PLUTUS IAS

MONTHLY CURRENT AFFAIRS

FEBURARY-MARCH 2023

for Competitive Exams

The Complete Coverage of All Important Events from Feburary - March 2023

HIGHLIGHTS

- CITES REPORT ON RED SANDERS SMUGGLING IN INDIA
- LAB GROWN DIAMONDS
- KEN BETWA LINK PROJECT
- NISAR (NASA-ISRO SYNTHETIC APERTURE RADAR) MISSION
- SKYGLOW: LIGHT POLLUTION
- AMRITKAAL BUDGET 2023-24

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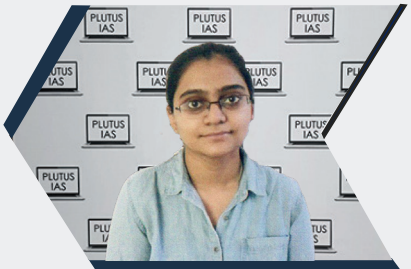
UPSC CSE 2021 ACHIEVERS

DIVYA MISHRA
AIR 28

DIVYANSHU CHOUDHARY
AIR 30



ANJALI SHROTRIYA
AIR 44

NIKHIL MAHAJAN
AIR 80

NITISH RAJORA
AIR 268

SURYABHAN ACHHELAL
AIR 488

NEERAJ KUMAR
AIR 550

MAHIMA MADAN
AIR 612

Many more...

Foreword

Dear Aspirants,

This magazine by **Plutus IAS team** is designed in such a fashion that it holistically covers all the relevant and important topics for civil services exam or IAS exam to make aspirants battle or exam ready. **Plutus IAS Current Affairs Magazine** is a secondary source of information, the newspaper will always remain the first source for preparation of current affairs.

Now, current affairs no longer remain the current, it is contemporary affairs. Questions asked in prelims as well as mains test the conceptual clarity of an aspirant.This magazine prepared with an aim to help you understand the interlinkage of both statics and current and internalize those concepts required to crack this examination.

Plutus IAS team wishes you all the best. Prepare for UPSC Civil Services Examination with calm , composed and serene mind with some patience to crack this examination in one go.

Team
Plutus IAS

Sources:

The Hindu | The Indian Express | The Economic Times | Press Information Bureau (keep checking the Features section for imp articles and our weekly PIB Gist) | PRS (only for recent Bills and articles related to them) | IDSA: Institute for Defense Studies and Analysis (keep checking every 2-3 days for in-depth IR articles) | Yojana and Kurukshetra (no need to read all articles – read selectively) | LokSabha and RajyaSabha Debates | NCERTs All standard reference books.

Plutus IAS Current Affairs Magazine covers a wide range of topics that overlaps with the CORE subjects.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FEBURARY-MARCH 2023

CURRENT AFFAIRS

CONTENT

General Studies -1

(Indian Heritage and Culture, History and Geography of the World and Society)

General Studies -2

(Governance, Constitution, Polity, Social Justice & International Relations)

General Studies -3

(Technology, Economic Development, Biodiversity, Security & Disaster Management)

General Studies -1

(Indian Heritage and Culture, History and Geography of the World and Society)

Child Marriage in India

Child marriage is a persistent and widespread problem in India, where over 47% of women are married before the age of 18. Despite being illegal, the practice remains prevalent in rural and impoverished communities, where families see it as a way to secure their daughter's futures and provide for their financial needs.

Relevance for Prelims: Child Marriage laws in India
Relevance for Mains: Reasons for the persistence of Child marriage in India.

STATUS OF THE CHILD MARRIAGE IN INDIA

Child marriage has numerous harmful consequences for young girls, including an increased risk of domestic violence, limited educational and career opportunities, and higher rates of maternal mortality. In addition, child brides are often taken out of school, making it difficult for them to pursue higher education or gain employment, trapping them in a cycle of poverty.

Child Marriage

REASONS FOR THE CHILD MARRIAGE IN INDIA

- One of the root causes of child marriage in India is poverty. Families in rural or low-income areas often see marriage as a means of alleviating their financial burden, as the groom's family is typically expected to provide a dowry. The bride's family may also see it as a way to secure their daughter's future, especially if they believe she is unlikely to find a suitable husband later in life.
- Another major factor contributing to child marriage in India is a lack of education. Many girls in rural areas do not attend school and those who do often drop out early. This lack of education leaves them vulnerable to exploitation and abuse and makes it difficult for them to understand their rights or resist pressure to marry at a young age.

GOVERNMENT'S INITIATIVES TO TACKLE CHILD MARRIAGE

- The Indian government has taken several steps to address child marriage, including raising the legal age of marriage for girls to 18 and implementing programs to educate communities about the dangers of the practice. However, these efforts have not been enough to eliminate the problem.
- To effectively tackle child marriage, it is essential to address the root causes of the issue, including poverty and lack of education. This can be done through programs that provide financial support to families and incentivize girls to stay in school. Providing girls with access to education and job training can also help them become financially independent and reduce their vulnerability to exploitation.
- In addition, community-based organizations and advocacy groups can play a critical role in raising awareness about the dangers of child marriage and empowering girls to resist pressure to marry young. These organizations can also work to change attitudes and beliefs within communities, and provide support and resources to families to help them resist the practice.

WAY AHEAD

Finally, the Indian government and international organizations can work together to implement stronger laws and enforcement mechanisms to protect girls from child marriage. This includes increasing the penalties for those who violate the law and providing support to girls who have been forced into marriage, including access to legal aid, health services, and educational opportunities.

CONCLUSION

In conclusion, child marriage is a serious problem in India that has long-lasting harmful effects on young girls. To effectively address the issue, it is essential to address its root causes, including poverty and lack of education, and to empower girls to resist pressure to marry young. With the support of the government, community organizations, and advocacy groups, it is possible to end child marriage and provide a brighter future for the young girls of India.

Source:
The Hindu

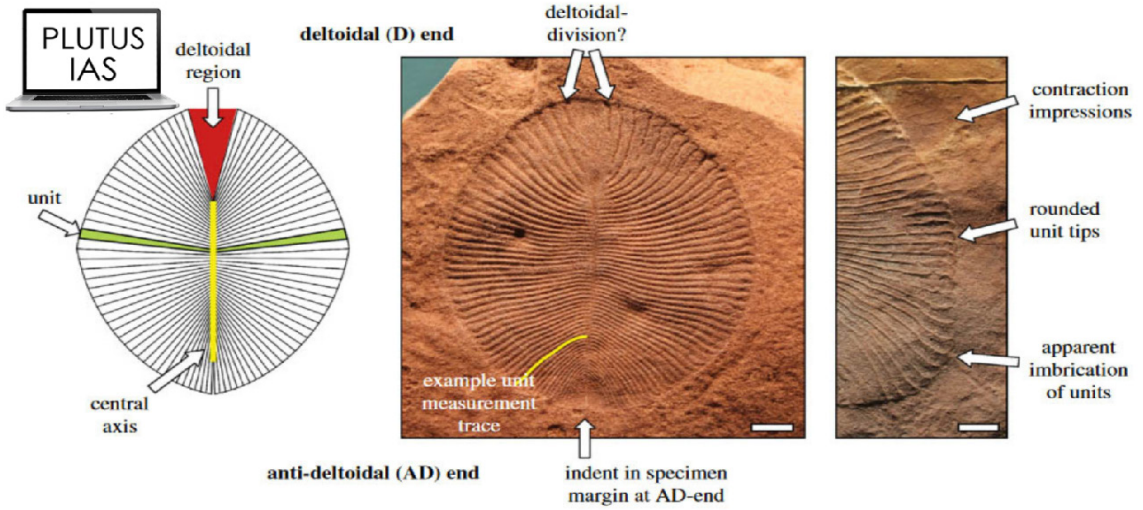
Dickinsonia

This article covers "Daily current events "and the topic is 'Dickinsonia' which is in news, it covers "History" In GS-1, and the following content has relevance for UPSC.

For Prelims: Dickinsonia
For Mains: GS-1, History, Details on Dickinsonia

WHY IN NEWS:

Scientists claimed the startling finding of extinct animal fossils from India's Bhimbetka Rock Shelters in 2021, but it turned out to be a false alarm.



Dickinsonia

ABOUT DICKINSONIA

- A creature called a Dickinsonia existed in a cave at least 538 million years ago.
- The Dickinsonia fossils found in various parts of the world show that they had a flat, somewhat circular, or oval shape.
- From a central column, it features rib-like elements that extend outward.
- Dickinsonia has been discovered in Vendian rocks from north Russia and South Australia.
- Because of its apparent resemblance to one genus of existing polychaetes, Spinther, it is frequently mistaken for an annelid worm.

- The "deltoidal region"—a huge, wedge-shaped segment at the blunt end—and several inflated segments or "units" that are mirrored across the central axis make up the body of the object.

REASON FOR CONFUSION

- Paleobiologists generally agree that the vegetation and fauna of the Ediacaran period, which lasted from 635 to 530 million years ago, "featured early animals and macroscopic eukaryotes living in a maritime habitat." The Maihar sandstone, which makes up the strata of Bhimbetka, is an unusual coastal terrestrial deposit that appears to include fossils.
- Since Dickinsonia is thought to have existed between 555 and 545 million years ago, it is "an iconic member" of the Ediacaran epoch and "an important age marker." The mystery surrounding the age of the Upper Vindhyan rocks would have been resolved as a result, and publishing its finding would have carried "the prestige of a 'first report' from India."
- To be mistaken for a fossil, the beehive needed to have undergone exactly the proper amount of degradation. Any more or less, as has occurred in the two years following the report, and the similarity vanishes. Perhaps one of the reasons others hadn't seen it elsewhere is because of its transient nature.

ADDITIONAL INFORMATION ON DICKINSONIA

Bhimbetka

- On the southernmost edge of the plateau in central India, the Rock Shelters of Bhimbetka are situated in the foothills of the Vindhyan Mountains.
- Paintings are found in caves that are about 30,000 years old.
- The Ratapani Wildlife Sanctuary includes sandstone outcrops.
- The origin of the name of the rock shelters, Bhimbaithaka, the seat of Bhima, one of the Pandava brothers from the Mahabharata, is a fascinating legend in and of itself.
- It has more than 750 rock shelters, more than a hundred of which are painted with images of animals and people in tones of green, red, white, brown, and black.
- The earliest of these depict scenes from the Upper Paleolithic and Mesolithic hunter-gatherer cultures.
- The most heavily decorated caves may have let in more sunshine and were frequently empty, according to the evidence. This further corroborates the widely held view that these paintings were not created with the intention of

beautifying or embellishing human dwellings.

- Archaeologists have been able to determine the historicity of these cave paintings thanks to the fact that many of them overlap, indicating that the rocks were painted on repeatedly and over several historical eras.

Bhimbetka

Early Paintings

- Early Bhimbetka paintings primarily represent wild animals including elephants, gaur, a local species of a wild bull, chital deer, monkeys, wild boars, and stags as well as hunting scenes with people wearing headgear and bows and arrows.
- Also, there are representations of a variety of scenes, such as rituals, women exterminating rodents from tunnels, and men and women hunting for honey and fruits.

bhimbetka paintings

Bhimbetka cave paintings

Later Paintings

- From the Historic era onward, later paintings show processions, battle scenes with swords, shields, daggers, and group rites. Animal figures are conspicuously absent from these paintings and, when they do occur, are excessively painted.

- It has also been stated that the motifs utilized in some of these later paintings indicate the religious influence of Hinduism or Buddhism.
- There are unmistakable images of gods like Ganesha and Shiva, as well as the Mother Goddess and symbols like the Trishul and swastika, in some.

dickinsonia fossil

Bhimbetka paintings

Boar Rocks

- This notable rock shelter, also known as Bhimbetka Shelter III F-19 and Bull Rock, is one of the hundreds of structures that make up the Bhimbetka cave paintings. Its name comes from a picture of a big, boar-like animal.
- The animal in the painting has what appears to be fur on its back, a large head, and horns. It appears to be charging toward two people—a crab and a human—on the left.
- The painting is known for its size—it is over 1.2 meters tall and 0.87 meters wide—and its deep red color, which is thought to have been produced by hematite.

dickinsonia animal

Bhimbetka rock shelters

Source:
The Hindu

General Studies -2

(Governance, Constitution, Polity, Social Justice & International Relations)

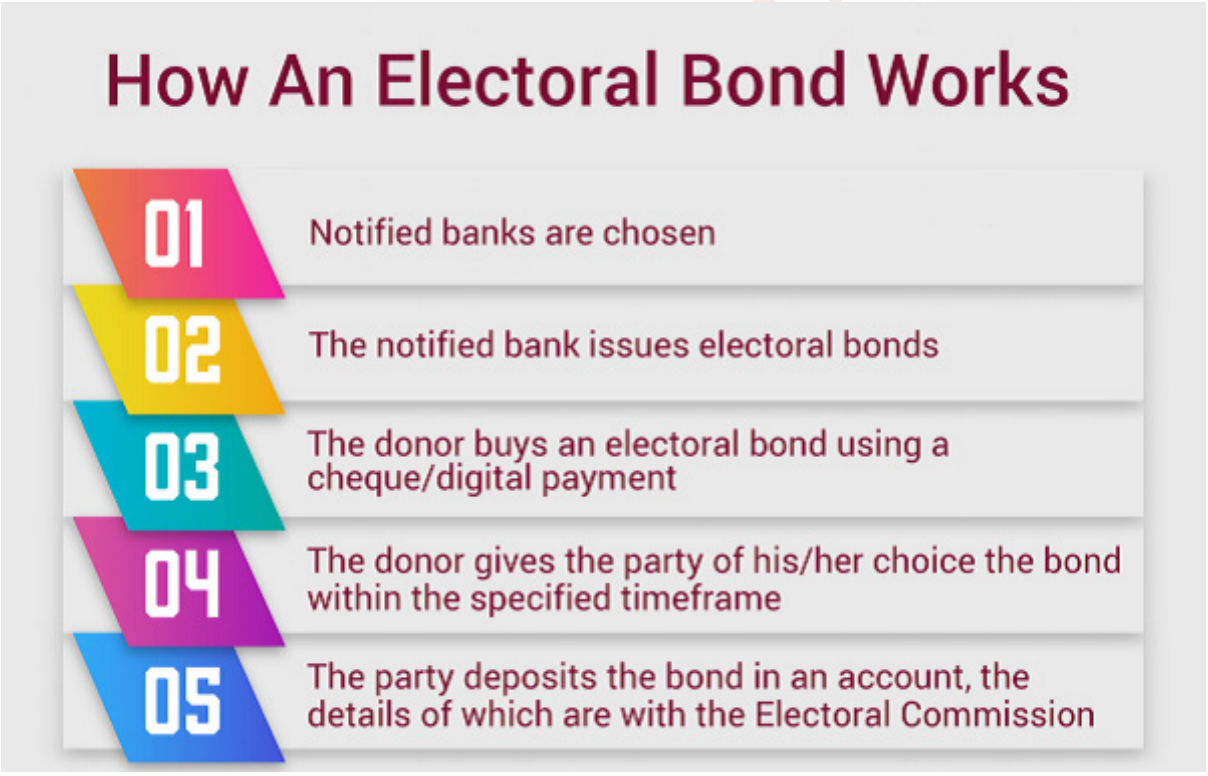
Supreme Court in India to hear Electoral Bonds petition

The article talks about how the Electoral Bonds in India impact the Indian Polity and Governance- Constitution.

Relevance for Prelims: Need and Relevance of Electoral Bonds, Eligibility
Relevance for Mains: Transparency in Electoral Funding

THE OBJECTIVE OF ELECTORAL BONDS IN INDIA

Electoral Bonds in India are financial instruments introduced in 2017 by the Indian government to encourage political funding through transparent and accountable means. These bonds are designed to be a replacement for cash donations made to political parties, which were previously the norm in India. The main objective of these Bonds is to bring more transparency to political funding and reduce the use of black money in political funding.



Electoral Bonds

ELIGIBILITY

- Electoral Bonds can be purchased by any citizen of India or a body incorporated in India.
- The bonds are issued by the State Bank of India (SBI) and can be bought in multiples of Rs. 1,000, Rs. 10,000, Rs. 1 lakh, Rs. 10 lacks, and Rs. 1 crore.

- These bonds can be redeemed only by recognized political parties registered with the Election Commission of India (ECI).
- The political parties can redeem the bonds within 15 days of their purchase.
- The donation received through the Bonds is exempt from Income Tax under section 80GGB of the Income Tax Act, 1961. This means that the donor does not have to pay any tax on the amount donated to a political party. The political parties, on the other hand, are required to report the donations received through these bonds in their contribution report submitted to the ECI.

CRITICISM OF THE ELECTORAL BONDS IN INDIA

One of the major criticisms of Electoral Bonds is that they do not have any provisions for disclosure of the identity of the donor. The anonymity provided by electoral bonds raises concerns about the potential misuse of these bonds by corporations or individuals with vested interests. This could lead to the influence of money on political decisions and the erosion of democratic principles.

Another criticism of these bonds is that they do not serve the purpose of reducing black money in political funding. The absence of donor disclosure provisions makes it possible for individuals and corporations to use black money to fund political parties through these bonds. This defeats the purpose of bringing transparency to political funding.

Furthermore, the requirement of a bank account for purchasing Electoral Bonds makes it difficult for small donors to participate in political funding. This exclusion of small donors from the political funding process could lead to the domination of political decision-making by a small group of individuals and corporations.

WAY FORWARD

In conclusion, Electoral Bonds in India have the potential to bring transparency to political funding, but their current form raises several concerns. The absence of donor disclosure provisions and the requirement of a bank account for purchasing the bonds limit their effectiveness in reducing black money in political funding and promoting democratic principles. The government must take steps to address these shortcomings and improve the design of the Bonds to ensure that they serve their intended purpose.

Source:
The Hindu

JOINT PARLIAMENTARY COMMITTEE ON ADANI FIASCO

A Joint Parliamentary Committee (JPC) is a special committee of the Indian Parliament consisting of members from both the Lok Sabha (Lower House) and Rajya Sabha (Upper House).

Relevance for Prelims: Insider Trading
Relevance for Mains: JPC and its significance

ABOUT JOINT PARLIAMENTARY COMMITTEE

Joint Parliamentary Committee is constituted to investigate specific issues and provide recommendations to the Parliament. They are considered to be one of the most important committees in the Indian Parliament as they provide a platform for members of the Parliament to engage in in-depth discussion and analysis on important policy issues.

SIGNIFICANCE OF JOINT PARLIAMENT COMMITTEE

The significance of the Joint Parliamentary Committee in India can be seen in several ways.

