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MINISTRY OF
SCIENCE AND
TECHNOLOGY



MK Yadav Sir

Table of Contents

- 1 Tungabhadra Dam
- 2 National Institutional Ranking Framework
- 3 World Elephant Day 2024
- 4 *Smithophis mizoramensis*
- 5 Grain ATM
- 6 Joint Parliamentary Committee
- 7 The Jews of Kerala
- 8 Harappan Drainage Systems
- 9 Biofortified Crops
- 10 Omkareshwar Floating Solar Project

How Tungabhadra dam gate was swept away, why farmers are fearful

AKRAM
BENGALURU, AUGUST 12

A FLOOD alert has been sounded downstream of the Tungabhadra dam in Karnataka's Koppal district after one of the 33 crest gates of the massive stone masonry dam across the Tungabhadra river was washed away late on Saturday evening.

Repairs can be carried out only after two-thirds of the dam is emptied, the Tungabhadra Board, which manages the project, said. Karnataka Deputy Chief Minister D K Shivakumar, who is also the Water Resources Minister, visited the dam on Sunday.

**EXPLAINED
INFRA**

How the gate broke

The dam has 33 vertical 'lift' type gates that move on rollers embedded in the masonry. The gates are operated from an overhead bridge.

"On 10/08/2024, 10 spillway gates were operated, i.e. from gate No. 12 to 21 to height of 15 feet and the discharge through the spillway gate was 22,890 Cusecs," the Tungabhadra Board said in a statement on Sunday. Spillways or overflow channels are structures used for the controlled release of water from a reservoir.

"During the said incident, i.e., at 10.50 pm, the spillway gate No. 19 was washed away from the groove of spillway," the statement said.

The crest (or spillway) gate failed after a link in the chain used to operate it broke. The force of the water in the dam swept the 60-foot-by-20-foot gate, weighing around 20 tonnes, some 500 ft away, Punusotham, president of the Tungabhadra Farmers' Association, said.

Local sources said welding was carried out on the chain links of the spillway gates to strengthen them 3-4 years ago. Punusotham said that considering the chain links were old, Karnataka had suggested that the links be replaced with steel cables to operate the crest gates. "Such a system is in place in the Alamatti dam in Bagalkot district," he said.

Water in reservoir

On August 10, the reservoir level was at its maximum 1633 ft, and the dam was full to its capacity, about 105.5 thousand million cubic (TMC) ft, according to Tungabhadra Board data. The inflow was 40,925 cusecs (cubic ft per second), and outflow was 28,133 cusecs.

According to the Tungabhadra Board statement issued by its Secretary O R K Reddy, following early inflows into the dam, water had



The 33-gate dam on the Tungabhadra in Karnataka was completed in 1953. /1



Karnataka, Andhra Pradesh, and Telangana.

Repairs and fears

The crest gate that has been swept away is located in the middle of the dam, and repairs can begin only after 60-65% of the water in the reservoir has been discharged.

The repair will be carried out as soon as possible with consultation with experts, the Tungabhadra Board has said. "Action is being taken to fabricate new stop lock gate. The work will be completed within a week," the Board said.

Cultivators with fields upstream are afraid that draining of the reservoir to carry out repairs will impact irrigation; those downstream have the same fear, apart from apprehensions of flooding due to increased outflows from the dam. The Karnataka State Natural Disaster Monitoring Centre has issued a flood alert to downstream areas.

Heavy rainfall could make the situation worse; however, no heavy rain is forecast in the region in the coming days.

Last year, due to a severe drought in the state, farmers either did not get the yield they hoped for, or avoided sowing altogether. Shivakumar said a projected inflow of around 50-60 TMC ft in September and October would help farmers in the region cultivate at least one crop this year.

as well as drinking water to Karnataka and Andhra Pradesh. The dam was first conceived of in 1860 to mitigate the impact of recurrent famine in Sangamaleshwaram in Andhra Pradesh. The river, which forms part of the boundary between Karnataka and Andhra Pradesh, has a total catchment area of almost 70,000 sq km.

