL HEALTH

ARIKISHAN SHARMA
NEW DELHI, NOVEMBER 10

UNION MINISTER of Fisheries, Animal Husbandry and Dairying Rajiv Ranjan Singh launched a Pandemic Fund project titled 'Animal Health Security Strengthening in India for Pandemic Preparedness and Response' in New Delhi last week.

What is the project?

The project aims to enhance the country's capacity to "prevent, detect, and respond to animal health threats."

It was approved by the Pandemic Fund, which was created by G20 countries in 2022 during Indonesia's presidency, in response to the Covid-19 pandemic. The basic purpose of the fund is to assist low- and middle-income countries strengthen their capacities to identify, report and contain future pandemics.

In its first investment round, the fund mobilised \$2 billion.

For the money, the Pandemic Fund received 350 expression of interest (EoI) and 180 full proposals in the first call. But its governing board approved only 9 grants in 37 countries – including the project from India, which is set to receive funding of \$25 million.

The project will be executed with the help of three implementing agencies – the Asian Development Bank (ADB), the World Bank, and the Food and Agriculture Organisation (FAO). It is expected to be completed by August 2026.

"The impact of the project would be to reduce the risk that a pathogen will emerge from animals (domesticated and wildlife) and be transmitted to the human population, endangering the health, nutritional security, and livelihoods of vulnerable populations."

The WHO had declared six public health emergencies of international concern in the past few decades. Out of these, five were zoonotic diseases, which originated from animals and later infected humans. This includes Covid-19, which affected the entire world in 2020-21.

About two-thirds of infectious diseases affecting humans originate from animals. Therefore, it is necessary to focus on animal health security as part of future pandemic preparedness. India has a population of some 536 million livestock animals and 853 million poultry birds, which require significant attention to prevent and manage the outbreak of infectious diseases.

What are the expected outcomes of the project?

According to the Ministry, following are the five key expected outcomes of the project:

- Augmentation of laboratory systems and vaccine manufacturing facilities;
- Strengthening of surveillance and early warning systems;
- Development of human resources capacity and competency;
- Strengthening of data systems, including risk analysis and risk management.

The central government recently launched a project to better monitor animal health for prevention of future pandemics.

The 'Animal Health Security Strengthening in India for Pandemic Preparedness and Response' initiative was launched by the Union Minister of Fisheries, Animal Husbandry and Dairying, Rajiv Ranjan Singh alias Lalan Singh, in New Delhi on October 25.

What is the project?

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Indian Express –Economy/Environment(GSIII)-Page 11

Elephant deaths in Bandhavgarh: when a fungus attack turns millets into poison

ANAND MOHAN J
BHO PAL, NOVEMBER 10

TEN WILD elephants died in Madhya Pradesh's Bandhavgarh Tiger Reserve recently after consuming a "large quantity" of kodo millet plants, which had been infected with a fungus, a toxicology report released last week by ICAR-Indian Veterinary Research Institute (IVRI), Bareilly, said.

Traces of cyclopiazonic acid – a toxin produced by fungi known to affect kodo millets – were found in the samples taken from the dead tuskers, according to the report.

What is kodo millet?

Kodo millet (*Paspalum scrobiculatum*) is a grain believed to have originated in India. It is cultivated in states such as Madhya Pradesh, Gujarat, Karnataka, Chhattisgarh, and parts of Tamil Nadu. It is also grown in other countries, including Pakistan, the Philippines, Indonesia, Vietnam, Thailand, and West Africa.

Kodo millet crops are best suited for tropical and subtropical regions. They are grown on poor soil and widely distributed in arid and semi-arid regions.

In India, kodo millet is a staple food for many tribal and economically weaker communities. It is one of the "hardest crops, drought tolerant with high yield potential and excellent storage properties," according to researchers.

Experts suggest that it is rich in vitamins and minerals. Kodo millet is also gluten-free, easy to digest, and a rich source of antioxidants, experts said.

How does kodo millet become



A calf mourns an elephant's death in Madhya Pradesh. Express/Special arrangement

ing and harvesting" stages, the study said.