Policy Issues

Firstly, They provide a forum for members of the Parliament to engage in discussions and debates on important policy issues. This allows members to share their perspectives and insights, and to engage in informed debates on complex issues. This helps to build consensus and ensures that the Parliament takes a comprehensive approach to decision-making.

Secondly, Joint Parliamentary Committee plays a critical role in providing recommendations to the Parliament on important policy issues. They gather evidence, hear from experts and stakeholders, and engage in in-depth analysis to provide recommendations informed by the best available evidence. This helps to ensure that the Parliament makes informed decisions that are in the best interests of the country and its people.

Transparency in the Policy-Making Process

JPCs help to increase transparency and accountability in the policy-making process. They provide an opportunity for members of the Parliament to hold the government accountable for its actions and decisions. This helps to ensure that the government is acting in the best interests of the people and is transparent in

its decision-making.

Strengthen the Democratic Process

Joint Parliamentary Committee helps to strengthen the democratic process in India. They provide an opportunity for members of the Parliament to engage in informed debates on important policy issues and to hold the government accountable for its actions. This helps to ensure that the Parliament is acting in the people's best interests and promoting democratic values.

Quality of Legislation

Finally, JPCs help to improve the quality of legislation. They provide a platform for members of the Parliament to engage in an in-depth analysis of important policy issues and to make informed recommendations to the Parliament. This helps to ensure that legislation is based on the best available evidence and is in the best interests of the people.

CONCLUSION

In conclusion, Joint Parliamentary Committee plays a critical role in the Indian Parliament. They provide a platform for members of the Parliament to engage in informed debates on important policy issues, provide recommendations to the Parliament, increase transparency and accountability, strengthen the democratic process, and improve the quality of legislation. They are an essential mechanism for ensuring that the Parliament is acting in the best interests of the people and promoting democratic values in India.

Source

The Indian Express

THE INFLUENCE OF INDIAN CULTURE IN SOUTHEAST ASIAN COUNTRIES DURING PREHISTORIC PERIOD

The Influence of Indian Culture in Southeast Asian countries during the prehistoric period: An Analysis in a special context of recent discoveries.

Introduction

India has never been an isolated country. Harappan Culture/ Civilization had a commercial relationship with Mesopotamia and Egyptian countries and in the later period, the cultural elements of India diffused towards southeast Asian countries. Many ancient texts like Ramayan, and Pali Nideshak described the Suvarnadwipa which means the island of the gold, Suvarnabhumi, the land of the gold Harpur dip (land of the camphor). Southeast Asian countries are rich in the production of coconut (Narikela Dvipa). In Ramayan, Rama visited Lanka which was made/constructed of Gold. Many Chinese sources also describe the presence of the Brahmans in these regions. After the origin of Buddhism in India, It diffused in the entire world, mainly to Southeast Asian countries. During the period of the Chola, they conquered southeast Asian countries. The Indianistain of Southeast Asian culture was the result of trade and commerce.

Many southeast Asian countries are following the practices of their ancient period. However, they had adopted any other religion but they have not left their cultural values. This shows the depth of Indian culture in Southeast Asian countries.

THE GRADUAL DIFFUSION OF INDIAN CULTURE TOWARD SOUTHEAST ASIAN COUNTRIES

During the prehistoric period, we see the cultural similarity between the eastern Indian culture with the cultures of Burma, China, Tibet, etc. If we study the potteries of the prehistoric period, we see the similarity in the ceramic cultures of both of the regions.

There is much evidence collected during the 19th century from eastern Indian sites regarding the cultural migration and influence from Northern India towards northeast and eastern India. The records however are kept in London. Robert Bruce Foote found many pieces of evidence from Pallavaram, Madras, and Boucher de Perthes (France) in 1863. Still, there are many places where archaeological

excavation could not be done properly. The Neolithic people of eastern India might have migrated to the southeast Asian region and could carry the cultural features there.

The Influence of Indian Culture on Southeast Asian

ARCHAEOLOGICAL RECORD

Beginning with the pioneering work of Sir John Lubbock (1867) who reported for the first time the evidence of the prehistoric archaeological record from Northeast India in the Athenaeum of London in 1867. The credit should be given to British anthropologists and archaeologists who contributed to archaeological research before the independence of India. During pre-Independence India many discoveries were made by Robert Bruice fruit regarding the pre-historical sites. He was the person whose contribution towards the paleolithic sites in India is unparalleled. However, after the Independence of India, many archaeologists like HC Sharma also analyzed the significance of Robert Bruce fruit's work. On the bases of neolithic sites, HC Sharma successfully explained the migration of people from one place to another place in the search for a subsistence base.

There are many historic sites discovered by archeologists explaining their cultural significance. HC Sharma in his arctic published in 2003 shows that the research

is confined to basically surface sites and rarely excavated sites of the Neolithic cultural period. J.P. Mills in the 1930s also stated that "the spade, the chief tool of archaeologists had hardly been used in research in Assam" The surface finds and excavated material failed to provide a detailed understanding of the subsistence and settlement patterns of the early farming communities.

This part of India still suffers from insufficient data for reconstructing its past cultures though it has a long history of more than 140 years of archaeological research.

However, we have very rich archaeological sites explaining the evidence of the cultural flow but because of a lack of sufficient discoveries and the excavation, the picture is still to uncover. However, based on the literary sources it can be mentioned that the migration of the people could be there. Migration of humans has been the general characteristic during the prehistoric era because humans had to migrate from one place to another place in the search of new subsistence bases. Based on archaeological and anthropological studies, this migration can be predicted. During the Paleolithic phase, many African men migrated toward India and from India to Southeast Asian countries. They must have carried some cultural element with them to various parts of Eurasia.

PREHISTORIC INVESTIGATION

The academic discussions among the Lower Palaeolithic archaeologists are centered on the debate about the timing and geographic expansion of the earliest "Out of Africa" hominid migrations. In recent years, the "Out of Africa" model has been playing a vital role in the Old World Palaeolithic scenario, which implies that Homo erectus ventured outside the African continent at 1.8 million years or slightly before.

Nearly four decades of intermittent prehistoric investigations (initiated in the mid-1970s) in the Garo Hills of Meghalaya revealed the existence of several assemblages with Paleolithic elements. The artifacts which have been identified (or rather, claimed) to be of Lower, Middle, and Upper Palaeolithic traditions of European nomenclature were collected from secondary depositional contexts and have been placed in different cultural stages based on the typological ground. Some of the industries have been compared and correlated to Indian as well as Southeast Asian traditions. As these artifacts are mostly surface collections and

the chronology is not yet well understood, the issue of the presence of Palaeolithic artifacts remains a "dilemma" in the prehistory of Northeast India (Hazarika 2012).

CHINESE CULTURE AND INDIAN CULTURE

In the recent research done by Chinese scholars, the evidence of the cultural flow can be predicted. Recently in 2006, the archaeologists of China Londo, Chiang, Hung, Chiang, and Barbara analyzed the culture based on the DNA study. He studied the DNA sequencing of three distinct gene regions in a phylogeographic approach to investigate the domestication of cultivated rice. Finally, he concluded about the cultural relationship between India and China, mainly Indo-Chinese regions of southeast Asia. Indochina may represent the ancestral center of diversity for the wild rice Oryza Rufipogon.

Phylogeographic analysis suggests that cultivated rice, Oryza sativa, was domesticated from its wild progenitor, Oryza Rufipogon, at least twice in at least two different geographic regions in eastern Asia and that the products of these two independent domestication events are the two major rice varieties, Oryza sativa indica and Oryza sativa japonica. Based on this geographical analysis, Oryza sativa indica was domesticated within a region south of the Himalayan mountain range, most likely in eastern India, Myanmar, and Thailand, while Oryza sativa japonica was domesticated from wild rice in southern China.

CULTURE OF NORTHEAST REGION

T.C. Sharma (1991) has pointed out that scholars all over the world think that archaeology in Northeast India is very important for world archaeology because this region is supposed to have played a great role in the domestication of several food plants essential for man, including rice. Therefore, It may be proved that during the prehistoric period, there must have been an interconnectivity between Indian culture with the culture of the Southeast Asian region,

INDIAN CULTURE AND SOUTHERN ASIAN COUNTRY

In the Historic Period, we have clear evidence available showing the cultural interrelation between India and Southeast Asian countries. The evolution of Buddhism and the diffusion of Buddhism towards southeast Asian countries may be the one reason behind that cultural connection to southeast Asian countries. Besides, many traders and merchants During the Asokan period, Many messengers and representatives of the Asoka were sent to various regions of the world and

they not only reached there but some of them settled there and in this way, they brought the Indian culture with themself.

Cultural flow from southern India towards the southeast Asian countries did not start only in the historical period because of commercial relationships or political relationships but this migration had been continuing from India towards the southeast Asian countries for thousands of years.

CONCLUSION

General migration of the Human can be seen in the direction of the rivers flow because for the men migration in the direction of rivers flow was easy. In the lack of technology, humans could not migrate against the river's flow. And hence the cultural migration from northern India towards southern India and then southeast Asian countries should not be surprising Burma (Myanmar), Thailand, Việt Nam, Cambodia, and Laos, Malay World is the region where the cultural connections with India are found in a large scale. The numerous reason behind the cultural influence on these regions can be described.

Source:
Orfonline.org

JUDGES APPOINTMENT

With the appointment of Justices Victoria Gowri as the judge of Madras High Court, the system of appointing judges is again in the news.

Concepts to be remembered for UPSC

Art 124 of the Indian Constitution for appointment of the Supreme Court Judges
Art 217 for the appointment of the High Court Judges.

- Collegium system
- First Judge Case
- Second Judge Casew
- Third Judge Case
- Fourth Judge Case

Judges Appointment

DETAILS ON APPOINTMENT OF JUDGES

ART 124 OF THE INDIAN CONSTITUTION

There shall be a Supreme Court of India constituting of a Chief Justice of India and, until Parliament by law prescribes a larger number, of not more than seven other Judges

Every Judge of the Supreme Court shall be appointed by the President by warrant under his hand and seal after consultation with such of the Judges of the Supreme Court and the High Courts in the States as the President may deem necessary for the purpose and shall hold office until he attains the age of sixty-five years: Provided that in the case of appointment of a Judges other than the Chief Justice, the Chief Justice of India shall always be consulted,

- A Judge may, by writing under his hand addressed to the President, resign his office;
- A Judge may be removed from his office in the manner provided in clause (4)

ART 217 OF THE INDIAN CONSTITUTION

a) As per Article 217 of the Indian Constitution, the President should consult with the Chief Justice of India, and the Governor of the State, and, if a judge other than the Chief Justice, the Chief Justice of the High Court should also be consulted.

COLLEGIUM SYSTEM

Collegium System is not mentioned in the Constitution, rather it is a judicial innovation that evolved over several judicial pronouncements i.e. First Judge Case, Second Judge Case, and Third Judge Case.
Evolution of the Collegium System:
a. First Judge Case
b. Second Judge Case
c. Third Judge Case
d. Fourth Judge Case

First Judges Case (1981)

- Also known as SP Gupta v/s UOI case
- This judgment was given in a 4:3 majority
- It stated that "cogent" grounds may be given for rejecting the "primacy" of the CJI's recommendation on judicial appointments and transfers.
- In its ruling, it was determined that "consultation" did not involve "concurrence," that the President had the authority to designate judges in accordance with Article 124, and that the President might disregard the opinions of the consultees.

Second Judges Case (1993)

- Collegium System was introduced in the second Judge Case
- By a majority of 7:2, a nine-judge bench of the Supreme Court overruled the judgment in the First Judges Case.
- It was opined that it was not only the CJI's opinion that was required for the appointment of judges, rather it would be the recommendation of the CJI+2 senior-most judge.
- So collegium became the body of CJI + senior-most judges.

Third Judge Case(1998)

The Collegium system now came to be known as CJI+4 senior studies, i.e. the body of 5 judges in total

Fourth Judge Case(2014)

In this case, the Supreme Court struck down the NJAC i.e. National Judicial Appointment Commission, which passed through 9the 9th constitutional amendment.

Appointment of the CHIEF JUSTICE OF INDIA

- The entire mechanism of the appointment of the judges is dealt with under Art 124(2) of the Indian constitution.
- The senior most Supreme Court judge deemed qualified to serve in the position should be appointed as India's Chief Justice.
- When the time is right, the Union Minister of Law, Justice, and Corporate Affairs will request the retiring Chief Justice of India's recommendation for the selection of the new Chief Justice of India.
- If there is any doubt about the fitness of the senior most Judge to hold the office of the Chief Justice of India, consultation with other Judges as envisaged in Article 124 (2) of the Constitution would be made for the appointment of the next Chief Justice of India.
- After receiving the Chief Justice of India's recommendation, the Union Minister of Law, Justice, and Corporate Affairs will forward it to the Prime Minister, who will advise the President on the appointment.

APPOINTMENT OF THE JUDGES OF THE SUPREME COURT

- The current strength of the Supreme Court Judge is 34.
- The Union Minister of Law, Justice, and Corporate Affairs would receive

the Chief Justice of India's request and recommendation to fill the vacancy whenever a vacancy arises in the position of a Supreme Court judge.

- The four seniormost puisne judges of the Supreme Court should form a collegium with the Chief Justice of India to discuss the Chief Justice's recommendation for the appointment of Supreme Court judges.
- If the successor Chief Justice of India is not one of the four seniormost puisne Judges, he would be made part of the collegium as he should have a hand in the selection of Judges who will function during his term as Chief Justice of India.
- The Chief Justice of India will seek the opinions of the seniormost Supreme Court judge from the High Court where the recommended candidate is from, but if that judge is unaware of the recommended candidate's merits and shortcomings, the next seniormost Supreme Court judge from that High Court should be consulted.

APPOINTMENT OF THE JUDGES OF THE HIGH COURT

- Article 217 of the Constitution: It states that the Judge of a High Court shall be appointed by the President in consultation with the Chief Justice of India (CJI), the Governor of the State.
- If there is a case of appointment of Judges other than the Chief Justice, the Chief Justice of that particular high court shall also be consulted.
- Involved consultation process: High Court judges are recommended by a Collegium of the CJI + 2 senior-most judges.
- The recommendation is sent to the Chief Minister, who advises the Governor to send the proposal to the Union Law Minister.

CRITICISM OF THE COLLEGIUM SYSTEM

- It is considered to be a total judge judiciary-centric appointment procedure where the judiciary is seemingly appointing judiciary with no involvement of the executive.
- Giving rise to "uncle judge syndrome": The infamous Uncle Judge Syndrome refers to corrupt practices where relatives of a judge have favored judgment and by virtue of this means, they get name, fame, and popularity.

Source:
Indiankanoon.org
Doj.gov.in

REPRESENTATION OF PEOPLES ACT 1951

Recent Cases of Disqualification of Elected Representatives Under the Representation of Peoples act 1951

UPSC relevant to the representation of peoples act 1951

The Representation of the Peoples Act, of 1951 is an Indian law that governs the conduct of elections and the qualifications and disqualifications for elected representatives. The Act lists several grounds on which a person can be disqualified from being chosen as, or for being, a member of Parliament or the State Legislature.

ABOUT REPRESENTATION OF PEOPLES ACT 1951

- Disqualification on conviction for certain offenses: If a person is convicted of any offense and is sentenced to imprisonment for two years or more, they are disqualified from being chosen as, or for being, a member of Parliament or the State Legislature.
- Disqualification for corrupt practices: If a person is found guilty of any unethical practice during the course of an election, such as bribing voters, they are disqualified from being chosen as, or for being, a member of Parliament or the State Legislature.
- Disqualification for disloyalty to the Indian Constitution: If a person advocates or practices any ideology opposed to the Indian Constitution, they can be disqualified from being chosen as, or for being, a member of Parliament or the State Legislature.
- Disqualification for office of profit: If a person holds any office of profit under the central or state government, they are disqualified from being chosen as, or for being, a member of Parliament or the State Legislature.
- Disqualification for unsoundness of mind: If a person is declared to be of unsound mind by a court of law, they are disqualified from being chosen as, or for being, a member of Parliament or the State Legislature.
- Disqualification for citizenship: If a person is not a citizen of India, they are disqualified from being chosen as, or for being, a member of Parliament or the State Legislature.
- Disqualification for failure to submit election expenses: If a person fails to submit their election expenses within the stipulated time period, they can be disqualified from being chosen as, or for being, a member of Parliament or the State Legislature.

SOME RECENT EXAMPLES OF DISQUALIFICATION OF ELECTED REPRESENTATIVES UNDER THE REPRESENTATION OF THE PEOPLES ACT, 1951 INCLUDE

- Disqualification of 20 AAP MLAs in Delhi

In 2018, the Election Commission of India recommended the disqualification of 20 Aam Aadmi Party (AAP) MLAs in Delhi under the Representation of the Peoples Act, 1951 for holding the office of profit. The Delhi High Court later upheld the disqualification.

- Disqualification of Azam Khan

Mr. Khan used insults to provoke the then Rampur District Magistrate Aunjaneya Kumar Singh, the Chief Minister Yogi Adityanath, Prime Minister Narendra Modi, and the Congress candidate Sanjay Kapoor during the 2019 Lok Sabha election campaign.

In Rampur, a lawsuit was filed against him in April 2019. Assistant Chief Judicial Magistrate Nishant Maan found Mr. Khan guilty of breaking Sections 153A and 505 (1) of the IPC and Section 125 of the Representation of the Peoples Act (RPA), 1951.

The Supreme Court ruled in 2013 in the Lily Thomas v. Union of India case (along with Lok Prahari v. Union of India) that any Member of Parliament, Member of the Assembly, or Member of the Legislative Council who is convicted of a crime and given a minimum of two years imprisonment loses membership of the House with immediate effect. The Assembly Secretariat cited this decision in its order of disqualification.

DISQUALIFICATION OF ABDULLAH AZAM KHAN UNDER THE REPRESENTATION OF PEOPLES ACT 1951

After receiving a two-year prison sentence from a Moradabad court in a case that dates back fifteen years, Abdullah Azam Khan was disqualified from the Uttar Pradesh Legislative Assembly on Wednesday. Abdullah Azam was convicted in the 15 years old case where after the attack on the CRPF camp in Rampur district of Uttar Pradesh the checking of the car of the father and son duo Mr. Azam khan and Mr. Abdullah Azam Khan there was a dharna on the road with their supporters.

The case was filed in 2008 Under Sections 341 (wrongful restraint) and 353

(attack or criminal force to prevent a public official from performing his duties), against Mr. Abdullah Azam Khan and his father.

Representation of peoples act 1951

These examples illustrate the wide range of grounds on which elected representatives can be disqualified under the Representation of the Peoples Act, 1951. However, there have been some issues and controversies surrounding the disqualification process as well, such as:

Delay in decision-making

In some cases, the process of disqualification can be delayed due to various factors, including legal challenges and political considerations. This can lead to a lack of accountability and transparency in the system.