The Tungabhadra reservoir sprawls over an area of 378 sq km primarily in Karnataka's Vijayanagar district. It is one of the major reservoirs in South India that supplies water for irrigation and industrial use,

River and the dam

The Tungabhadra, which is formed at

the confluence near Shimoga of two streams, Tunga and Bhadra, that rise in the Western Ghats, flows into the Krishna at Sangamaleshwaram in Andhra Pradesh.

On Monday, the water level was almost 1631 ft, and the reservoir capacity was 97.75 TMC ft, Board data show. Accumulated silt over the years now fills around 30% of the original capacity of the dam. The state government has proposed to build a balancing reservoir to address this problem.

TUNGABHADRA DAM

(Syllabus: GS Paper 1 – Geography)

Context: A flood alert has been issued downstream of the Tungabhadra dam in Karnataka's Koppal district after one of the 33 crest gates of the dam was washed away.

Tungabhadra Dam

- **Location:** The dam is built across the Tungabhadra River in Hosapete, Ballari district, Karnataka.
- **Alternate Name:** Tungabhadra Dam is also known as Pampa Sagar.
- **History:** The Tungabhadra Dam was first conceived in 1860 to address recurrent famine in the Rayalaseema region.
- **Height:** The dam stands at a height of about 49.5 meters.
- **Coverage:** The Tungabhadra reservoir covers an area of 378 square kilometers, primarily in Karnataka's Vijayanagar district.
- **Importance:** The reservoir is one of the major sources of water for irrigation, industrial use, and drinking water in Karnataka and Andhra Pradesh.
- **Tungabhadra Board:** It was established by a presidential order in 1953 to manage the reservoir.
 - **Composition:** The Board includes a chairman appointed by the Union government and four members representing the Union government, Karnataka, Andhra Pradesh, and Telangana.

Tungabhadra River

- **About:** It is formed at the confluence of two streams, Tunga and Bhadra, near Shimoga in Karnataka.
- **Source and Flow:** Both streams rise in the Western Ghats and merge to form the Tungabhadra, which flows into the Krishna River at Sangamaleshwaram in Andhra Pradesh.
- **Boundary River:** The Tungabhadra forms part of the boundary between the states of Karnataka and Andhra Pradesh.

IIT Madras retains top spot in NIRF ranking for sixth consecutive year

The Hindu Bureau
NEW DELHI

The Indian Institute of Technology, Madras is the best educational institution in the country for the sixth time since 2019, shows the overall ranking based on parameters identified and defined in the National Institutional Ranking Framework (NIRF).

In the 2024 rankings, released by Education Minister Dharmendra Pradhan on Monday, IIT Madras also retained the first position in engineering for the ninth year since 2016. The Indian Institute of Science, Bengaluru is the top institution under both the universities and research categories, retaining both positions since 2016 and 2021, respectively.

The ranks were given in 16 categories this year,

Top institutions in India

The table shows the top 10 overall institutions and Central and State universities, according to India Rankings, 2024. IIT-Madras secured the top spot in overall category

Ranks	Overall	Top universities	State universities
1	IIT-Madras	IISc, Bengaluru	Anna University
2	IISc, Bengaluru	Jawaharlal Nehru University	Jadavpur University
3	IIT-Bombay	Jamia Millia Islamia	Savitribai Phule University
4	IIT-Delhi	MAHE, Manipal	Calcutta University
5	IIT-Kanpur	Banaras Hindu University	Punjab University
6	IIT-Kharagpur	University of Delhi	Osmania University
7	AIIMS, Delhi	Amrita Vishwa Vidyapeetham	Andhra University
8	IIT-Roorkee	Aligarh Muslim University	Bharathiar University
9	IIT-Guwahati	Jadavpur University	Kerala University
10	JNU	Vellore Institute of Technology	CUSAT



three more than last year. Open universities, skill universities, and State public universities are the three new categories. Mr. Pradhan said the Ministry is considering "sustainability" as a criterion, probably from next year.

While the Indian Institute of Management, Ahmedabad continued to be

the top management institute for the fifth consecutive year since 2020, the All India Institute of Medical Sciences (AIIMS), New Delhi is the best place to study medical sciences as it retained the top spot for the seventh consecutive year.