Cyclopiazonic acid is one of the major mycotoxins – toxic substances produced by certain fungi or moulds that can lead to disease and death in humans and animals – associated with kodo millet. Upon the consumption of the infected grain, the mycotoxin can cause kodo poisoning, which was first recognised in the mid-1980s, the study said.

How does toxic kodo millet affect animals?

Kodo poisoning mainly affects the nervous and cardiovascular systems and the symptoms include vomiting, giddiness, unconsciousness, small and rapid pulse, cold extremities, and tremors.

according to Wildlife Department officials

There have been no reported deaths of human beings due to kodo poisoning as patients can recover once their stomach is flushed by giving them stimulants, hot tea or milk. Previous cases have shown that patients can take up to three days to recover

How can kodo millet be checked for fungal infection?

Dr P K Chandan, the Additional Deputy Director at Kanan Pindari Zoological Garden in Chhattisgarh's Bilaspur, told *The Indian Express*, "It is difficult to spot the toxicity with the naked eye. The plant will look fresh but inside, it may have become poisonous due to the presence of high moisture and other factors. One needs to do a chemical trace analysis to investigate if the millets are poisonous"

To determine levels of mycotoxins in kodo millet crops, different types of chromatographic methods – separation of components of a mixture – are used. However, these techniques are time-consuming.

As a result, on-site, rapid, and cost-effective detection methods such as lateral flow assays – paper-based tests that ascertain a quantity of molecules in complex fluid mixtures – and biosensors have become popular.

How can infections be prevented in kodo millets?

Researchers advocate the use of biocontrol agents – the use of an organism to fight against another organism – to prevent kodo millet crops from getting infected by fungi. Many microbes can minimise fungal development and mycotoxin secretion.

The growth of "competitive, non-toxic strains of the same fungi" as a "biocontrol"

and complete loss of mobility" as well.

What are the earliest known cases of kodo poisoning?

In 1922, the Indian Medical Gazette reported four cases of acute kodo poisoning. The details of the cases were written by Anand Swarup, an assistant surgeon at Shahjahanpur in Uttar Pradesh.

The patients included a 50-year-old woman, a 22-year-old man, and two boys aged 12 and 9 who were all brought to the hospital unconscious. They were revived after their stomach was flushed. The patients told the police that they began to vomit and shiver after they consumed bread made from "kodon" (kodo millet) flour.

Ten wild elephants from a herd of 13 died over the last three days in Madhya Pradesh's Bandhavgarh Tiger Reserve. In a statement, Principal Chief Conservator of Forests (Wildlife) Vijay N Ambade said the deaths could have been caused by "mycotoxins associated with kodo millet". Here is a look at what happened.

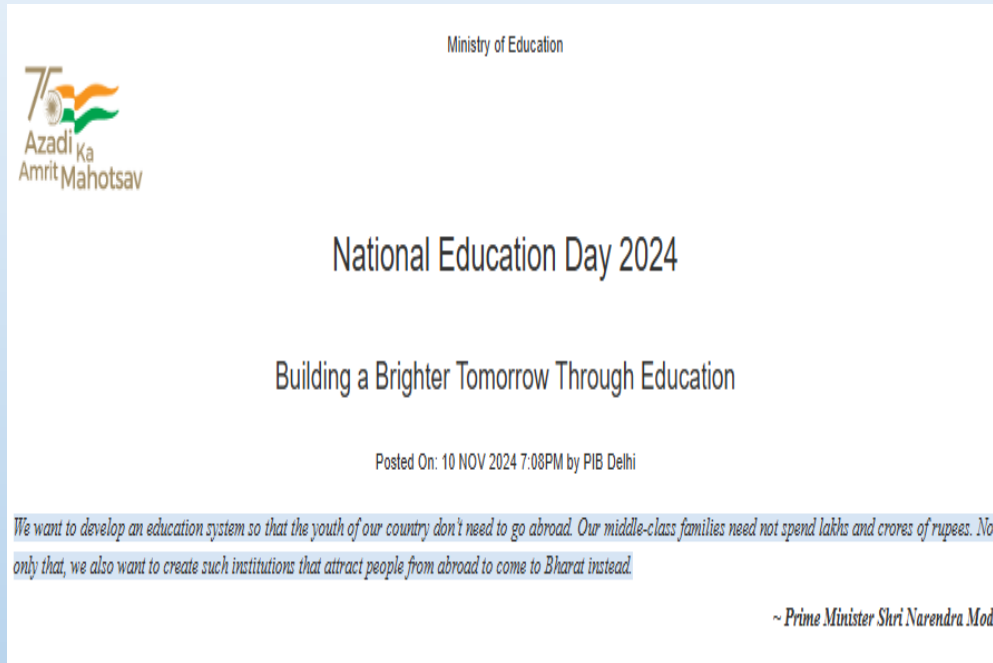
First, what is kodo millet?