Political bias

There have been allegations of political bias in the disqualification process, with some parties accusing the authorities of targeting their members while ignoring similar violations by members of other parties.

Lack of clarity

The criteria for disqualification under the Representation of the Peoples Act, 1951 are sometimes unclear, leading to confusion and disputes. This can also result in inconsistent decisions being made by different authorities.

CONCLUSION

In order to address these issues, there have been calls for greater transparency and accountability in the disqualification process, as well as for clearer criteria for disqualification under the Representation of peoples act 1951. Additionally, there is a need to ensure that the process is free from political bias and that decisions are made in a timely and consistent manner.

Source:

- Legislative.gov.in
- TheHindu (The curious case of the disqualification of a politician)
- The Hindu (Azam Khan's conviction and disqualification from Assembly create a flutter in U.P)
- The Hindu (SP alleges double standards in disqualification of convicted BJP MLAs)
- The Hindu (Lakshadweep MP Mohammed Faizal disqualified from Lok Sabha over attempt to murder case)
- Abplive.com (Why are Azam Khan and his son Abdullah silent? BJP preparations begin for 'Mission Mode' on Swar seat)

THE SUTLEJ YAMUNA LINK (SYL) CANAL ISSUE

The Sutlej Yamuna Link (SYL) Canal issue is a long-standing water dispute between the Indian states of Punjab and Haryana, related to the sharing of waters of the Sutlej and Yamuna rivers. The construction of the SYL canal was planned to provide Haryana with a share of the river waters, but the project has been mired in controversy and legal battles. The issue has been marked by violence and loss of life, including the murder of engineers involved in the project.

UPSC RELEVANCE FOR LINKAGES OF RIVERS

Sutlej Yamuna Link

HISTORY OF SUTLEJ YAMUNA LINK (SYL) CANAL

- The history of the Sutlej Yamuna Link (SYL) canal issue goes back to the early 1960s when the Indian government initiated the construction of a canal to link the Sutlej and Yamuna rivers. The canal was meant to provide water to Haryana, which was formed as a separate state in 1966 after being carved out of Punjab. However, the construction of the canal was delayed due to protests by Punjab, which argued that the project would result in a loss of its share of the river waters.
- In 1976, the Indian government intervened and passed the Punjab Reorganization Act, which provided for the construction of the SYL canal and the sharing of river waters between the two states. However, Punjab continued to resist the project, and the canal construction was stalled for several years.
- In 1990, a group of militants in Punjab carried out a series of attacks on

engineers and laborers working on the Sutlej Yamuna Link (SYL) canal project. Several engineers were kidnapped, and some were later found murdered. The violence led to a suspension of the construction of the canal.

- In 2004, the Supreme Court of India ordered the construction of the canal to be completed within a year, but the order was not implemented due to protests in Punjab. The issue was further complicated by a change in government in Punjab, with the new government taking a stand against the construction of the canal.

SYL Canal

PRESENT STATUS OF SUTLEJ YAMUNA LINK (SYL) CANAL

- In recent years, the issue has remained unresolved, with both Punjab and Haryana continuing to stake their claim to the river waters. The Supreme Court has repeatedly ordered the construction of the canal, but its implementation has been stalled due to protests and legal battles.
- In November 2016, the Supreme Court of India once again ordered that the canal be completed, directing Punjab to hand over its share of the river waters to Haryana. This led to protests in Punjab, with the state government passing a resolution against the construction of the canal. The matter was referred to a constitutional bench of the Supreme Court, which is currently hearing arguments on the issue.

CONCLUSION

Recently Governor of Haryana speaking at the inaugural budget session at the Haryana state legislature said the state government is committed to getting the due share of the state from the Ravi -Beas rivers through the construction of the Sutlej Yamuna link canal. He has mentioned the other river projects in the states of Himachal Pradesh namely the Renuka dam project and in Uttarakhand the Kishau and lakhwar -Vyasi on the river Yamuna and the commitment of the state government in the construction of upstream projects.

Source:

- Scroll.in
- The Hindu (Haryana government committed to construct SYL canal, says Governor)
- The Hindu (Undermining the SYL Canal)

General Studies -3

(Technology, Economic Development, Biodiversity, Security & Disaster Management)

Status of Rubella and Measles in India

This article covers "Daily current events "and the topic is about 'rubella and measles' which is in news, it covers "Science and technology and Health" In GS-2, and GS-3, the following content has relevance for UPSC.

For Prelims: About Rubella and measles
For Mains: GS-2, GS-3 ,Health and science and technology

Why in news:

India declared a goal to eradicate measles and rubella (MR) by 2023 after missing the previous deadline of 2020 for several reasons, some of which were made worse by the pandemic's interruptions.

India set the goal of eradicating MR by 2023 in anticipation that the 2020 target would not be feasible.

ABOUT RUBELLA AND MEASLES

MEASLES

- It is a viral disease that is extremely contagious and kills young children all over the world.
- A single-stranded, encapsulated RNA virus with one serotype is the culprit. It is categorized as a member of the family Paramyxoviridae's genus Morbillivirus.
- Since it targets children who are malnourished and have weakened immune systems, it is especially harmful to youngsters from disadvantaged economic backgrounds.
- Blindness, encephalitis, severe diarrhea, ear infections, and pneumonia are just a few of the terrible problems it can bring on.
- A safe and effective vaccination is currently available, but measles still claims the lives of thousands of youngsters each year throughout the world.
- Young children make up the majority of the fatalities.
- The paramyxovirus family includes the measles virus, which is often spread through direct contact with the air.
- Measles mortality decreased by almost 73% between 2000 and 2018 thanks to intensive vaccination campaigns conducted worldwide.
- Measles symptoms often start 10 to 12 days after the infection. The typical signs include:

- high fever
- clogged nose
- red eyes
- Little white dots on the mouth's interior
- Rashes that extend downward from the face and upper neck (this appears after several days)

Vaccine for measles

- This vaccination, known as the MMR, protects against measles, mumps, and rubella.
- MMR is administered twice, once at 12 to 15 months and once around 4 to 6 years of age.
- Teenagers and adults can receive the MMR vaccine as needed.

RUBELLA

- It is also known as German Measles or Rubella.
- Rubella is a contagious, mostly minor viral infection that primarily affects children and adolescents.
- The single-stranded RNA virus with an envelope that causes it is called the rubella virus.
- Pregnant women who contract rubella may lose their lives or give birth to children who have Congenital Rubella Syndrome (CRS), an untreatable birth condition.
- Although rubella is distinct from measles, the two diseases have significant similarities, such as the red rash.
- Rubella is not as contagious or dangerous as measles since it is caused by a different virus.

THE SITUATION OF MEASLES AND RUBELLA IN THE WORLD AND IN INDIA

- According to the World Health Organization, rubella is a major vaccine-preventable cause of birth abnormalities and the measles virus is one of the most contagious human viruses in the world, killing more than 100,000 children annually (WHO).
- According to figures from the WHO, during the past 20 years, the measles vaccination is thought to have prevented more than 30 million deaths worldwide.

- India vaccinated around 119 million children in 14 States between 2010 and 2013 as part of a phased measles catch-up immunization program for children aged 9 months to 10 years.
- In 2014, Mission Indradhanush was established to increase vaccination rates among the unvaccinated.
- India developed a national strategic plan for the eradication of measles and rubella from 2017 to 2021.
- The government added the rubella-containing vaccine (RCV) to the regular immunization schedule during this time.
- As of December 2021, Bhutan, DPR Korea, the Maldives, Sri Lanka, and Timor-Leste have all been confirmed as having eliminated measles. Maldives and Sri Lanka have also maintained their status as countries that eradicated rubella in 2021.

What are the MR Prevention Measures:

Government programs:

VACCINATION FOR MEASLES AND RUBELLA

- The MR Immunization Program was introduced in 2017 by the Ministry of Health and Family Welfare.
- The largest-ever effort, the MR campaign targets about 41 crore youngsters nationwide.
- No matter whether they have ever received the measles/rubella vaccination or have ever had the disease, all children between the ages of 9 months and under 15 receive a single dose of the MR vaccine.
- All fifty states offer the MR vaccination free of charge.
- UIP, Mission Indradhanush, and Intensified Mission Indradhanush are some
- further initiatives.
- The MR campaign, the largest ever in any campaign, aims to reach around 41 crore youngsters nationwide.
- Measle-rubella (MR), measle-mumps-rubella (MMR), and measle-mumps-rubella-varicella (MMRV) combination vaccines are available to prevent infections.

Source:

- The Hindu

Ken Betwa Link

This article covers "Daily current events "and the topic is about the 'Ken betwa link' which is in news, it covers the "Infrastructure" In GS-3, and the following content has relevance for UPSC.

For Prelims: About Ken Betwa interlinking project

For Mains: GS-3 Issues associated with Ken Betwa river interlinking project

Why in news:

- The Ken Betwa Link Project (KBLP), which the Ministry of Jal Shakti recently presided over a meeting on, is described as the national government's "flagship project" and is "critical for the water security and socioeconomic development of the Bundelkhand region."
- The Union Cabinet approved the KBLP in December 2021 for Rs 44,605 crore. in this undertaking.
- Political and environmental concerns have caused the project to be delayed.

ABOUT KEN-BETWA LINK

- Aiming to transmit extra water from the Ken River in Madhya Pradesh (MP) to Betwa in Uttar Pradesh (UP) to irrigate the drought-prone Bundelkhand region, the Ken Betwa Link Project (KBLP) links two rivers.
- The region is primarily comprised of the MP districts of Tikamgarh, Panna, and Chhatarpur, as well as the UP districts of Jhansi, Banda, Lalitpur, and Mahoba.
- The project is for constructing a 230 km canal, a 77-meter-tall Dhaudhan dam (to be erected within Panna Tiger Reserve), and a 2 km broad dam.
- One of the 30 river interlinking projects planned across the nation is called Ken-Betwa.
- Meaning: By building a multipurpose dam, not only will water conservation be accelerated, but 103 MW of electricity will also be generated, and 62 lakh people will have access to clean water.

BACKGROUND OF KEN-BETWA LINK PROJECT

- In August 2005, the governments of Madhya Pradesh and Uttar Pradesh signed a tripartite agreement of understanding for the creation of a detailed project report (DPR), which gave the notion of connecting Ken with Betwa a

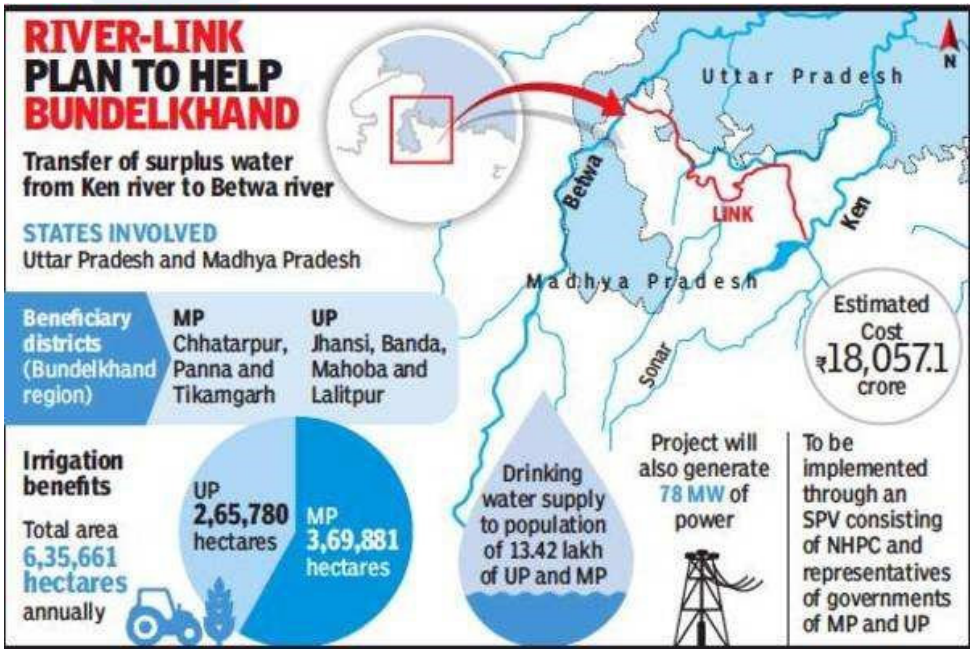
significant boost.

- The Center designated KBLP a National Project in 2008. Later, it was incorporated into the prime minister's development plan for the region of drought-prone Bundelkhand.
- The Ministry of Jal Shakti and the two states signed a memorandum of understanding in 2021 to implement this initiative.

EXECUTING ORGANIZATION

- The project will be carried out by the Ken-Betwa Link Project Authority (KBLPA), a Special Purpose Vehicle (SPV).
- To carry out the project, the Link Project Authority (KBLPA) will be established.
- For specific connection projects, the National Interlinking of Rivers Authority (NIRA) has the authority to create an SPV.
- Project's phases include: The project has two phases and essentially consists of four parts.
- One of the parts—the Daudhan Dam complex and its ancillary units, including the Low-Level Tunnel, High-Level Tunnel, Ken-Betwa Link Canal, and power plants—will be the focus of Phase I.
- Three parts will make up Phase II: the Lower Orr Dam, the Bina Complex Project, and the Kotha Barrage.

Ken Betwa Link Project



Ken Betwa Link

PROJECT-RELATED CONCERNS

- Environmental: Due to issues over ecology and wildlife conservation, such as the project's passage through a tiger reserve's essential habitat, Despite the project's passage through a crucial tiger habitat in the Panna Tiger Reserve, the National Green Tribunal (NGT) and other higher authorities have not yet given its clearance.
- Panna Tiger Reserve Submergence: The National Water Development Agency states that the reservoir of the Daudhan dam will "involve a submergence of 9000 ha land, of which 5803 ha comes inside Panna Tiger Reserve" (PTR).
- Three Wildlife Sanctuaries (WLS), namely Nauradehi, Rani Durgawati of MP, and Ranipur WLS of UP, are scheduled to be integrated with PTR in order to lessen this.
- Economic: Project implementation and maintenance come at a significant financial expense that has been increasing as a result of delays.
- Social: There will be social costs associated with the reconstruction and rehabilitation needed as a result of the project's displacement.
- They worry that the project will jeopardise Panna's access to water.
- Legal: The approval given to the KBLP also has substantial legal issues.
- It has not been established that approval of the Ken-Betwa connection Project by the Standing Committee of the National Board for Species is required for the improvement and better management of the wildlife there, as stated in Section 35(6) of the Wildlife (Protection) Act, 1972.

BENEFITS

- The project is located in the Bundelkhand region, which spans 13 districts in Uttar Pradesh and Madhya Pradesh and is prone to drought.
- The Jal Shakti Ministry claims that the project will be extremely helpful to this area that lacks access to water.
- Additionally, it will open up opportunities for other river projects to be connected, preventing water shortages from impeding national development.
- The project is anticipated to produce 103 MW of hydropower and 27 MW of solar power, as well as offer yearly irrigation for 10.62 lakh hectares and drinking water for around 62 lakh people, according to the Jal Shakti Ministry.

ABOUT THE NATIONAL PERSPECTIVE PLAN FOR RIVER INTERLINKING

- The National River Linking Project (NRLP), formerly known as the National

Perspective Plan, envisions the transfer of water through inter-basin water transfer projects from water "surplus" basins where there is flooding to water "deficit" basins where there is drought/scarcity.

- The National Water Development Agency (NWDA) has designated 30 links under the National Perspective Plan (NPP) for the creation of feasibility reports, 16 under the Peninsular Component, and 14 under the Himalayan Component (FRs).
- In August 1980, the NPP for moving water between basins with water surpluses and deficits was created.

Way ahead

- A case-by-case analysis should be used to determine whether river interlinking is necessary and feasible, with a focus on resolving any federal issues that may arise.
- Restructure the water sector's public-private partnerships and water prices to at least recover operation and maintenance expenditures.
- A community-based participatory method to promote behavioral modifications and groundwater management.

Source:

- Times of India
- The Hindu

Skyglow: Light pollution

This article covers "Daily current events "and the topic is" Skyglow" which is in news, it covers the "Environment and ecology" In GS-3, the following content has relevance for UPSC.

For Prelims: About Skyglow, light pollution,
For Mains: GS-3, Implications of Skyglow

Why in news:

- The brightness of Skyglow has recently been determined to have grown due to artificial lighting by 9.2-10% annually between 2011 and 2022, with severe ecological, health, and cultural ramifications.
- A global database that contained more than 51,000 entries contributed by citizen scientists and listed the dimmest star that may be seen from a specific place has been examined by researchers.

ABOUT SKYGLOW

- The Skyglow, which blankets the night sky above and around towns and can obscure all but the brightest stars, is a constant sheet of light.
- It is caused by the brightening of the night sky over populated areas brought on by streetlights, security floodlights, and outdoor decorative lights.
- The Nocturnal (active at night) are blinded by this light, which also floods into the heavens and distorts their course.
- One element of light pollution is "skyglow."

SKYGLOW SCENARIO ENTAILS

Global

- Over Europe, the Skyglow had brightened by around 6.5%, over North America by about 10.4%, and over the rest of the planet by about 7.7%.
- The result is noteworthy since it contradicts satellite-based statistics that suggested the rate of rise had been roughly 2% annually.
- The mismatch is most likely due to the satellites' inability to detect blue LED light and analyze light that is emitted perpendicular to the ground.

India

- According to a 2016 study, 19.5% of Indians live in a country with the least amount of skyglow among the G20 nations, which would at the very least prevent viewing of the Milky Way galaxy and, at the very worst, prevent "dark adaptation for human eyes."
- One of the results is the stimulation of cone cells in the human eye, which is

only feasible in well-lit environments.

- According to a 2017 study, between 2012 and 2016, India's illuminated area expanded by 1.07 to 1.09%, and the average radiance of "stably lit areas" — i.e., places that aren't affected by wildfires — increased by 1.05 to 1.07%.
- It affects all elements of insect life and prolongs the hunting season for bug predators, according to a study from 2020.
- Using artificial light at night can hinder the body's ability to produce melatonin, a key hormone that influences sleep, mood, and cognition, according to a study published in 2020.

Impact of light pollution

Energy and financial waste:

It is inefficient to have lighting that shines when and where it is not needed, or that emits too much light. Energy waste has severe economic and environmental repercussions.