IIT Bombay is the best 'innovational institution' followed by IIT Madras and

IIT Delhi. IIT Roorkee retained its first position in architecture and planning for the fourth consecutive year. The National Law School of India University, Bengaluru was named the best law school for the seventh year in a row.

DU IN SIXTH PLACE
» PAGE 2

Ranks	Overall	Top universities	State universities
1	IIT-Madras	IISc, Bengaluru	Anna University
2	IISc, Bengaluru	Jawaharlal Nehru University	Jadavpur University
3	IIT-Bombay	Jamia Millia Islamia	Savitribai Phule University
4	IIT-Delhi	MAHE, Manipal	Calcutta University
5	IIT-Kanpur	Banaras Hindu University	Punjab University
6	IIT-Kharagpur	University of Delhi	Osmania University
7	AIIMS, Delhi	Amrita Vishwa Vidyapeetham	Andhra University
8	IIT-Roorkee	Aligarh Muslim University	Bharathiar University
9	IIT-Guwahati	Jadavpur University	Kerala University
10	JNU	Vellore Institute of Technology	CUSAT

Context: The Indian Institute of Technology, Madras has been ranked as the best educational institution in India for the sixth consecutive year since 2019, according to the National Institutional Ranking Framework (NIRF).

National Institutional Ranking Framework (NIRF)

- **About:** This framework outlines a methodology to rank institutions across the country
- **Launched in:** 2015 by the **Ministry of Education.**
- **Parameters used for ranking:** Teaching, Learning and Resources," "Research and Professional Practices," "Graduation Outcomes," "Outreach and Inclusivity," and "Perception".
- **First edition:** 2016.

India Rankings of HEIs in India 2024:

- **Leading in Universities and Research:** The Indian Institute of Science, Bengaluru, ranked as the top institution under both the universities and research categories.
 - It has retained the top spot in universities since 2016 and in research since 2021.
- **NIRF introduced three New Categories:** State Public Universities, Skill Universities, and Open Universities. Anna University, Chennai, topped the State Public Universities category, while Indira Gandhi National Open University (IGNOU) led the Open Universities ranking.
- **In category-specific rankings:** IISc Bengaluru claimed the top spot among universities, followed by Jawaharlal Nehru University and Jamia Millia Islamia.
- **Topped medical Institution Category:** All India Institute of Medical Sciences (AIIMS).
- **Top in Management:** The Indian Institute of Management, Ahmedabad.
- **Best 'innovational institution:** IIT Bombay followed by IIT Madras and IIT Delhi.

World Elephant Day 2024: Know history, significance, theme and more

Context: Every Year, World Elephant Day is observed on August 12 to raise awareness about the challenges in elephant conservation and their protection worldwide.

World Elephant Day 2024

- **Establishment:** Patricia Sims of Canada and the Elephant Reintroduction Foundation of Thailand, a project of HM Queen Sirikit of Thailand, collaborated to create World Elephant Day on August 12, 2012.
- **Patricia Sims' Role:** Since its inception, Patricia Sims has been responsible for overseeing World Elephant Day activities and initiatives.
- **Partnerships for Conservation:** The project has joined forces with over 100 organizations dedicated to elephant conservation, enhancing global awareness and support.
- **Global Response:** World Elephant Day has mobilized millions worldwide, showcasing their concern for elephant welfare and willingness to contribute to their protection.
- **Theme 2024:** World Elephant Day 2024 Day is “Personifying prehistoric beauty, theological relevance, and environmental importance.”

Different Types of Elephants

- **Mainly classified into two main species:** Asian and African elephants.