Kodo millet (*Paspalum scrobiculatum*) is also known as Kodra and Varagu in India. The crop is grown in India, Pakistan, the Philippines, Indonesia, Vietnam, Thailand, and West Africa.

The millet is believed to have originated in India and Madhya Pradesh is one of the largest producers of the crop, according to a 2020 research paper, 'Nutritional, Functional Role of Kodo Millet and its Processing: A review'. The tropical and subtropical regions are best suited for Kodo millet cultivation and it is grown on poor soils, and widely distributed in arid and semi-arid regions. Apart from MP, the millet is cultivated in Gujarat, Karnataka, Chhattisgarh, and parts of Tamil Nadu.

HEADLINES OF THE DAY

PIB: Governance(GSII)



- National Education Day is celebrated on November 11 every year in honor of **Maulana Abul Kalam Azad**, the first Education Minister of independent India and a prominent educationist.
- This day highlights the importance of education in shaping India's future. With 65% of the nation's population under the age of 35, it is crucial to provide them with opportunities for quality education and skills development.
- The Government of India is dedicated to building strong education infrastructure that fosters the holistic development of students and empowers the youth to drive the nation towards progress.

HEADLINES OF THE DAY



PIB: Economy(GSIII)



Research Unit
Press Information Bureau
Government of India

The Decline in Out-of-Pocket Expenditure (OOPE) in Health in India

November 10, 2024

The National Health Accounts (NHA) data for 2021-22 reveals a positive trend, OOPE on healthcare is decreasing, largely due to increased government investment and an improved public healthcare framework. As per NHA data, between 2014-15 and 2021-22, government health expenditure (GHE) as a percentage of GDP rose from 1.13% to 1.84%. Additionally, GHE's share of overall government spending grew from 3.94% to 6.12%, reflecting a robust commitment to public health. During the same period, per capita health spending tripled from ₹1,108 to ₹3,169.

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- Out-of-Pocket Expenditure (OOPE) in healthcare refers to the money people pay directly from their own pockets for medical services, such as doctor visits, medicines, and hospital stays. In India, high OOPE has long been a significant challenge, especially for low-income families, as it forces many to spend a large portion of their earnings or savings on healthcare

HEADLINES OF THE DAY

Air: IR(GSII)

Kartarpur Sahib Corridor Between India And Pakistan Completes 5 Years



- The Kartarpur Sahib Corridor between India and Pakistan has completed five years today. The corridor leads to the Gurdwara Sri Kartarpur Sahib in the Narowal district of Pakistan, where the First Sikh Guru, Guru Nanak Dev Ji, spent the last 18 years of his life. The corridor was inaugurated by Prime Minister Narendra Modi on November 9, 2019, at Dera Baba Nanak in Gurdaspur, on the occasion of the 550th Prakash Purb of Sri Guru Nanak Dev Ji. Lakhs of devotees have visited this historical Gurdwara over the past five years. Sources from the Land Ports Authority of India have told Akashvani News that, during these five years, 3 lakh 42 thousand devotees from India have visited the Gurdwara. Today, 417 people have gone on the pilgrimage, the highest number of devotees this year so far. India and Pakistan renewed their agreement in October this year to operate the Kartarpur Corridor and facilitate pilgrims from India to visit the Kartarpur Sahib Gurdwara for another five years.