ECOSYSTEM DISRUPTION AND WILDLIFE EXTINCTION

- Plants and animals rely on the earth's daily cycle of light and dark to guide life-sustaining behaviors including reproduction, nutrition, sleep, and protection from predators.
- According to scientific data, nighttime artificial light has harmful and fatal impacts on a variety of animals, including amphibians, birds, mammals, insects, and plants.
- Ex: Sea turtles are discouraged from nesting on beaches that are lit. Skyglow prevents trees from detecting seasonal changes.
- When clownfish eggs are exposed to artificial light at night, they do not hatch, killing the young.

NEGATIVE EFFECTS ON HUMAN HEALTH OF LIGHT POLLUTION

- Humans have a circadian rhythm, or biological clock, that is dictated by the day-night cycle, just like the majority of life on Earth. That cycle can be broken at night by artificial light.
- A small 2009 assessment found that night shift workers had a 40% higher risk of breast cancer due to circadian disturbance, which can be brought on by changed melatonin levels.
- The destruction of the night sky works as a type of continuous cultural and ecological genocide by erasing Indigenous people's connection to the stars.

Light pollution:

- Inappropriate or excessive use of artificial light also referred to as LP, can have negative effects on the environment that affect people, wildlife, and our climate.
- Light pollution has several factors,
- including:
    - **glare**: excessive brightness that impairs vision
    - **skyglow:** The sky over populated regions will sparkle at night.
    - **Light intruders**: Light that shines where it isn't wanted or needed
    - **Clutter:** Bright, illogical, and crowded collections of light sources.
- **Causes:**
- LP is a byproduct of modern industrial civilization.
- Advertising, commercial buildings, offices, industries, streetlights, and illuminated athletic venues are a few of its sources, as well as the interior and external illumination of buildings.

Light pollution

WAY AHEAD

- Over 130 "International Dark Sky Places," where artificial lighting has been modified to lessen skyglow and light trespass, have been certified by the International Dark-Skies Association. However, the majority are in northern hemisphere developed nations.
- The chance to engage in lighting solutions before animals there are substantially harmed is presented by the fact that less developed areas are frequently both species-rich and currently less light-polluted.
- The scientists advise using light sources that cast light at an angle below the horizon, capping their emissions, and adjusting their output by the overall brightness of the area being illuminated.
- Where lights cannot be turned off, they can be shaded to prevent light pollution of the surroundings and the sky.

Source:
The Hindu

Yellow Banned Disease Damages the Coral Reefs

This article covers "Daily current events "and the topic is 'Yellow banned Disease Damages Coral Reefs' which is in news, it covers the "Environment and ecology" In GS-3, and the following content has relevance for UPSC.

For Prelims: About yellow banned disease, Coral reefs

For Mains: GS-3, Environment disease

Why in news:

According to recent reports, Thailand's enormous tracts of the ocean floor are being destroyed by a condition known as yellow band disease that is fast spreading.

The reefs may be more susceptible to yellow-band disease as a result of overfishing, pollution, and rising water temperatures brought on by climate change, according to scientists.

ABOUT HOW YELLOW BAND DISEASE HARMS THE CORAL REEFS

- The yellow-band disease, so named because of the color it gives corals before it kills them, was discovered decades ago and has severely damaged Caribbean reefs. No known treatment exists.
- Several environmental stressors, such as rising water temperatures, pollution, sedimentation, and increasing competition for resources from other organisms, contribute to the development of the Yellow Band illness.
- These elements may weaken the coral and increase its susceptibility to bacterial and fungal infections.
- Contrary to the consequences of coral bleaching, the impacts of the disease cannot be reversed.

ABOUT: CORALS

- Corals are marine invertebrates that belong to the phylum Cnidaria's class Anthozoa.
- Typically, they are found in dense colonies made up of several, similar polyps.
- Coral polyp colonies make up the underwater ecosystems known as coral reef
- In their tissues, zooxanthellae, a kind of photosynthetic algae, coexist with coral polyps in a symbiotic relationship.
- Through photosynthesis, these algae give the coral energy, while the coral gives

the algae the substances they require for growth as well as a safe environment.

A CORAL REEFS

- Millions of microscopic polyps that form massive carbonate structures are what give rise to coral reefs. The biggest living thing on the planet and the only ones that can be seen from space are coral reefs.
- Corals can be found in both shallow and deep waters throughout the oceans of the world, but reef-building corals can only be found there. This is because the algae found in their tissues prefer water temperatures between 22 and 29 °C and require sunshine for photosynthesis.
- There are also deep-water corals that may survive up to 20,000 feet below the surface in chilly, gloomy water (6,000 m). In the deep ocean, you can find both stony corals and soft corals. The same algae are not present in deep-sea corals,
- While deep-sea corals don't have the same algae and can survive without sunlight or warm water, they also grow very slowly. They can be discovered, for example, on seamounts, which are underwater peaks.

VARIOUS CORAL TYPES

- Barrier, fringing, and atoll coral reefs are the three main varieties.
- Fretting reefs are the most prevalent type of reef. This kind of reef develops in the ocean straight from the coast. Along the coastline and adjacent islands, they create borders.
- An atoll is created when a volcanic island completely submerges below the surface and a fringing reef continues to grow upward from it. Atolls typically have an open lagoon in the center of a circle or an oval shape.
- In that they likewise surround a shoreline, barrier reefs are similar to bordering reefs; however, they are separated from the land by a body of water as opposed to extending outward from the shore. As a result, between the reef and the beach, there is a lagoon of open, frequently deep water.
- The world's largest coral reef system is located in Indonesia. South Asia's coral reefs are most abundant in India, the Maldives, Sri Lanka, and the Chagos Islands. The Great Barrier Reef, which stretches 1,931 kilometers in length and varies in width from 16 to 322 kilometers off the Queensland coast of Australia, is the biggest collection of coral reefs.

Significance

- Ecological Relevance A varied range of plant and animal species can find a home on the coral reef, one of the planet's most productive and diverse ecosystems.
- By absorbing carbon dioxide and defending coasts from erosion and storm damage, they also play a crucial part in regulating the planet's temperature.
- Coral reefs are important economically because they support several sectors like fishing, tourism, and recreation. They also offer information on biotechnology and medicine.
- Coral reefs absorb wave energy, safeguard coasts, and lessen the effects of storms and sea level rise, acting as natural buffers against the effects of climate change.
- Biodiversity: Fish, sharks, crustaceans, mollusks, and a wide variety of other marine life can be found in coral reefs. They are regarded as the ocean's rainforests.

Threats

- Ocean acidification and coral bleaching are two effects of climate change that coral reefs are particularly susceptible to.
- Coral bleaching is when the algae (zooxanthellae) residing in the coral polyps' tissues are expelled, turning the coral white.
- Pollution: Sewage, agricultural runoff, and industrial discharge are just a few of the pollutants that harm coral reefs.
- These contaminants can damage the general health of the reef ecosystem and bring about coral illness and death.
- Overfishing: Overfishing has the potential to upset the delicate ecosystems of coral reefs, which could result in a drop in coral populations.
- Coastal development can harm coral reef and worsen the condition of the reef ecosystem as a whole. Examples include the building of ports, marinas, and other infrastructure.
- Coral reefs are also in danger from invasive species, such the lionfish, which can displace local species and upset the ecosystem's general balance.

PRESERVATION OF CORALS

- Tech-Related Intervention
- Cyromesh: Can be used to store coral larvae at -196°C.

- Coral larvae can be kept in Cyromesh at -196°C and eventually released back into the wild.
- Biorock: the construction of coral-friendly artificial reefs
- National Coastal Mission Programme in India
- International Initiative for Coral Reefs
- A platform for Global Coral Reef R&D Acceleration.

Way ahead

- Around the world, up to 10% of coral reefs have deteriorated, and another 30% are predicted to vanish within the next 20 years. If suitable conservation and management measures are not implemented, all coral reefs in the Indo-Malayan region risk extinction over the next 40 years, according to researchers.
- For the effective management of coral reefs, an integrated coastal management plan is urgently required. A law is required to shield them from human-made activity.
- Coral overexploitation must be strictly controlled, and fishing practices that harm corals must be outlawed.
- Domestic sewage, industrial waste, chemical, and fertilizer pollution ought to be curbed. Boats should not be anchored in locations with coral reef present.
- Mangrove forests serve as filters and shield the coral reef system from cyclones, storms, and tsunamis, which is why they are so important. Mangrove forest destruction in reef zones ought to be outlawed. The local community might be enlisted to help with the planting of mangrove species in reef zones.
- Fishermen and other members of the local community should be made aware of the value of coral reefs by the relevant authorities. Students in schools and colleges should be taught about the coral reef's significant ecological merits and other advantages.

Source:
The Hindu
Epa.Govt

Neuromorphic Computing

Artificial Synapse for Brain-Like Computing or Neuromorphic Computing was recently developed by a team of scientists at the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR). They have created brain-like computing by utilizing scandium nitride (ScN), a semiconducting semiconductor with exceptional stability and CMOS compatibility.

ABOUT NEUROMORPHIC COMPUTING

- The term "Neuromorphic Computing" was first used in the 1980s and refers to a type of computing that is inspired by the human brain and the nervous system.
- It describes the process of creating computer systems that are modeled after the neurological and endocrine systems of humans.
- Without requiring much space for the software to be installed, The devices of the neuromorphic computing system can function as effectively as the human brain.
- The development of the Artificial Neural Network model is one of the technological developments that has reignited scientists' interest in Neuromorphic Computing systems (ANN).

Working Principle

- Artificial Neural Networks (ANN), which are composed of millions of synthetic neurons and are modeled after the brain's neurons, are used to power neuromorphic computing.
- Using the Spiking Neural Networks' architecture, these neurons communicate with one another in layers to transform input into output via electric spikes or signals (SNN).
- This enables the machine to accurately simulate the neuro-biological networks in the human brain and carry out tasks like sight recognition and data interpretation quickly and effectively.

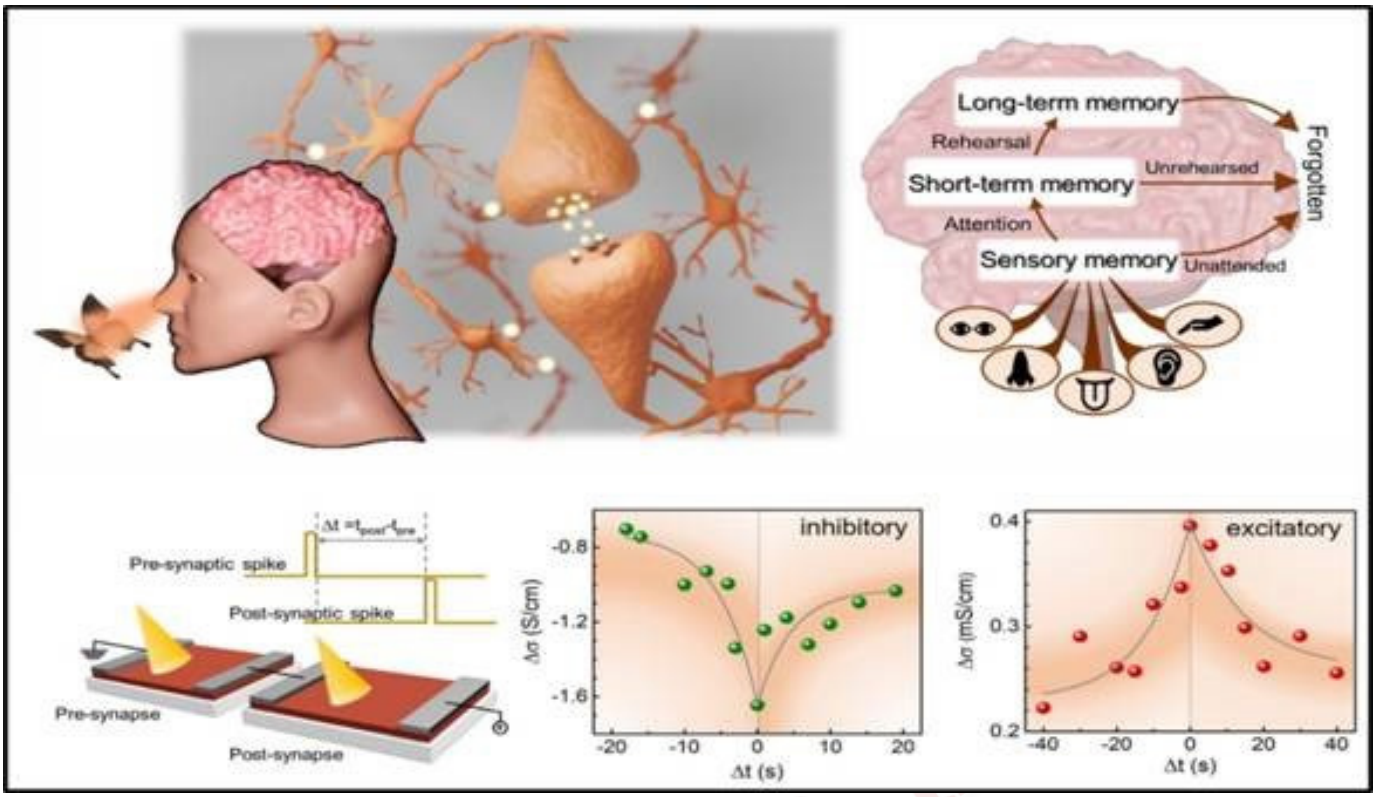
CHARACTERISTICS

The characteristics of neuromorphic computers are as follows:

- Memory and processing are combined. Instead of having distinct sections for each, the neuromorphic computer chips, inspired by the human brain, process, and store data jointly on each individual neuron. Neural net computers and

other neuromorphic processors overcome the von Neumann bottleneck and can simultaneously have great performance and low energy consumption by collocating processing and memory.

- Highly parallel. Up to one million neurons can be found on neuromorphic semiconductors like Intel Lab's Loihi 2. Each neuron performs multiple simultaneous tasks. Theoretically, this enables these computers to carry out as many tasks concurrently as there are neurons. The seemingly random firing of neurons in the brain, known as stochastic noise, is what this kind of parallel processing imitates.
- Compared to conventional computers, neuromorphic computers are more suited to processing this stochastic noise.
- Naturally scalable Normal scaling barriers do not exist for these computers. Users add more neuromorphic chips, increasing the number of active neurons, to run larger networks.
- Computation is driven by events. When other neurons spike, individual neurons, and synapses compute. This indicates that just a tiny subset of neurons are actively processing spikes; the rest of the computer is inactive. Power usage is incredibly efficient in this way.
- High levels of plasticity and adaptability. These computers are made to be adaptable to shifting stimuli from the outside world, just like human beings. Each synapse is given a voltage output in the spiking neural network architecture or SNN, and this output is adjusted depending on its task.
- Different connections are intended to evolve as a result of potential synaptic delays and a neuron's voltage threshold in SNNs. Researchers anticipate that neuromorphic computers with higher flexibility would learn, solve novel challenges, and quickly adapt to new situations.
- Tolerance of faults: The fault tolerance of neuromorphic computers is very high. Similar to the human brain, a computer can continue to work even if one of its components fails since information is stored in several places.
- List of qualities of neuromorphic computers.
- The properties of neuromorphic computers set them apart from conventional computers in important ways.



Neuromorphic Computing

CHALLENGES OF NEUROMORPHIC COMPUTING SYSTEM

- Numerous experts think neuromorphic computing has the ability to transform the strength, effectiveness, and capacities of algorithms in AI while also revealing new information about cognition. However, the neuromorphic computing process is still in its infancy and faces a number of difficulties.
- Accuracy: Compared to deep learning, machine learning, neural hardware, and edge graphics processing units, neuromorphic computers use less energy (GPUs). However, they have yet to demonstrate that they are indisputably more accurate than them. Many people prefer traditional software because of the accuracy issue, expensive expenses, and complexity of the technology.
- Limited algorithms and software: Software for the neuromorphic computing system is still behind the hardware. The majority of neuromorphic research is still carried out using von Neumann-developed techniques and common deep-learning tools.
- This restricts the research findings to conventional methods, which neuromorphic computing seeks to advance beyond. In a 2019 interview with Ubiquity, Katie Schuman, an assistant professor and researcher in the computing system, stated that the adoption of neuromorphic computing technologies "will require a paradigm shift in how we think about computing as

a whole." Though this is a challenging task, the future of computing innovation depends on our ability to go beyond our conventional von Neumann systems.

- Inaccessible: Nonexperts cannot access neuromorphic computers. To make neuromorphic computers more accessible, software developers have not yet produced application programming interfaces, programming models, or languages.
- Clear performance and common challenge challenges benchmarks are lacking in neuromorphic research.
- Without these guidelines, it is challenging to evaluate the functionality of neuromorphic computers and demonstrate their efficacy.

- The known components of human cognition, which are still far from being understood, are the only ones that neuromorphic computers can access. For instance, numerous hypotheses, such as the Orch (OR) theory put forth by Sir Roger Penrose and Stuart Hameroff, contend that human cognition is based on quantum computation. Neuromorphic computers would be partial representations of the human brain and could need to combine technology from disciplines like probabilistic and quantum computing if cognition requires quantum computation as opposed to conventional computation.

IMPLICATIONS OF THE STUDY

- The goal of neuromorphic computing technology is to resemble a biological synapse, which keeps track of and remembers the signal produced by stimuli.
- A device that controls the transmission of the signal and retains the signal is created using ScN.
- Meaning: This invention has the potential to be turned into an industrial product since it can offer a new material for stable, CMOS-compatible optoelectronic synaptic functionalities at a relatively lower energy cost.
- Memory storage and processor modules are physically separate on conventional computers. As a result, data transfer between these components throughout an operation consumes a great deal of power and time.
- Instead, a synapse (the junction between two neurons), which serves as both a processor and a memory storage unit, makes the human brain a superior biological computer that is both smaller and more effective.
- The brain-like computing technique can assist in meeting the rising computational needs in the contemporary era of artificial intelligence.

SIGNIFICANCE NEUROMORPHIC COMPUTING

- Neuromorphic computing has paved the way for advancements in science and quick development in computer engineering.
- In the field of artificial intelligence, This computing process has been a ground-breaking idea.
- The neuromorphic computing process has increased information processing and made it possible for computers to work with better and more advanced technology with the aid of one of the machine learning approaches used in artificial intelligence (AI).

Source:
PIB

The Decline of Kelp Forests

This article covers "Daily current events "and the topic is about 'the decline of the kelp forests' which is in news, it covers the "Environment and ecology" In GS-3, and the following content has relevance for UPSC.

For Prelims: About kelp forests
For Mains: GS-3, significance of kelp forests

Why in news:

According to a recent study, climate change is contributing to the decline of kelp forests.