Asian Elephant: Conservation in India

- **Population:** Around 26,000
- **Conservation status – IUCN:** Endangered, **Wildlife (Protection) Act, 1972:** Schedule I, **CITES:** Appendix I, **CMS:** Appendix I.
- **Elephant declared as the national heritage animal** by GoI in 2010.
- **Project Elephant:** Launched in 1992 as centrally sponsored scheme.
 - **Objectives:** To protect elephants, their habitat & corridors,
 - To address issues of man-animal conflict,
 - Welfare of captive elephants.
- **African Forest Elephant:** Critically Endangered
- **African Savanna Elephant:** Endangered

New snake species discovered in Mizoram named after the state

Smithophis mizoramensis

- **About:** Smithophis mizoramensis is a new snake species discovered in Mizoram.
- **Naming After Discovery:** The species is named Smithophis mizoramensis after its place of discovery.
- **Mizo Name Given:** The snake is also known by its Mizo name “Tuithiangrul,” meaning “Mizo Brook Snake.”
- **Habitat:** Smithophis mizoramensis inhabits both lowland and highland areas of Mizoram, particularly near rivers and their surroundings.
- **Species Classification:**
 - **Global Count:** The discovery raises the total number of Smithophis species worldwide to five.
 - **Previous Records:** Smithophis atemporalis and Smithophis bicolor are two other species from this genus previously recorded in Mizoram.
- **Research and Characteristics**
 - **Extended Study:** The new species has been under study for 15 years due to its resemblance to related species.
 - **Genetic Distinction:** Genetic analysis shows a 10-14% DNA difference from its nearest relatives.
 - **Unique Features:** The snake exhibits distinct colouration and scale patterns.



Context: Scientists from Mizoram University and the Max Planck Institute have discovered a new snake species, Smithophis mizoramensis, in the northeastern Indian state of Mizoram.

Withdraw grains, not cash: Odisha launches India's first 24/7 rice ATM

Context: Recently, India's first round-the-clock grain ATM was opened at Mancheswar in Bhubaneswar, Odisha.

Grain ATM

- **About:** It is referred to as the Annapurthi Grain ATM, designed and developed by the World Food Programme India.
- **Objective:** to enhance nutritional security in the state by providing 24x7 access to rice and wheat.
- The ATM is designed to address issues in the distribution of food grains through the Public Distribution System.
- **Process:** The process to withdraw grains from the ATM is straightforward. Beneficiaries need to input their Aadhar or Ration card number and undergo biometric authentication.
 - Once authenticated, the machine dispenses the entitled grain within five minutes.

Key Features of the New Food ATM

- **High Capacity and Accuracy:** The World Food Programme in India highlighted that the ATM could dispense up to 50 kilograms of grains with an error rate of just 0.01%.
- **Energy Efficiency:** It operates on just 0.6 Watts per hour and can be connected to solar panels for automatic refilling.
- **Modular Design:** The machine's modular design allows for easy assembly and adaptation to various spaces, ensuring consistent 24x7 access.

SEBI row: BJP rejects calls for JPC probe

It alleges 'wider conspiracy' between Congress, Hindenburg Research; Opposition party threatens nationwide protest if demand is not met

The Hindu Bureau
NEW DELHI

The Bharatiya Janata Party (BJP) and the Congress on Monday continued to spar over Hindenburg Research's allegations against Securities and Exchange Board of India (SEBI) Chairperson Madhabi Puri Buch, with the ruling party rejecting the Opposition demand for a Joint Parliamentary Committee (JPC) probe.

The BJP alleged that the Congress was part of a "wider conspiracy" involving Hindenburg Research and "a tool kit" gang to destabilise the Indian economy, crash the stock market on a Monday and create economic anarchy in the country.

CONTINUED ON
» PAGE 10



Why is the government afraid of a JPC? Doesn't it imply that there is something to hide and be afraid of?
K.C. VENUGOPAL
Congress general secretary (organisation)

Stock markets remain calm

Lalatendu Mishra
MUMBAI

Contrary to fears of a massive fall owing to the publication of the Hindenburg Research report on Saturday, the benchmark stock indices on Monday remained nearly calm and ended range-bound.

However, Adani Group stocks lost an estimated \$13.4 billion in value, as per estimates by Reuters.

The S&P BSE Sensex, which opened weaker, and down 375 points from Friday's close, gradually recovered lost ground during the day and closed with a minor loss of 57 points at 79,649 points, led by public sector stocks. Similarly, the NSE Nifty-50 index closed with a loss of 20.50 points at 24,347.