What are the Study's Highlights:

- The major kelp species in the southern hemisphere, Ecklonia radiata, is particularly susceptible to climate change in areas close to the equator.
- The species is experiencing reductions along the eastern Australian coastline, and it is predicted that these declines will continue internationally in the coming years.
- Even if in situ protection might not be practical, its distinctive genetic diversity can be conserved by ex-situ storage in culture banks for use in any restoration, hybridization, or adaptation plans in the future.

ABOUT THE KELP FORESTS

- Underwater habitats known as kelp forests are created in shallow water by the dense growth of several species.
- Large brown algae known as kelp are found in shallow, chilly seas close to the beach.
- Kelp Forests are always coastal and require shallow, reasonably clear water. They cling to the seafloor and eventually grow to the surface and rely on sunshine to produce food and energy.
- They have considerable ecological and commercial value and serve as the underwater habitat for hundreds of species of invertebrates, fish, and other algae.
- It is significant because it provides a range of marine animals with essential nourishment. Up to 60% of the carbon present in coastal invertebrates is produced by kelps.
- They provide a habitat for birds to forage since they are a diverse invertebrate

and fish ecosystem.

- It increases the productivity of the coastal environment by releasing carbon into it. The primary production of kelp results in the generation of fresh biomass, detritus, and other elements.

Kelp Forests

MAJOR KELP FORESTS DISTRIBUTION AROUND THE WORLD

- Inuit, scientists, and arctic explorers have all documented kelp forests in the Arctic. 10% of all coasts in the world are concentrated in the Canadian Arctic.
- To the harsh environment, kelps have evolved. These cool-water species have unique adaptations that allow them to endure subfreezing temperatures, protracted periods of darkness, and even the growth of sea ice.
- They are capable of some of the highest rates of primary production of any natural ecosystem on Earth when located in areas with cold, nutrient-rich water.
- Between Ellesmere Island and Labrador, along the shores of Lancaster Sound, Ungava Bay, Hudson Bay, Baffin Bay, and Resolute Bay, Kelp forests have been scientifically observed in Hudson Bay and eastern Canada.

THE FUNCTION

- The way kelps work underwater is similar to how trees work on the land. By blocking light and calming waves, they alter the physical environment to produce habitat.
- Numerous kinds of crustaceans, fish and other algae call these forests home, and they also provide crucial three-dimensional underwater habitats.
- One of the ocean's most diversified ecosystems is made up of these forests.

Seabirds and marine animals like sea lions, sea otters, and even grey whales use kelp forests as protection from predators and storms, and many fish species use them as nurseries for their young.

THREAT

- Alarming rates of sediment discharge into coastal waterways are being caused by thawing permafrost and collapsing Arctic beaches, which could impede plant development by obstructing sunlight.
- Young kelp is impacted by the turbidity and salinity changes brought on by glacier runoff.
- It is well recognized that destructive fishing methods, coastal pollution, and unintentional harm from boat entanglement have a deleterious impact on kelp forests.
- By traveling in herds, sea urchins can destroy kelp forests at a rate of 30 feet (9 m) each month. For kelp forests to flourish, sea otters are essential for maintaining sea urchin numbers.

SIGNIFICANCE

- Kelp forests support a wide range of economic, leisure, and tourism activities, and they are crucial to coastal economies all around the world.
- North Americans eat kelp, and during the past 20 years, the kelp aquaculture business has expanded at a global pace of 7% annually (kelp is a coveted food source in many countries, full of potassium, iron, calcium, fiber, and iodine).
- Inuit traditionally use kelp as sustenance in the Arctic and gather a wide variety of wild animals.

Source:
Downtoearth
Scroll. in

World economic outlook report 2023

This article covers "Daily current events "and the topic is 'World economic outlook report 2023" which is in the news, it covers the "Indian economy" In GS-3, and the following content has relevance for UPSC.

For Prelims: About IMF, reports published by IMF
For Mains: GS-3, concerns associated with the report, Indian economy

Why in the news:

The January update of the World Economic Outlook was released by the International Monetary Fund (IMF).

ABOUT IMF

The International Monetary Fund (IMF) is a membership-based institution with 190 member nations. The most influential nations in the global economy are represented on the IMF's executive board in proportion to their financial weight.

Functions of IMF

- Financial Assistance: The IMF lends money to member nations experiencing balance of payments issues in order to bolster economic growth conditions, replenish foreign reserves, and stabilize currencies. The implementation of structural adjustment programs is required, and the IMF will oversee them.
- IMF keeps an eye on the global monetary system and the 190 nations that make up its membership's economic and financial policies.
- The IMF flags potential stability risks and offers guidance on necessary policy adjustments as part of this process, which occurs both globally and in specific nations.
- Capacity Development: It offers technical support and instruction to central banks, finance departments, taxing bodies, and other financial entities.

Reports published by IMF

- World Economic Outlook
- Global Financial Stability Report
- Fiscal Monitor
- External Sector Report

CONCERNS ASSOCIATED WITH THE WORLD ECONOMIC OUTLOOK REPORTS

It provides analyses of short- and long-term changes in the world economy. The international economy is discussed at length in each chapter, including concerns that affect industrialized nations, emerging nations, and economies that are transitioning to the market. Each chapter also addresses hot-button issues of the day. Aside from updating it twice a year in January and July, the IMF releases the WEO twice a year in April and October. Important conclusions from the most recent World Economic Outlook update

GLOBAL EXPANSION

According to the forecast, global growth would reach 3.1 percent in 2024 after falling to 2.9 percent in 2023. The prediction for 2023 is 0.2% higher than that of October 2022, although it is still below the long-term average of 3.8%. The war in Ukraine and rising interest rates continue to have a negative impact on the economy.

INFLATION

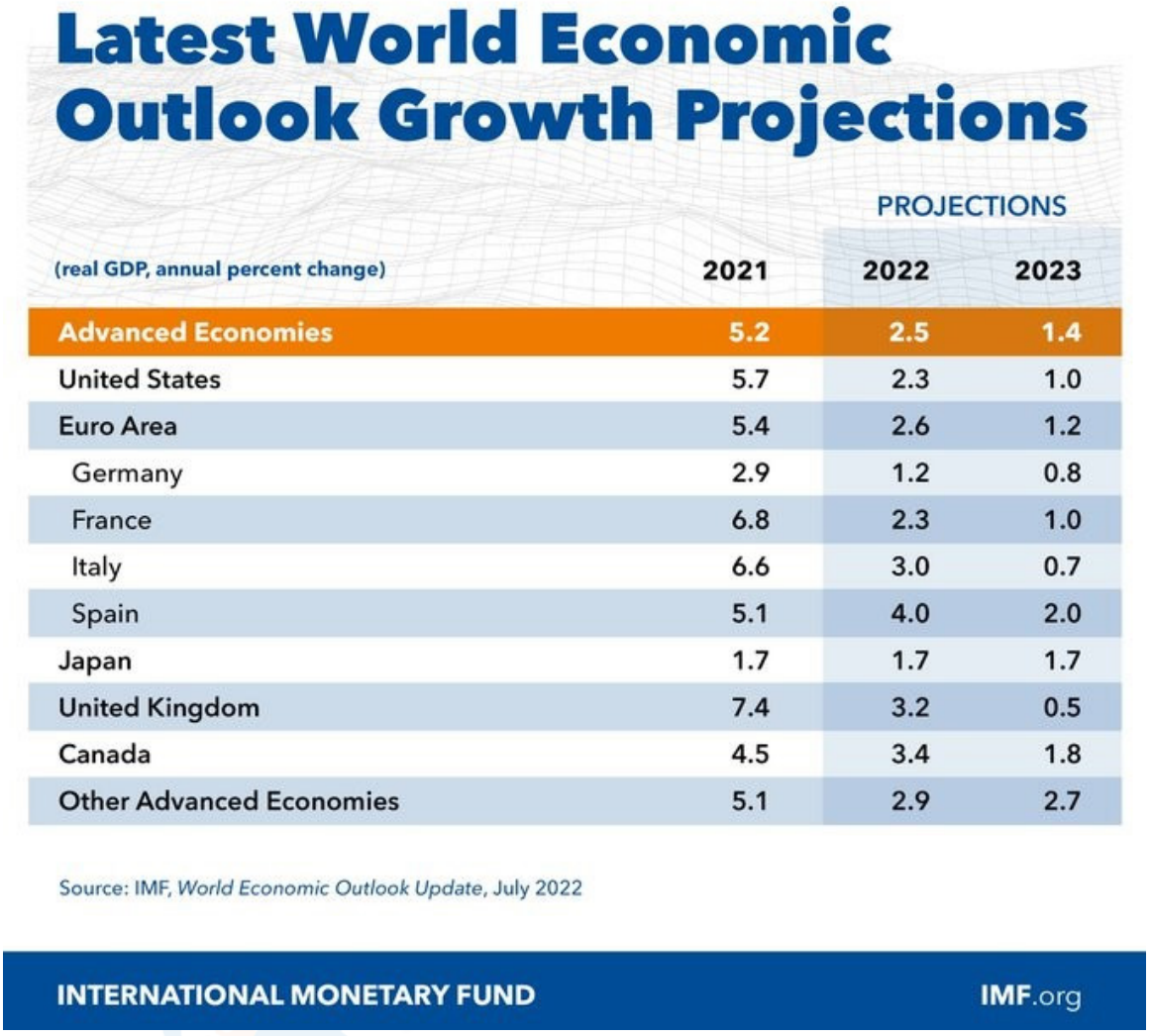
Global inflation is predicted to decline from 8.8% in 2022 to 6.60% in 2023 and 4.30% in 2024, still above pre-pandemic levels of roughly 3.50% (2017–19).
There are two key causes for the decreasing price increase.
global monetary tightening: As a result of slower inflation caused by higher interest rates, consumers are less likely to spend money overall.
Prices of several commodities, including gasoline and non-fuel, have decreased from their most recent highs as a result of waning demand.

Asia

The analysis predicts that growth in emerging and developing Asia would increase to 5.3% and 5.2%, respectively, in 2023 and 2024, following a more severe than anticipated decline to 4.3 percent that can be attributed to China's economy in 2022.

INDIAN SCENARIO ACCORDING TO WORLD ECONOMIC OUTLOOK REPORTS

The expected growth for the Indian economy for the upcoming fiscal year is 6.1%, down from 6.8% for the current fiscal year that ended on March 31.



World Economic Outlook Growth Projection

CONCERNS

- The crisis in Ukraine could worsen, China's bad health results could hinder recovery, and debt distress could get worse as a result of increasing global financing costs.
- In addition, bad news about inflation may cause financial markets to quickly reorder their priorities, and growing geopolitical fragmentation may stymie economic expansion.

Recommendations

- Despite the current problem in the cost of living, preserving continuous deflation remains a top issue in most economies. Given the potential effects that tighter monetary conditions and slower growth may have on financial and debt stability, the employment of macroprudential instruments and the

strengthening of debt restructuring regimes are necessary.

- Accelerating the COVID-19 immunization program in China would safeguard the recovery and have positive cross-border consequences.
- Broad-based fiscal relief programs ought to be stopped, and financial aid ought to be properly directed to those who will be most affected by the rise in food and energy prices.
- Stronger multilateral cooperation is needed to protect the advantages of the rules-based international system, lower greenhouse gas emissions, and boost green investment.

Source:

Timesnownews.com

Amritkaal Budget 2023-24

Relevance for Prelims: Amritkaal Budget

Relevance for Mains: Key focus of the Budget

First Amritkaal Budget

The first budget of Amritkaal in India was presented on 1st February 2023, by the newly elected government. This budget was highly anticipated as it was expected to outline the government's economic vision and policy priorities. The budget was keenly watched by economists, industry leaders, and the public, who were eager to see the government's plans for the country's economic development and growth.

ABOUT AMRITKAAL BUDGET

The budget focused on several key areas, including agriculture, infrastructure development, employment generation, and healthcare. The government announced a series of initiatives aimed at boosting agriculture and increasing the income of farmers. The allocation for agriculture and rural development increased by over 20% compared to the previous year. The government also announced plans to set up agro-processing zones and improve the marketing of agricultural products.

Amritkaal Budget

Budget

BUDGET ON INFRASTRUCTURE

In the area of infrastructure development, the government announced several initiatives aimed at strengthening the country's transportation, energy, and communication networks. The allocation for infrastructure was increased by

over 25% compared to the previous year. The government also announced plans to upgrade the country's road and railway networks, expand the capacity of ports and airports, and improve the power distribution system.

BUDGET ON EMPLOYMENT

The government also announced several initiatives aimed at generating employment and promoting entrepreneurship. The allocation for employment generation was increased by over 15% compared to the previous year. The government also announced plans to create new job opportunities through the establishment of small and medium-sized enterprises, as well as through the expansion of existing businesses.

AMRITKAAL BUDGET ON HEALTHCARE

In the area of healthcare, the government announced several initiatives aimed at improving the quality and accessibility of healthcare services. The allocation for healthcare was increased by over 10% compared to the previous year. The government also announced plans to set up new hospitals and health centers, upgrade existing facilities, and provide free healthcare services to poor and marginalized communities.

Conclusion

In conclusion, the first budget of Amritkaal in India was focused on boosting economic growth, generating employment, and improving the standard of living of the people. The government's initiatives in agriculture, infrastructure, employment generation, and healthcare are expected to have a positive impact on the country's economic development and growth in the coming years. The budget received a positive response from the public and the business community, who praised the government's efforts to address the country's economic and social challenges.

Source:

Indiabudget.gov

Cultured Meat

According to Data Bridge Market Research's analysis, the global market for cultured meat would expand at a CAGR of 15% between 2022 and 2029. The US Food and Drug Administration has now given its blessing for lab-grown beef for the first time. Up to this moment, only Singapore has allowed the selling of goods derived from domesticated meat.

Why in the news:

In its June 2020 Food Outlook Report, the UN Food and Agriculture Organization (FAO) forecast that the world's meat production will decrease to 333 million tonnes in 2020, 1.7% less than in 2019.

The interruption is primarily due to Covid-19, but it has also raised widespread fears about zoonotic illnesses, particularly deadly avian influenza and African swine fever. This will help the market for meat substitutes.

ABOUT CULTURED MEAT

Actual meat that has been generated from animal cells is known as cultured meat. Other names for it include lab-grown meat, cell-based meat, and produced meat. This meat can be made without having to raise and kill animals. Animal cells are grown in a lab to produce cultured meat, which is an alternative to consuming meat from deceased animals. This meat is produced in cell culture as opposed to being raised within an animal's body. It is nutritionally comparable and has a similar flavour, aroma, appearance, and feel to typical animal flesh.

WORLDWIDE SCENARIO

Government support for companies that produce cultured meat is significant everywhere. Among others, the governments of Israel, Japan, and the Netherlands have made investments in clean meat companies.

Additionally, regulatory agencies in countries like the US are choosing how to advertise these products. These programmes demonstrate how the clean meat sector can sustainably feed future generations.

DIFFERENCES BETWEEN CULTURED MEAT AND MEAT FROM PLANT SOURCES

- While cultured meat is produced by cultivating cells in a lab, plant-based meat is produced utilising plant sources like soy or pea protein.
- To feed more people, reduce the risk of zoonotic diseases, and diminish the

impact of meat consumption on the environment, both initiatives aim to produce meat alternatives.

DIFFERENCE BETWEEN TRADITIONAL BEEF AND CULTURED MEAT

- With the Exceptng directly from animals, cultured or cultivated meat is identical to regular meat in terms of cellular structure.
- In comparison to conventional cattle, raised beef may reduce land use by more than 95%, greenhouse gas emissions by 74–87%, and nutrient pollution by 94%.
- Because it is grown in sanitary facilities, the possibility of cultured beef being contaminated by pathogens like salmonella and E coli is considerably reduced.
- Unlike animals raised for meat, it doesn't require antibiotics, which lessens the risk that developing antibiotic resistance poses to the general public health.

THE PROCESS OF LAB-GENERATED MEAT

- Lab-grown beef is created using the more than 100-year-old technique of in vitro muscle tissue growth.
- The initial step in the process is to separate a small number of cells from premium livestock animals, like a cow or chicken, and identify which of those cells have the can and make delectable meat food products.
- The cells are then put in a clean, controlled environment and given the essential nutrients they need to grow normally.
- In essence, the environment found inside an animal's body can be mimicked in order to cell proliferation.
- When the meat is prepared, we harvest it, process it according to standard procedures, and then package, cook, or otherwise render the meat fit for consumption.

THE SIGNIFICANCE OF CULTURED MEAT

- Among the benefits of clean meat that might be realised are sustainability, environmental friendliness, animal welfare, food safety, and inventive cuisine. Furthermore, cell-based beef claims to be better for the environment.
- The necessity for modern factory farming and issues like animal maltreatment, e. coli and salmonella diseases, and meat laced with antibiotics might be eliminated.
- Salmonella: The name given to a group of bacteria. It is the US country with the highest frequency of foodborne disease. Raw beef, raw eggs, raw poultry,

and unwashed fruits and vegetables are all sources of salmonella.

- 'E. coli' (Escolicchia coli) Typically, E. coli poses no health risks. Consuming meals laced with germs can result in E. coli illnesses. To reduce the risk of illness and food poisoning, handle food properly. Avoid raw milk and fluids, properly cook your meat, wash your produce before you eat it or cook it, and wash your fruits and veggies.

ADVANTAGES OF CULTURED MEAT

The E. coli bacteria, which is present in animal faeces, and other contaminants that we can come into contact with at a meat processing facility are said to be substantially less likely to be present in cultured meat, according to its supporters.

Antibiotic use is declining

In the past, animals were regularly given antibiotics to maintain their health. When an infection is resistant to antibiotic treatment, it cannot be adequately treated.

Less environmental impact

As the world's demand for meat rises, more forested land is being converted to ranches and crop fields. Meat that has been raised on farms uses a lot less water, land, and pollution.

Even though a little amount of tissue is required for cultured meat, no animal slaughter is essential.

ISSUES AND CHALLENGES WITH CULTURED MEAT

- Because it contains animal cells, Cultured Meat is not considered to be Vegan.
- It is really expensive.
- Conventional meat continues to rule the market, and industry lobby groups have been fighting to keep hold of that dominance, even to the point of opposing the idea of alternative meats altogether.
- Organizations involved in agriculture and animal husbandry are leading the opposition against lab-grown meat, claiming that since it did not come from an animal, it is not actually instance, the US Cattlemen's Association was successful in convincing Missouri to pass legislation prohibiting the

classification of cultured meat and meat derived from plants as meat.

- The Cattle Council of Australia has been exerting comparable pressure on the national government since 2018.

WAY AHEAD

There is still a number several be resolved before cultured meat is widely available, such as price, resolving consumer distrust, and conventional meat producers' objections. When laboratory-produced meat becomes available, it might be healthier for you than meat derived from animals. According to experts writing in the Journal of Scientific Research, "this is because of the power of the technology to change the profile of key amino acids and lipids and to be richer in vitamins, minerals, and bioactive substances."

Source

- Openpr.com
- Gfi.org

GST COMPENSATION TO STATES

States Demand for extension of GST Compensation to States

Relevance for Prelims: GST Compensation to States, Working of GST Compensation
Relevance for Mains: Relevance and Need of GST Compensation

About Goods and Service Tax

Goods and Services Tax (GST) is a comprehensive indirect tax levied on the supply of goods and services in India. GST replaced several indirect taxes imposed by the central and state governments, making it a single unified tax system. One of the key features of GST is the sharing of revenue between the central and state governments.

GST COMPENSATION TO STATES

GST compensation to states refers to the reimbursement of losses incurred by the states due to the implementation of GST. According to the GST Act, the central government is obligated to compensate the states for any revenue loss incurred due to the introduction of GST for a period of five years from the date of its implementation. The compensation is calculated based on the revenue of the states in the base year of 2015-16, and a growth rate of 14% has been assumed.

The GST compensation mechanism is an important aspect of the Indian economy as it ensures the financial stability of the states and helps them to meet their developmental needs. The compensation is crucial for the states as it helps to make up for the revenue losses, they incurred due to the GST implementation. The compensation also ensures that the states are able to continue with their existing developmental activities without any financial constraints.

COLLECTION AND DISTRIBUTION OF GST COMPENSATION CESS

The GST compensation collected by the central government is done through the GST compensation cess, which is levied on certain luxury and demerit goods, such as cigarettes, aerated drinks, and SUVs. The GST compensation cess is collected by the central government and is used to compensate the states for their revenue loss due to GST implementation.

The central government also transfers a portion of the Integrated GST (IGST) collected on the inter-state supply of goods and services to the states. The IGST

revenue is divided between the central and state governments in the ratio of 50:50. The central government also transfers a portion of the Central GST (CGST) and State GST (SGST) collected on intrastate supply of goods and services to the states.

The central government also transfers the unutilized balance of the compensation fund to the states on a quarterly basis. The GST compensation fund is created to meet the compensation requirements of the states. The central government transfers the balance of the fund to the states after accounting for the compensation paid to the states during the quarter.

CHALLENGES AND CONCERNS ASSOCIATED WITH IT

However, the central government has been facing challenges in providing GST compensation to the states due to the low collection of GST revenue. The COVID-19 pandemic has further compounded the problem, leading to a sharp decline in GST collections. As a result, the central government has been struggling to pay the compensation to the states on time, leading to a liquidity crunch for the states.

To address this issue, the central government has proposed several measures, including borrowing options and the creation of a special borrowing window. The borrowing options include borrowing by the central government on behalf of the states, or by the states themselves, with the central government providing a guarantee. The special borrowing window is an alternative financing mechanism that allows the states to borrow from the market to meet their GST compensation needs.

The proposed measures have faced criticism from several quarters, with some experts arguing that the borrowing options will increase the debt burden of the states and the central government. Some have also argued that the borrowing options may not provide adequate compensation to the states, leading to a further decline in their financial stability.

CONCLUSION

In conclusion, the GST compensation to states is a critical aspect of the Indian economy and is crucial for ensuring the financial stability of the states. The COVID-19 pandemic has led to a decline in GST collections, making it difficult for the central government to compensate the states on time. While the proposed measures may provide some relief to the states, they also have their own set of

challenges and limitations. It is important for the government to find a sustainable solution to the issue of compensation to the states, keeping in mind the long-term interests of the Indian economy.

Source:

- Livemint.com

Renewable energy in India

This article covers "Daily current events "and the topic is about 'Renewable energy in India which is in news, it covers the "Indian Economy" In GS-3, and the following content has relevance for UPSC.

For Prelims: About renewable energy sources
For Mains: GS-3, infrrenewable energy in indiaastructure,Indian Economy

CONTEXT

- The world's installed wind energy capacity is the fourth largest in India. The potential is larger and can be hastened, though, if the policies and bidding system are adjusted.
- According to the Union Ministry of New and Renewable Energy, the nation's total installed capacity was 41.67 GW as of September 30, 2022. In the years 2020–21, almost 60.15 billion units were
- By 2022, the Indian government wants to have 175 GW of capacity for renewable energy. Achieving 60 GW of onshore and 5 GW of offshore wind energy capacity was a goal.

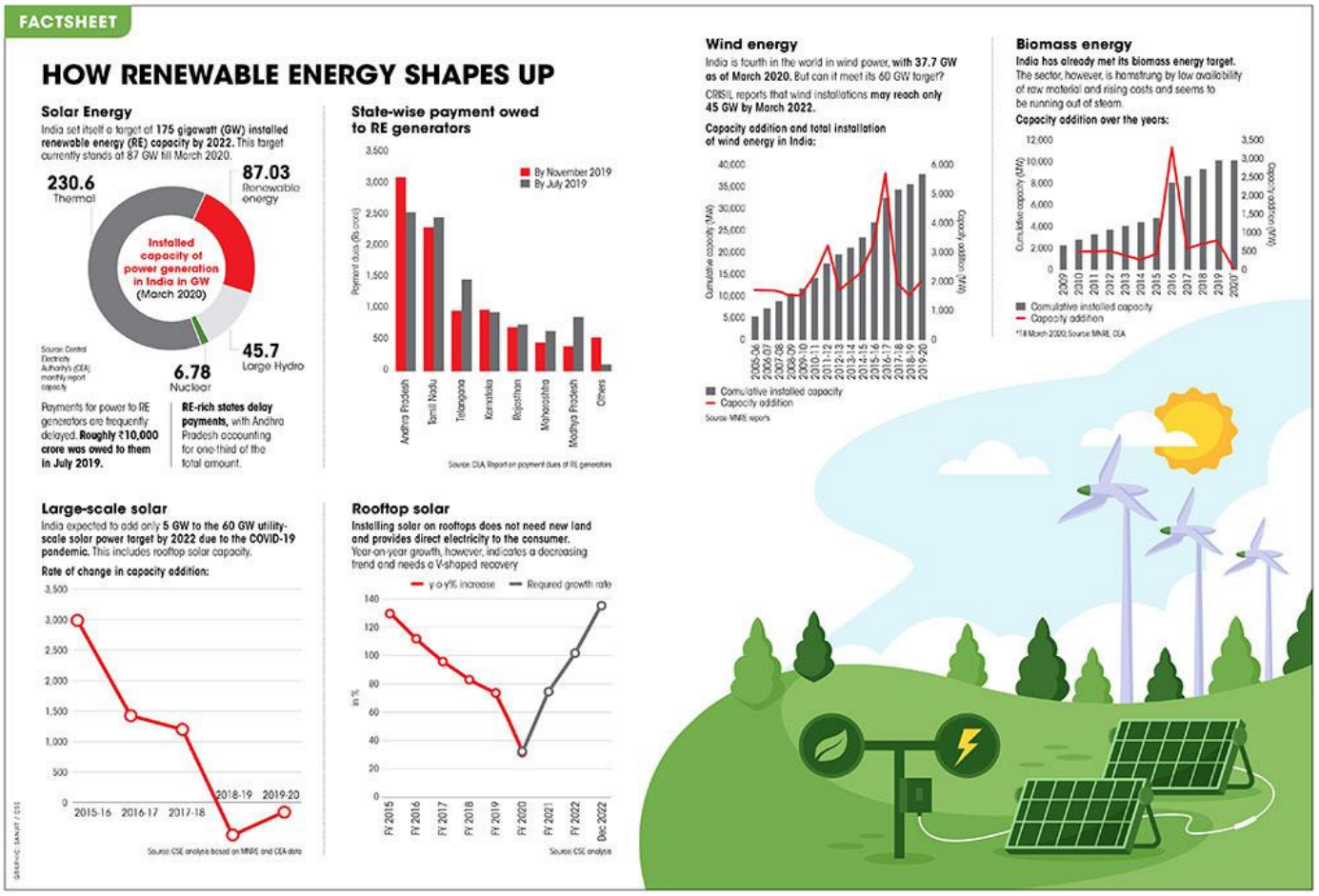
RENEWABLE ENERGY

Renewable energy comes from natural sources that are regenerated more quickly than they are used up. Examples of such sources that are continually replenished are the sun and the wind. There are many different types of renewable energy all around us.

Renewable energy sources are frequently included when using the term "alternative energy." It refers to alternate energy sources to the most popular non-sustainable sources, such as coal.

The most popular renewable energy sources currently are:

- Solar energy
- Wind energy
- Hydro energy
- Tidal energy
- Geothermal energy
- Biomass energy



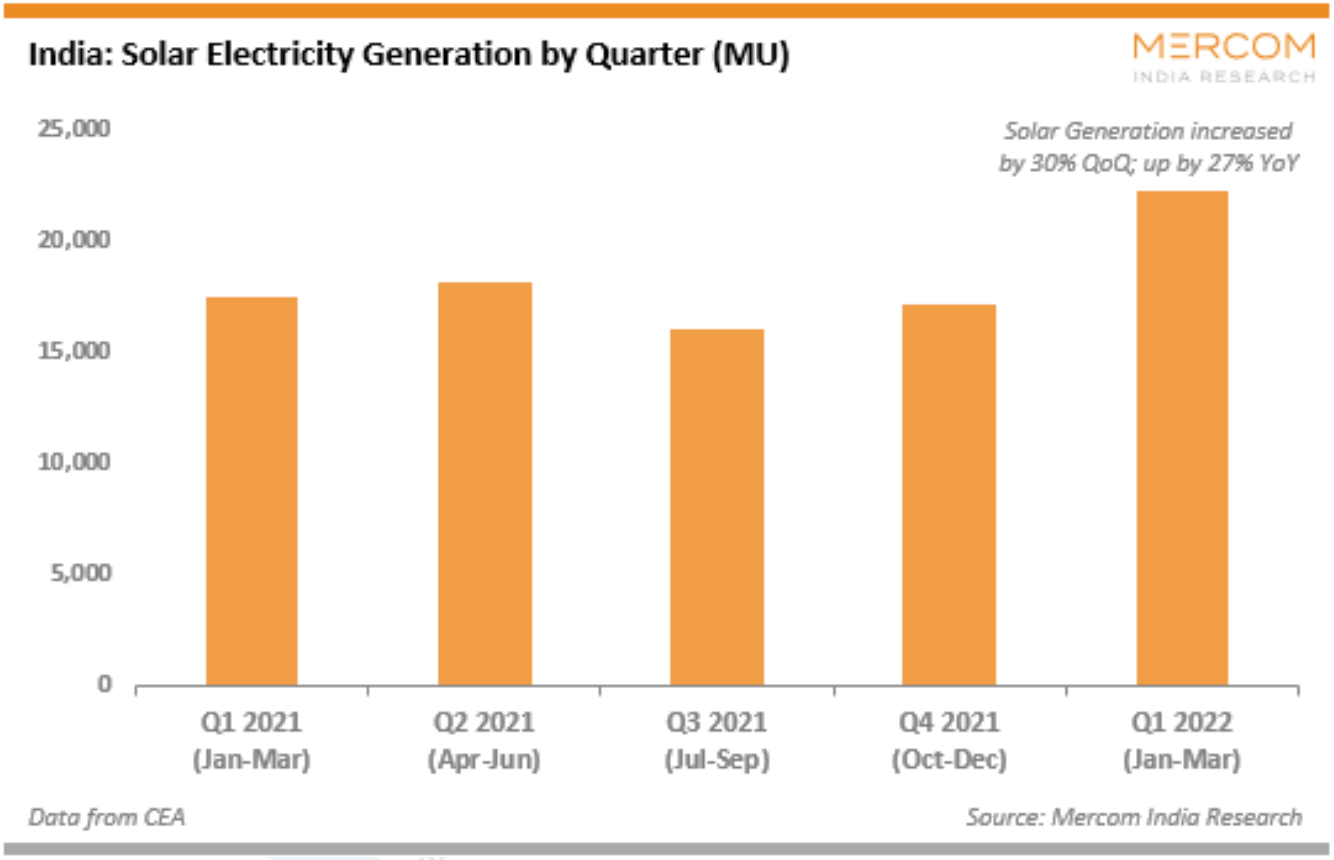
Renewable Energy

SOLAR ENERGY

- Solar energy is the most plentiful energy source available and may be used in cloudy conditions. The Earth absorbs solar energy at a pace that is around 10,000 times greater than the rate at which people use
- The quantity of solar energy that reaches the surface of the globe in a single hour exceeds the planet's whole annual energy
- Solar technologies are capable of providing heat, cooling, natural lighting, power, and fuels for a variety of uses. Through photovoltaic panels or mirrors that concentrate solar radiation, solar technologies transform sunlight into electrical energy.
- India has a lot of solar energy potential. The energy incidence over India's land area is around 5,000 trillion kWh every year, with the majority of areas receiving 4–7 kWh per sq. m. per day. In India, solar photovoltaic power may be efficiently harnessed and has enormous.
- India increased its grid-connected solar capacity by a total of 8 GW in the first

eight months of 2022.

- Solar energy generation reached 73.48 Billion units for the financial year 2021-22.
- An increase of 22% over the previous year. The top three states for solar energy production were Rajasthan, Karnataka, and Andhra Pradesh.



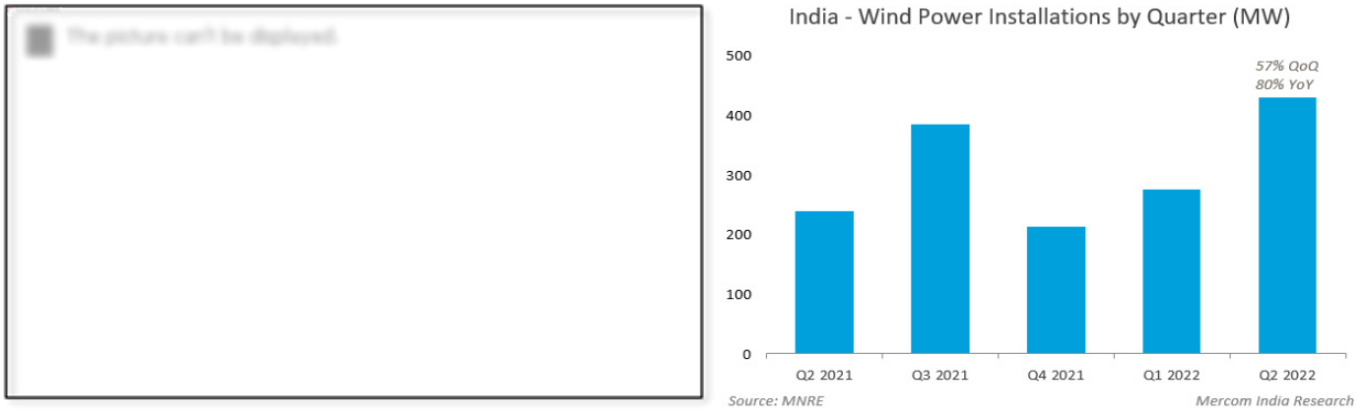
Solar Energy

WIND ENERGY

- Wind energy is the process of harnessing the kinetic energy of moving air by means of massive wind turbines that are installed on land (onshore), in salt water, or in freshwater (offshore). Despite the fact that wind energy has been used for thousands of years, onshore and offshore wind energy technology has lately progressed to maximize the quantity of electricity produced, with higher turbines and larger rotor diameters.
- Although average wind speeds vary widely by location, the globe's technical potential for wind energy exceeds that of electricity production, and most locations of the world have the potential to support considerable wind energy
- According to Renewables 2022 Global Status Report, India ranked third globally for the total installed capacity of wind power (40.1 GW), behind

China, the US and

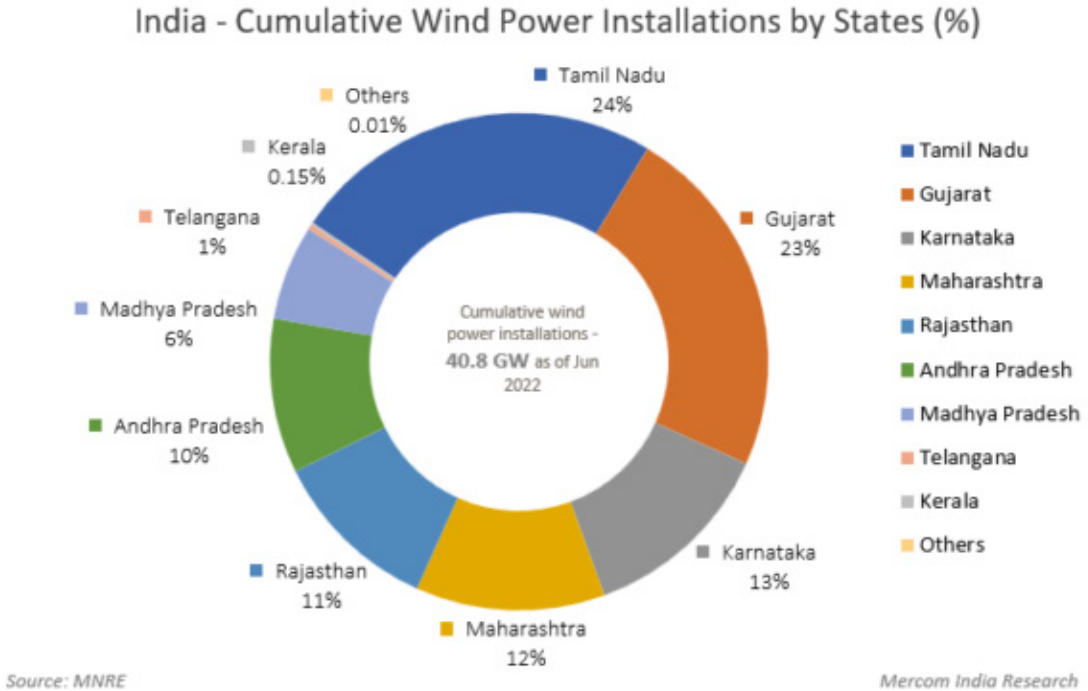
- In the second quarter (Q2) of 2022, India installed 430.45 MW of wind power capacity, a 57% quarter-over-quarter (QoQ) increase compared to the 275 MW installed in the first quarter.



Wind Power Installation by Quarter

of 2022. According to the latest data given by the Ministry of New and Renewable Energy, the total number of wind installations in the nation is 40.8 GW.

Top of the list was Gujarat, which added about 210.2 MW of wind capacity. With 72.3% of the total capacity, Tamil Nadu, Gujarat, Karnataka, and Maharashtra remained the top markets for wind.