FULL REPORT
» PAGE 13

Notable Cases of JPC Formation

- Bofors scandal (1987)
- Harshad Mehta Stock market scam (1992)
- Ketan Parekh share market scam (2001)
- Soft drink pesticide issue (2003)
- 2G spectrum case (2011)
- VVIP Chopper scam (2013)
- Land Acquisition (2015)
- NRC (2016)
- Personal Data Protection Bill (2019)

Context: The ruling party and the opposition clashed over Hindenburg Research's allegations against SEBI Chairperson, with the ruling party rejecting the opposition's call for a Joint Parliamentary Committee (JPC) investigation.

Joint Parliamentary Committee

- **Establishment:** The JPC is an ad-hoc Committee set up by Parliament to examine specific subjects or Bills thoroughly.
- **Composition:** Includes members from both Houses of Parliament, representing both ruling and opposition parties, and is chaired by a Lok Sabha member appointed by the Speaker.
- **Determination of Members:** Parliament decides the composition, with no set limit on the number of members.
- **Dissolution:** The committee is dissolved after fulfilling its term or completing its task.
- **Recommendations:** Recommendations are advisory and not mandatory, though they are often accepted if they come from a majority of ruling party members.
- **Evidence Gathering:** The JPC can gather evidence from various sources, including experts, public bodies, and individuals, either on its own initiative or in response to requests.

Powers of the Committee

- Can obtain evidence from experts, public bodies, associations, and individuals, either suo motu or upon request.
- Failure to appear before a JPC in response to summons constitutes contempt of the House.
- Generally not called to give evidence, but the JPC can seek information from ministers with the Speaker's permission.
- Can collect oral and written evidence and call for documents related to its inquiry.

Once thriving, now all but gone: a history of Kerala's Jewish communities

SHAJU PHILIP
THIRUVANANTHAPURAM, AUGUST 12

QUEENIE HALLEGUA, 89, died in Kochi on Sunday. She was the last woman of Kerala's once-vibrant Paradesi Jewish community. Her death left her nephew Keith, 65, as the last Paradesi Jew in Kerala.

The Jews of Kerala

From boasting a population of 20,000-50,000 in the mid-1940s, India's Jewish population today is estimated to comprise 4,000-5,000 members. Almost all belong to the Marathi-speaking Bene Israel community, settled on the Konkan coast for hundreds of years. They are not, however, the oldest Jewish community of India. That honour goes to one of Kerala's two main Jewish communities.

MALABAR JEWS, also known as the Cochin Jews, trace their history to the days of

King Solomon (hypothesised to be in the 10th century BCE, almost 3,000 years ago). Initially they settled in Cranganore (present-day Kodungallur in Thrissur district), which the community itself referred to as Shingly.

The oldest documentary evidence of this community — a set of copper plates given to the local Jewish leader by the Cranganore's Hindu ruler, from circa 1,000 CE — lists various economic and ceremonial privileges that the Jews enjoyed in the region. From the 14th century onward, and especially following the arrival of the Portuguese in the 16th century, Malabar Jews moved further south from Cranganore to Cochin (now Kochi) where the local king rolled out the red carpet for them.

PARADESI JEWS, literally "foreign" Jews, migrated to the Indian subcontinent in the 15th and 16th centuries from the Iberian Peninsula. They fled to India due to persecu-

tion by the Catholic rulers of Spain and Portugal, and settled on the Malabar coast alongside pre-settled Jewish communities, as well as in Madras (now Chennai). The Paradesi Jews of Cochin were active in Kerala's spice trade, and those settled in Madras were involved in the trade of Golconda diamonds and other precious stones.

In Kerala, the Paradesi Jews adopted Malayalam, and many local customs and traditions. But at some point, they stopped marrying those from Kerala's older Jewish community, and began to look down on them. This effectively created two distinct Jewish communities in Kerala. Many accounts, especially by Western writers, refer to the Paradesi as "White Jews" and the Malabar as "Black Jews", although this pejorative characterisation is largely inaccurate.