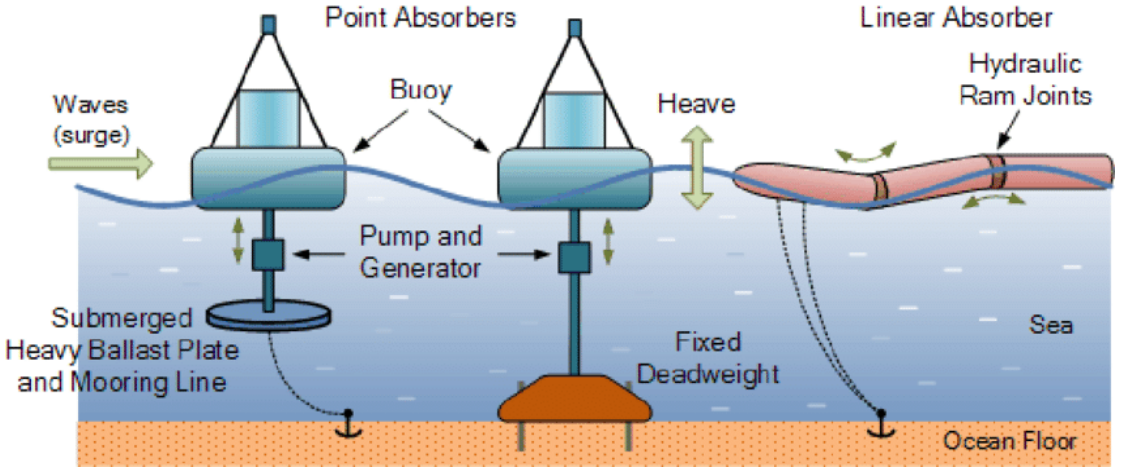
Wind Power Installation

HYDRO-POWER ENERGY

- The largest renewable energy source in the electricity sector at the moment is hydro-power. It is dependent on typically consistent rainfall patterns. The energy of water flowing from higher elevations to lower elevations is captured by hydro-power.
- It can be produced by rivers and reservoirs. Run-of-river hydro-power facilities rely on the river's available flow, whereas reservoir hydro-power plants use water that has been stored in a
- In addition to supplying energy, hydro-power reservoirs frequently serve as sources of drinking water, irrigation water, flood and drought control, navigation services, and energy.
- According to Renewables 2022 Global Status Report, India added 843 MW of hydro-power capacity in 2021, raising the total capacity to 3 GW.
- The top five hydroelectric power plants in the nation are located in the states of Gujarat, Himachal Pradesh, Uttarakhand, and Maharashtra.

OCEAN ENERGY/ TIDAL ENERGY

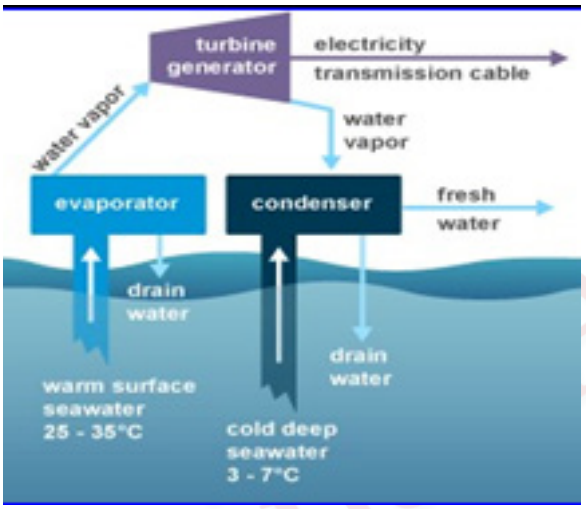
- Tides are used to power turbines twice daily in tidal energy, another sort of hydropower. While tidal flow isn't constant, unlike some other hydro energy sources, it is incredibly predictable and may therefore make up for times when the tide current is weak.
- Tidal energy is now at the research and development (R&D) stage in India, according to the Ministry of New and Renewable Energy. Low to moderate tidal wave power is predicted for the Gulf of Khambat, Gulf of Kutch, southern Gujarat, Palk Bay and Mannar Channel in Tamil Nadu, Hooghly River, South Haldia, and the Sunderbans in West Bengal.



Ocean Energy

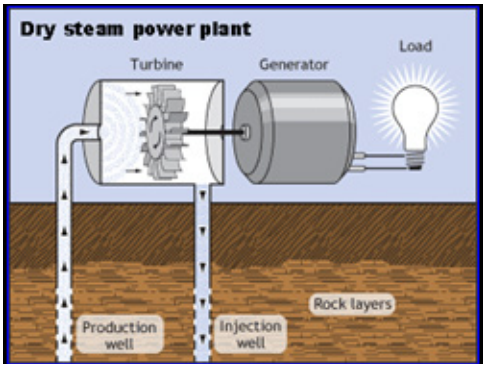
GEOTHERMAL ENERGY

- Geothermal energy uses the thermal energy that exists within the Earth's interior. Warming geothermal reservoirs can be accomplished using wells and other methods.
- Enhanced geothermal systems are ones that are naturally adequately hot but improved by hydraulic stimulation, whereas hydrothermal reservoirs are those that are naturally sufficiently hot and permeable.



Geothermal energy

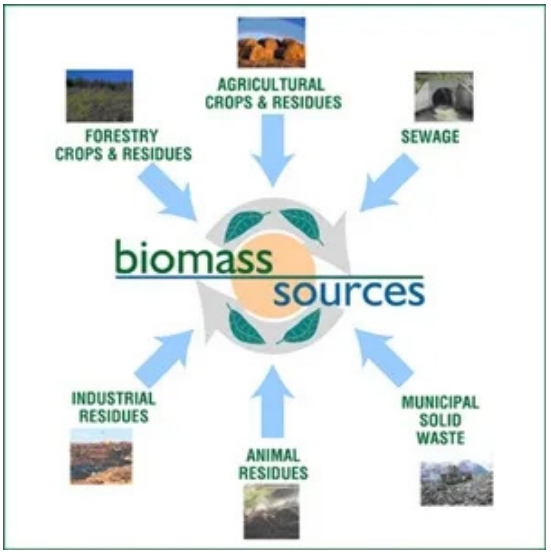
- Once they reach the surface, fluids of various temperatures can be used to generate electricity. The technique for generating energy from hydrothermal reservoirs is established, dependable, and mature since it has been in use for more than a century.
- Rajgir in Bihar, Manikaran in Himachal Pradesh, Surajkund in Jharkhand, Tapoban in Uttarakhand, and the Sohana region in Haryana are among the interesting geothermal sites for direct heat usage applications. reservoir. The pressure of the deep reservoir is released as the water is pumped into the generator.



Geothermal Energy

BIOMASS ENERGY

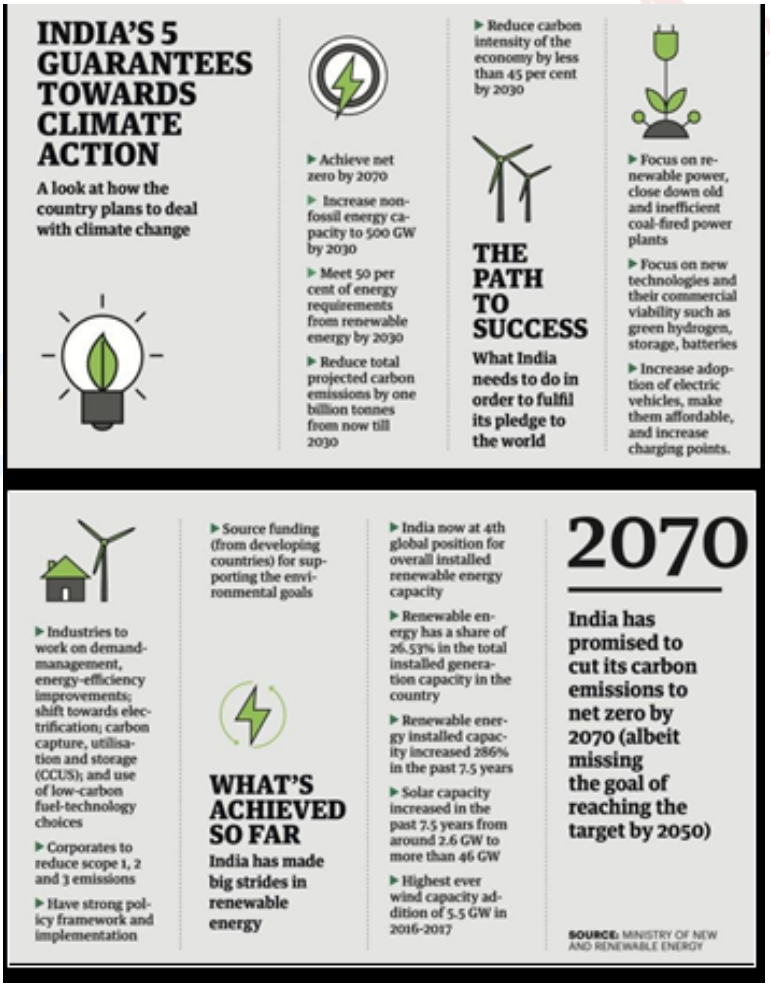
- Bioenergy is made from various organic resources, known as biomass, including wood, charcoal, dung, and other manures for the production of heat and power, as well as agricultural crops for the creation of liquid biofuels. The majority of biomass is used for cooking, lighting, and space heating by the poorest people in developing countries rural areas.
- Modern biomass systems make use of specialized plants or trees, waste materials from forestry and agriculture, and a variety of organic waste streams.
- Although at a lower rate than when fossil fuels like coal, oil, or gas are burned, burning biomass produces greenhouse gas emissions. However, given the potentially negative environmental effects linked to considerable increases in plantations for bioenergy and forests, as well as the consequent deforestation and land-use change, bioenergy should only be used in limited applications.
- The primary goal of the biomass power and co-generation program is to promote technologies that make the best use of the nation's biomass resources for grid power Bagasse, rice husks, straws, cotton stalks, coconut shells, soy husks, de-oiled cakes, coffee trash, jute waste, groundnut shells, sawdust, and other biomass products are used to generate electricity.
- In the nation, more than 800 biomass power and bagasse/non-bagasse cogeneration facilities of 10170 MW capacity have been erected to supply electricity to the grid. Maharashtra, Karnataka, Uttar Pradesh, Tamil Nadu, and Andhra Pradesh are the states that have taken the lead in putting bagasse cogeneration plants into The major States for biomass power projects are Madhya Pradesh, Gujarat, Rajasthan, and Tamil Nadu.



Biomass energy

CURRENT SCENARIO OF RENEWABLE ENERGY IN INDIA

- Global Status Report (GSR 2022) presents a world map of country shares of renewable energy for the first time and emphasizes development in some of the top nations.
- A record 135 nations made the commitment to attain net zero greenhouse gas emissions by the year 2050 in the run-up to the United Nations Climate Change Conference (COP26) in November 2021.
- However, only 84 of these nations had targets for renewable energy across the whole economy, and only 36 had targets for 100% renewable energy.
- REN21 (Renewable Energy Policy Network for the 21st Century)published the Renewables 2022 Global Status Report (GSR 2022). India was in third place behind China and Russia in terms of renewable energy installations in 2021.



Current scenario of Renewable Energy

BENEFITS OF RENEWABLE ENERGY

- Because weather disruptions in one region cannot be the same in other

locations, solar and wind power plants might produce electricity with little or no interruption. however, it will provide electricity under typical circumstances in locations without electricity or in distant

- Zero Carbon Emissions: During renewable energy production, no greenhouse gases or other pollutants are
- Energy security: There is no chance that renewable resources will run out because they do not deplete over time. While fossil fuels (coal, gas, and oil) are thought to be finite resources, there is a good chance that they will eventually run
- Low maintenance costs: One benefit of solar energy is that there is almost no need to purchase fuel, and there is also less wear and tear because there is no movement of
- Reduce pollution: Renewable energy technologies have a positive impact on both air quality and human health.
- In order to accomplish Sustainable Development Goals, electricity is provided to the underprivileged via renewable energy. For example, installing solar panels allows the underprivileged to obtain

CHALLENGES OF RENEWABLE ENERGY

- The majority of renewable energy facilities take up a lot of room. This raises the cost of the large land area as well as other difficulties regarding the purchase of
- Renewable energy sources are influenced by the weather, including solar, wind, and tide, and It becomes ineffective and impractical without the right weather conditions.
- To take advantage of economies of scale, it is necessary to put up huge projects for renewable This necessitates a sizable upfront investment, which may be a turnoff at first.
- Renewable energy sources require some kind of energy storage since their intermittent nature makes it difficult for them to consistently and carefully discharge electricity. Technologies for storing data are still quite expensive, despite the costs

GOVERNMENT INITIATIVES FOR GENERATING RENEWABLE ENERGY

- India was the first nation in the world to establish a ministry of non-conventional energy resources, which is today known as the Ministry of New and Renewable Energy (MNRE), which was founded in 1992. The Solar

Energy Corporation of India, one of its public sector enterprises, is in charge of developing the solar energy sector in India.

- According to the Central Electricity Authority's strategy framework, the nation wants to generate 57% of its total electricity from renewable sources by 2027. India plans to have 275 GW of renewable energy, 72 GW of hydroelectricity, 15 GW of nuclear energy, and roughly 100 GW from other zero-emission sources by 2027, according to its 2027
- The International Solar Alliance (ISA) is a group of 121 nations that was founded by India. The majority of these nations are sun-drenched countries that are entirely or partially located between the Tropics of Cancer and Capricorn. In order to lessen reliance on fossil fuels, the alliance's main goal is to promote efficient solar energy
- Biomass-based fuels are more calorie-dense and cleaner than conventional biomass. The government is also aiming for bio-CNG cars with a 20% petrol blend. Biomass energy production is preferable since it will clean up urban areas and lessen our reliance on foreign energy
- PM KUSUM: Farmers in the nation are encouraged to build solar pumps, grid-connected solar power plants, and other renewable energy sources. By 2022, the plan seeks to install 25,750 MW of solar and other renewable energy capacities.
- SRISTI is a program for sustainable rooftop implementation for solar transformation in India. The country's beneficiaries will receive a financial incentive from the central government in exchange for establishing solar power plant rooftop

WAY AHEAD

- In order to facilitate the expansion of renewable energy, both intrastate and interstate transmission infrastructure should be
- To strengthen the institutional framework and enable the efficient flow of government funding. Strengthening the institutional framework is crucial in order to keep an eye on how government policies and initiatives are being carried out.
- It is essential to provide policy direction well in advance so that the private sector can make the appropriate plans because renewable energy requires significant investment to attain economies of
- It is crucial to identify the sectors with the highest energy consumption and link them with production sources to meet the fluctuating demand and maximize

energy use. For instance, it is necessary to encourage the agricultural industry to use electricity at off-peak times

- The private sector does not enjoy frequent surprises or changes in policy. To instill confidence in the businesses, the government should define the geographical regions, integrate the grid, and concentrate on execution at the local level.
- We should concentrate on electric and hydrogen fuel cell-powered automobiles as these are the best ways to transition to renewable energy sources.

CONCLUSION

Renewable energy is without a shadow of a doubt the energy of the future. The current trajectory suggests that fossil fuel-based energy may be eliminated as early as 2050. This will result in a cleaner, greener planet and improve the quality of life on earth. To attain optimum efficiency, we must have a defined set of policy guidelines that examine the best combination of energy sources that are integrated into the grid.

SOURCE:

- mnre.gov.in
- mercomindia.com
- ren21.net
- The Economics Time
- yojana.gov.in
- Down To Earth

CITES Report on Red Sanders Smuggling in India

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is a global treaty aimed at protecting endangered species and their habitats. In its recent report, CITES has highlighted the issue of red Sanders smuggling in India and the steps taken by the Indian government to protect the species.

ABOUT RED SANDERS

Red Sanders, also known as red sandalwood, is a species of tree native to India. The species is known for its high-quality wood, which is used in the manufacture of furniture, musical instruments, and other items. The species is also known for its medicinal properties, making it highly valuable in traditional medicine.

However, the high demand for the Sanders has led to illegal and unsustainable exploitation of the species, resulting in its decline and making it one of the most sought-after species for illegal trade. According to the CITES report, the majority of this Sanders smuggling takes place in India, where the species is endemic. The report also highlights the role of organized criminal networks in the illegal trade of Red Sanders.

Red sandalwood

STEPS WERE TAKEN BY THE GOVERNMENT

To protect the species and combat illegal trade, the Indian government has taken several steps. The government has declared the Sanders as a protected species under the Wildlife Protection Act, of 1972, making it illegal to trade in Red Sanders without proper authorization. The government has also established a special task force to monitor and control the illegal trade in the Sanders.

The Indian government has also taken steps to increase public awareness about the importance of protecting Red Sanders. The government has launched several campaigns to educate the public about the illegal trade of the Sanders and the consequences of engaging in such activities. The government has also established community-based conservation programs aimed at promoting the sustainable use of the species and its habitat.

In addition, the Indian government has increased its efforts to prevent the illegal trade of the Sanders. The government has stepped up its enforcement efforts and increased its cooperation with international organizations, such as CITES, to combat the illegal trade of Red Sanders. The government has also increased its surveillance and monitoring efforts at ports and airports to prevent the illegal export of the Sanders.

CONCLUSION

In conclusion, the CITES report highlights the issue of Red Sanders smuggling in India and the steps taken by the Indian government to protect the species. The illegal trade of the Sanders poses a threat to the species and its habitat, and it is important for the government and international organizations to work together to combat this illegal trade. The measures taken by the Indian government, such as declaring the species as protected, establishing a special task force, and increasing public awareness, are important steps in the right direction. However, much more needs to be done to ensure the long-term survival of Red Sanders and other threatened species.

SOURCE:

- Downtoearth

Muons Particles

This article covers "Daily current events "and the topic is about 'Muons particles' which are in news, it covers "Science and Technology" In GS-3, the following content has relevance for UPSC.