In Cochin, the Koders were among the

EXPLAINED
CULTURE



Clock tower of the Paradesi synagogue in Mattancherry. Wikimedia Commons

most prominent Paradesi Jewish families. Samuel Koder (1908-94) ran the Cochin Electric Company which operated from the

1940s till the late 1970s, before the Kerala State Electricity Board (KSEB) bought it. He was one of the tallest Jewish leaders in India, and, according to his obituary in *The New York Times*, "an authority on the history of the Jews of Kerala". Samuel's father, also named Samuel (1869-1941), built the famous Koder House, now a boutique hotel in Kochi. Queenie was Samuel Jr's daughter.

A dwindling community

Unlike Jewish communities in Europe or West Asia, the ones in India seldom faced anti-Semitism or persecution. Many like the Koders, rose to high positions as agents of foreign trade, and advisers to Dutch and Hindu rulers. Later, during British rule, Jews in Kerala prospered as merchants and were employed as teachers, clerks, and lawyers in the ever-expanding British bureaucracy.

However, since the 1950s, there has been a steady migration of Kerala Jews to Israel.

According to estimates, there are well over 4,000 'Cochinim' in Israel today. Most belong to the Malabar Jewish community, with a few hundred Paradesi. Only 14 Malabar Jews, and one Paradesi Jew are now left in Kerala.

"Jew Streets" in Mattancherry and Kochi, and formerly Jewish-owned shops and business houses, are among the few remaining relics of Kerala's once-thriving Jewish community. So are the state's seven synagogues, the most prominent among which is the Paradesi Synagogue built in 1568 CE in Mattancherry, among the oldest synagogues in the Commonwealth. Queenie's late husband Samuel Hallegua was its last warden.

There are three other Paradesi synagogues at Paravur, Chendamangalam, and Mala. All of them are protected monuments. Malabar Jews have three synagogues, with only the Kavumbhagam Ennakulam Synagogue still active. This too was taken over by the state government in 2021 for conservation.

Context: The last woman of Kochi's Paradesi Jew community passed away at the age of 89 in the Mattancherry area, marking the end of an era for the historic community.

The Jews of Kerala

- **About:** Kerala's Jewish population, once vibrant with 20,000-50,000 members, has dwindled dramatically. Today, only 4,000-5,000 Jews remain in India, primarily from the Bene Israel community.
- **History:** Various traditions and records suggest different origins for the Cochin Jews, ranging from migrations during King Solomon's era to arrivals after the destruction of the Second Temple and a fourth-century migration from Majorca.
- **Two Main Jews Community in Kerala:**
 - **Malabar Jews:** they also known as Cochin Jews, trace their origins back almost 3,000 years to the time of King Solomon.
 - ✓ They first settled in Cranganore (present-day Kodungallur) and later moved to Cochin due to Portuguese pressure.
 - **Paradesi Jews:** Paradesi Jews, who migrated to India from the Iberian Peninsula in the 15th and 16th centuries, settled in Kerala and Madras, becoming significant players in the spice and precious stones trade.
 - ✓ The Paradesi Jews adopted local customs and Malayalam language but eventually distanced themselves from the older Malabar Jewish community, creating a distinct separation between the two groups.
- **Migration to Israel:** Since the 1950s, Kerala's Jewish community has seen a significant migration to Israel. Today, only 14 Malabar Jews and one Paradesi Jew remain in Kerala, while over 4,000 Cochinim live in Israel.
- **Decline:** The remnants of Kerala's Jewish community include the "Jew Streets" in Mattancherry and Kochi, along with seven synagogues, the most famous being the Paradesi Synagogue, now a historical monument.

Harappan cities had remarkable drainage systems. Delhi can learn a thing or two



Context: The Harappan cities like Dholavira and Mohenjodaro excelled in urban planning with advanced drainage, wastewater management, and rainwater harvesting systems.

Harappan Drainage Systems

- **Urban Centres:** Harappan cities like Rakhigarhi, Mohenjodaro, Harappa, Dholavira, and Lothal were known for their advanced town planning.
- **Drainage System:** The drainage systems in Harappan cities were sophisticated, with drains running along streets and lanes and vertical pipes in houses to manage wastewater.
- **Wastewater Facilities:** Houses had vertical pipes leading to chutes that emptied onto the streets, demonstrating advanced wastewater management.
- **Water Resources:** An extensive network of reservoirs, wells, and canals was developed to meet agricultural and irrigation needs.
- **Rakhigarhi Findings:** Recent excavations at Rakhigarhi revealed covered and open drains with soakage pits at street corners.
 - Similar soakage jars were found in Banawali, indicating consistent drainage practices.
- **Early Evidence:** Mohenjodaro showed advanced water management with over 400 wells and a network of baked-brick drains.
- **Dholavira's Techniques:** Dholavira in Gujarat is noted for its effective rainwater management strategies in an arid environment.

PM releases 109 high yielding, climate resilient and biofortified varieties of crops

Context: Recently, the Prime Minister of India released 109 high yielding, climate resilient and biofortified varieties of crops at India Agricultural Research Institute, New Delhi.

Biofortified Crops

- **Definition:** Biofortified crops are developed through conventional breeding or genetic modification to enhance their nutrient content.
- **Objective:** The aim is to create crops that are naturally rich in essential micronutrients, offering higher levels of vitamins, minerals, and other nutrients.
- **Importance:** These crops play a crucial role in combating malnutrition, targeting vulnerable populations, and improving climate resilience.
- **Some Biofortified Crop Varieties Developed in India:** 87 biofortified cultivars in 16 crops. These include zinc-enriched rice, protein and iron-rich wheat, lysine and tryptophan-enhanced maize, and calcium, iron, and zinc-rich finger millet varieties.
- **India's Biofortification Efforts**
 - **Field Crops:** The released field crops include seeds for cereals, millets, forage crops, oilseeds, pulses, sugarcane, cotton, fiber crops, and other potential crops.
 - **Horticultural Crops:** The horticultural crop releases cover various fruits, vegetables, plantation crops, tuber crops, spices, flowers, and medicinal crops.

Government Initiatives

- **National Food Security Mission (NFSM):** Focuses on promoting high-yielding, nutrient-rich crop varieties and distributing biofortified seeds.
- **Krishi Vigyan Kendras:** KVKs offer training, on-farm trials, and demonstrations to promote the cultivation of biofortified crops.
- **Rashtriya Krishi Vikas Yojana:** Provides financial support to states for agricultural development and biofortified crop initiatives.

North India's largest floating solar project commissioned in MP's Omkareshwar: Minister

Narmada River



Context: Madhya Pradesh has inaugurated the largest floating solar project in central and north India at Omkareshwar, with a capacity of 90 MW.

Omkareshwar Floating Solar Project

Environmental Benefits

- **Carbon Emission Reduction:** The project aims to reduce carbon emissions by 2.3 lakh tons, contributing to India's net-zero emissions goal by 2070.
- **Water Conservation:** It helps in water conservation by reducing water evaporation from the reservoir.

- **Location:** The Omkareshwar Floating Solar Project is situated at Omkareshwar in District Khandwa, Madhya Pradesh.
- **Infrastructure:** It is developed on the backwaters of the Omkareshwar Dam, a gravity dam on the Narmada River.
- **Scale and Impact**
- **Size:** It is the largest floating solar park in India and the largest floating solar project in central and north India.
- **Developed by:** The project is executed by SJVN Green Energy Limited (SGEL), a wholly owned subsidiary of SJVN, which is a joint venture between the Government of India and the Government of Himachal Pradesh.
- **Cost:** The total project cost is Rs. 646 crores.
- **Energy Generation:** The project generates 90 MW of energy and is projected to produce 196.5 million units of electricity in its first year and 4,629.3 million units over 25 years.
- **Tariff:** The project operates on a Build Own and Operate basis for 25 years with a tariff rate of Rs 3.26 per unit.
- **Operational Impact:** Upon commissioning, it will play a significant role in supporting the Government of India's

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