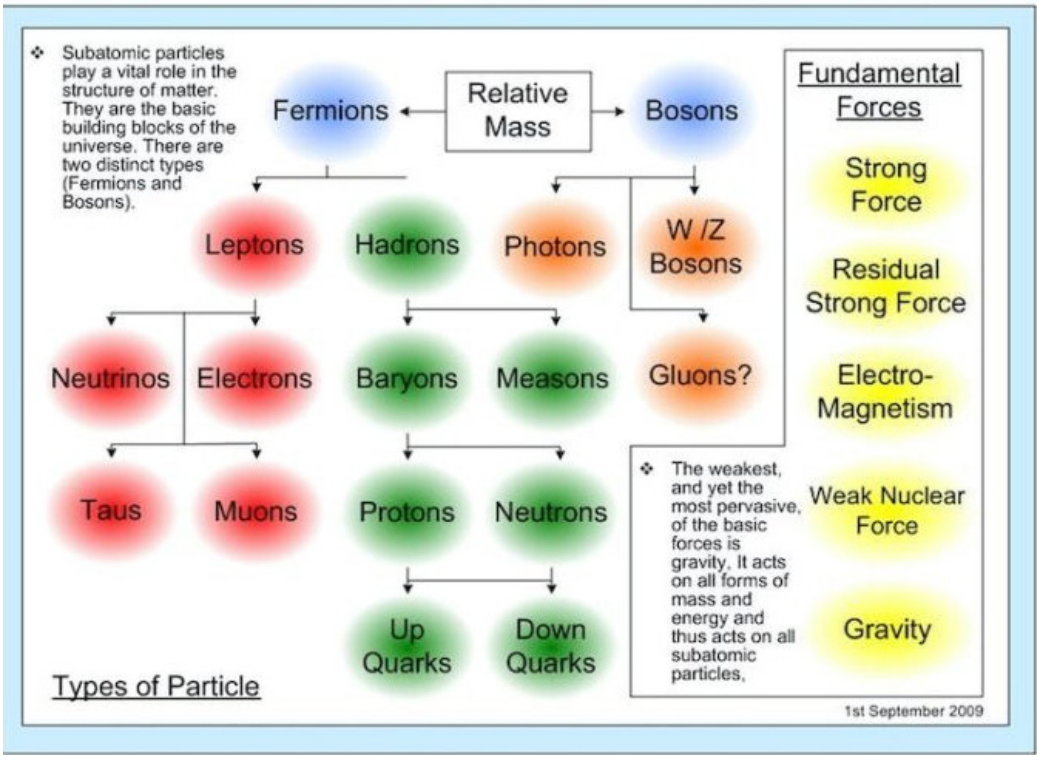
For Prelims: About Muons particles, types of particles
For Mains: GS-3, applications of muons particles

Why in news:

- The castle wall of Xi'an city, an old Chinese city, is being examined by scientists using muons, cosmic particles.
- They looked at the city wall of Xi'an using a muon detector called CORMIS (Cosmic Ray Muon Imaging System).

ABOUT MUONS

Subatomic particles known as muons fall from the sky. They are produced when high-energy particle clusters known as cosmic rays, which travel across space at a speed just below the speed of light, collide with particles in the Earth's atmosphere. Atoms are the smallest units of matter and are composed of protons, neutrons, and electrons, which are referred to as subatomic particles.



Muons Particles

ELECTRONS VS. MUONS

- Muons are similar to electrons in structure but weigh more than 207 times as much, or about the same as a tiny elephant compared to an adult. As a result, they are occasionally referred to as "fat electrons".
- Compared to electrons, which can only go through a few centimetres of material, These particles are so heavy that they can pass through hundreds of metres of rock or other material.
- Only for 2.2 microseconds do muons live before decomposing into an electron and two different types of neutrinos.

MUOGRAPHY

- Muography, also known as muon radiography, is a method that takes advantage of muons' capacity to penetrate. The imaging of the internal structure of massive things is made possible by the measurement of their absorption in the matter.
- Muography is essentially similar to X-ray, but because of muons' strong penetrating ability, it can scan considerably larger and wider structures.
- The only requirement is to position a muon detector underneath, inside, or next to the object of interest because these high-energy particles are naturally created and commonplace.
- When US experimental physicist and Nobel laureate Luis Alvarez worked with Egyptologists to look for secret rooms in the Pyramid of Khafre, Giza, the method was first employed in the late 1960s.

APPLICATIONS

- In Archaeology: The method was originally applied in the late 1960s, when Egyptologists and Nobel Prize-winning US experimental physicist Luis Alvarez worked together to look for secret rooms in the Pyramid of Khafre at Giza.
- However, contemporary archaeologists experimented again in 2017 using more powerful and advanced muon detectors and made an important discovery.
- The archaeologists were able to find a previously undiscovered room that was at least 30 metres long by deploying many detectors.
- Detecting Volcanic Eruptions: Using this method, researchers are attempting to fully comprehend the interior workings of the volcano. Data will be essential in determining what dangers to anticipate in a potential eruption.
- Nuclear Power Reactors: Muons can be used to inspect damaged nuclear

power plants and detect radioactive substances. Following the earthquake and tsunami that hit Japan in 2011, scientists used the method to peer inside the Fukushima nuclear reactors.

- Applications include the study of superconductors, molecular systems and chemical reactions, innovative battery materials, and a variety of organic systems. Muons are also used in many other investigations.

Source:

- Indianexpress
- The conversation

NISAR (NASA-ISRO Synthetic Aperture Radar) MISSION

This article covers "Daily current events "and the topic is about 'The NISAR mission' which is in news, it covers "Space technology" In GS-3, the following content has relevance for UPSC.

For Prelims: About NISAR Mission
For Mains: GS-3, Science and Technology

Why in news:

The NASA Jet Propulsion Laboratory (JPL) in California, United States, recently held a send-off ceremony for NISAR (NASA-ISRO Synthetic Aperture Radar).

Using two distinct radar frequencies (L-band and S-band), NISAR will be the first radar of its kind in orbit to methodically scan Earth. It will measure changes in our planet's surface that are less than a centimeter across.

ABOUT NISAR

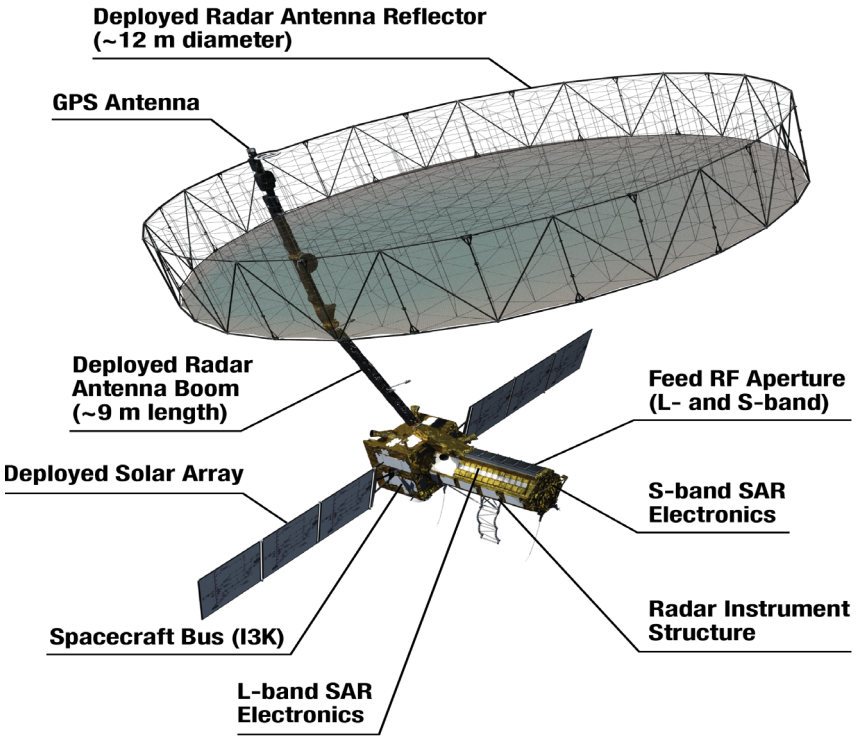
According to a cooperative agreement inked in 2014, the US and Indian space agencies collaborated to build NISAR. It is anticipated to be launched from Satish Dhawan Space Center into a close-polar orbit in January 2024. At least three years will pass before the satellite stops working. It is an observatory in low Earth orbit (LEO). The entire world will be mapped by NISAR in 12 days.

FEATURES OF NISAR MISSION

It is a dual-frequency imaging radar satellite weighing 2,800 kilograms and equipped with both L-band and S-band Synthetic Aperture Radar (SAR) instruments.

While ISRO (Indian Space Research Organisation) contributed the S-band radar, the Geosynchronous Satellite Launch Vehicle (GSLV) launch system, and the spacecraft, NASA provided the L-band radar, GPS, a high-capacity solid-state recorder to store data, and a payload data subsystem.

S-band radars function between 2-4 GHz and have a wavelength of 8 to 15 cm. They are difficult to attenuate because of their wavelength and frequency. They can be used for both local and global weather observation because of this.



NISAR Mission

- In order to focus the radar signals sent and received by the upward-facing feed on the sensor structure, it features a 39-foot stationary antenna reflector built of a gold-plated wire mesh.
- NISAR will create high-resolution photos utilizing SAR. No matter the weather, SAR can gather data day or night because it can penetrate clouds.
- For at least three years, NASA will need the L-band radar for its global science operations. The S-band radar would be used by ISRO for a minimum of five years.

L-Band

The Institute of Electrical and Electronics Engineers (IEEE) refers to the radio frequency band between 1 and 2 gigahertz as the L band (GHz). This is at the top end of the ultra-high frequency (UHF) band and the lower end of the microwave spectrum.

S-Band

- The Institute of Electrical and Electronics Engineers (IEEE) refers to the microwave band, which covers frequencies between 2 and 4 gigahertz, as the "S-band" (GHz).

- As a result, it crosses the normal boundary between the UHF and SHF bands at 3.0 GHz. Several communications satellites, including those used by NASA to interface with the Space Shuttle and the International Space Station, weather radar, surface ship radar, airport surveillance radar for air traffic control, and some satellites used for communications.

ADVANTAGES

Earth Science

NISAR will offer a wealth of information and data about changes to the Earth's surface, natural disasters, and ecological disturbances, advancing our knowledge of Earth's system processes.

Disaster management

The mission will deliver crucial data to aid in the management of natural disasters like earthquakes, tsunamis, and volcanic eruptions, enabling quicker response times and better risk assessments.

Farm

NISAR data will be utilized to provide information regarding crop growth, soil moisture, and land-use changes in order to improve agricultural management and food security.

Infrastructure Monitoring

The mission will offer information for managing and monitoring infrastructure, such as keeping an eye on deforestation, urbanization, and oil spills.

Climate Change

NISAR will assist in seeing and comprehending the effects of climate change on the terrestrial surface of the planet, such as melting glaciers, rising sea levels, and modifications in carbon storage.

Way ahead

- The Satish Dhawan Space Center is scheduled to launch the three-year NISAR mission in 2024. NISAR will be used by ISRO for many different tasks, such as mapping agricultural areas, monitoring glaciers in the Himalayas, and landslide-prone regions, and observing changes in the shoreline.
- The S-band radar will be used by ISRO for at least five years. For at least three years, NASA will need the L-band radar for its global science operations. Losses caused by calamities must be reduced for our society and economy.

To implement effective mitigation and make the most of our resources responsibly and economically, we need to make educated decisions.

- We can decipher other impacts and comprehend processes taking place at depth by measuring movements and other changes on the Earth's surface. With the aid of NISAR data and scientifically based management and storage of freshwater and energy sources, resources can be used more effectively and sustainably.
- The information from NISAR can assist people in different parts of the world manage natural resources and risks effectively. It can also help scientists better understand the consequences and rate of climate change.

Source:

- Nasa.Govt
- Indian Express

LITHIUM DISCOVERY IN THE REASI DISTRICT OF JAMMU AND KASHMIR

- Opportunities and challenges of lithium discovery in the Reasi District of Jammu and Kashmir
- The recent discovery of lithium reserves in the Reasi district of Jammu and Kashmir has opened up new opportunities for India's energy and technology industries. Lithium is a critical component in the production of electric vehicle batteries, and the discovery of Lithium reserves has the potential to significantly reduce India's dependence on imported lithium, save the country billions of dollars, and create employment opportunities for the local population. However, there are also significant social, environmental, and geopolitical challenges associated with the development of these reserves.

Lithium Discovery

FACTS ON LITHIUM DISCOVERY IN JAMMU-KASHMIR

The lithium reserves in the Reasi district are estimated to be around 5.9 million tons. The development of lithium mining in the region could create significant employment opportunities for the local population, which has been struggling with high unemployment rates for years. "Lithium is a crucial material that was previously unavailable in India, so we were completely dependent on imports. The GSI (Geological Survey of India) G3 (advanced) analysis reveals the presence

of best-quality lithium in large quantities near the base of the hills of the Mata Vaishno Devi shrine

OPPORTUNITIES OF LITHIUM

- The discovery of lithium reserves in the Reasi district presents significant opportunities for India's future. India is one of the largest importers of lithium, and the discovery of these reserves could significantly reduce India's dependence on imports of this critical resource. This could save India billions of dollars in foreign exchange and reduce the country's trade deficit. India's push towards electric vehicles and renewable energy would also receive a boost, as lithium is a key component in the production of electric vehicle batteries and energy storage systems.
- The development of the lithium mining industry in the region could also attract investment and boost overall economic development in the area. The development of downstream industries, such as battery manufacturing and recycling, could create additional employment opportunities and boost economic growth. The region could also attract investment in infrastructure development, which could benefit the local population and improve their living standards.

SOCIAL CHALLENGES OF LITHIUM RESERVES

- One of the primary social challenges associated with the development of lithium reserves in the Reasi district is the displacement of local communities. The development of the lithium mining industry could lead to the displacement of local communities, which could have significant social and economic consequences. It is essential that the development of the industry takes into account the needs and concerns of the local population and ensures that they are not negatively impacted by the development.
- Another social challenge is the lack of local skills and knowledge required for lithium mining. The mining of lithium requires skilled and semi-skilled labor, and the development of the industry could create jobs for the people of Reasi and nearby areas. However, there is a lack of skilled labor in the region, and it may be necessary to bring in outside labor to fill these positions.

Environmental Challenges

The mining of lithium can have significant environmental impacts, including water pollution, deforestation, and soil degradation. The hard rock in the mountain region in the Reasi district would necessitate open mining and it may lead to a lot

of pollution in the area. It is essential that the mining of lithium in the Reasi district is done in a responsible and sustainable manner, with appropriate measures taken to mitigate any negative impacts on the environment and the local population. The use of environmentally friendly mining techniques, such as dry mining, can help reduce the environmental impact of lithium mining.

Geopolitical Challenges

The discovery of lithium reserves in the Reasi district has significant geopolitical implications. India's push towards electric vehicles and renewable energy has created a high demand for lithium, and the discovery of lithium reserves could significantly reduce India's dependence on imported lithium. This has the potential to upset the global lithium supply chain, which is currently dominated by China, Australia, and South America. India's increased lithium production could also affect global lithium prices, potentially leading to increased competition and geopolitical tensions. Also being closer to the international border with Pakistan, now there are more incentives for Pakistan to disrupt the relatively peaceful security situation in the Jammu region by exporting the cross border terrorism into the region. Even China may use Pakistan`s capacity to create troubles on the Indian side of Jammu and Kashmir to delay the lithium mining project

Conclusion

The discovery of lithium reserves in the Reasi district presents significant opportunities for India's future. The development of the lithium mining industry could create employment opportunities, attract investment, and boost economic development in the region. However, it is essential that the development of the industry takes into account the needs and concerns of the local population.

Source:

- The Hindu
- Deccanherald.com

The Indian story of White Gold—a Lithium

News of the recent exploration of 5.9 million tonnes of Lithium in the Salal- the Haimana area of the Reasi district of J & K has captured every Indian's attention. The discovery is a landmark as the World is craving for in-demand minerals such as Lithium.

The discovery is validated by the Geological Survey of India (GSI), adding to lots of cheers. The report by GSI is the second in the four-stage exploration process that will lead to final and exact reserves.

WHAT IS LITHIUM?

It is a rare earth metal (REM), which is generally mainly silver-white in appearance. It is generally observed in the earth's crustal part and obtained by the solar evaporation of a large brine pool.

The extraction of this metal is generally by Open pit mining which needs the removal of large overload on the surface.

Lithium

WORLD DISTRIBUTION OF LI-RESERVES

To date, the continent of South America is fortunate enough to have the largest reserves of white gold. The region known as the "Golden Triangle," as in Argentina-Chile-Bolivia, is the current largest storehouse of the world's reserves. The next significant reserves are in the Pilbara and Yilgarn cratons of Australia, which also host significant reserves.

Apart from these locations, China and the Korean Peninsula also host white metal reserves. Thanks to a new discovery, India is a new entrant in the top club (though

India has small 16-tonne reserves in Karnataka found earlier).

But contrary to this, China is a major (77%) supplier of REM and lithium due to its excessive control over the global supply chain!

distribution of Li-reserves

THE SIGNIFICANCE OF LITHIUM

- As of today, modern civilization is mainly coal- and petroleum-driven and has thus suffered much irreversible environmental damage. The solution that humanity sees is in the lithium-driven e-batteries that could drive the next generation of our civilization.
- Lithium is considered the tool for green economic transformation as its uses are diverse in renewable energy, such as solar panels, wind turbines, and electric batteries, which have started to change our environmental footprints.
- Lithium batteries are long-lasting with high energy density, are rechargeable, and with fewer carbon footprints.
- Metal also holds prominence as it forms an important element in industries as well.
- According to a World Bank report, demand for Li would rise by 500% by 2050.

WHAT ARE THE CONCERNS ABOUT ITS USE?

Though its metal for the world's green transition but there are, equally, some concerns attached to its use as-

- The mining of Li, as mentioned, is open-pit, which leaves many scars on the

surface. It involves the removal of overburden, i.e., vegetation, waterbodies, soil, etc. It also involves large-scale rehabilitation of the population and wildlife.

- The contamination of groundwater, the air release of harmful materials, the loss of biodiversity, and the lurching of the ground are major concerns.
- For India, the country with the most population and density the visible and invisible socio-economic impacts are more than other parts undergoing Li explorations.

WHAT HAS THIS NEW DISCOVERY MADE POSSIBLE FOR INDIA?

If the inferred discovery would go stronger further India has a lot to gain from it.

- Green commitments: This would make it possible to fulfill India's commitment to achieving 30% electric vehicles by 2030. This adds significantly to India's credibility as the future green country.
- Export earnings: Li is the most sought-after mineral in the world. And we can earn an export advantage by entering the global supply chain.
- Employment: This discovery has the potential to create new employment and, in fact, alter the nature and role of the workforce in the near future.
- Geostrategic advantage: The most important advantage that policymakers tend to derive is to avoid dependency on China. Currently, India imports this crucial metal from China and Hong Kong. With its own reserves now, it can have its own domestic production and export earnings.

Way Forward

India needs to make sure the discovery is finally realized. There shouldn't be gaps in the planning and exploration. Well-guided mining strategy with reliance on sustainable mining practices and most importantly, local involvement is much needed in the region like J&K. The green future, in the form of Li reserves, has knocked on the door of India, and it is our duty to grab the opportunity and achieve the desired results.

Source:

- The Hindu

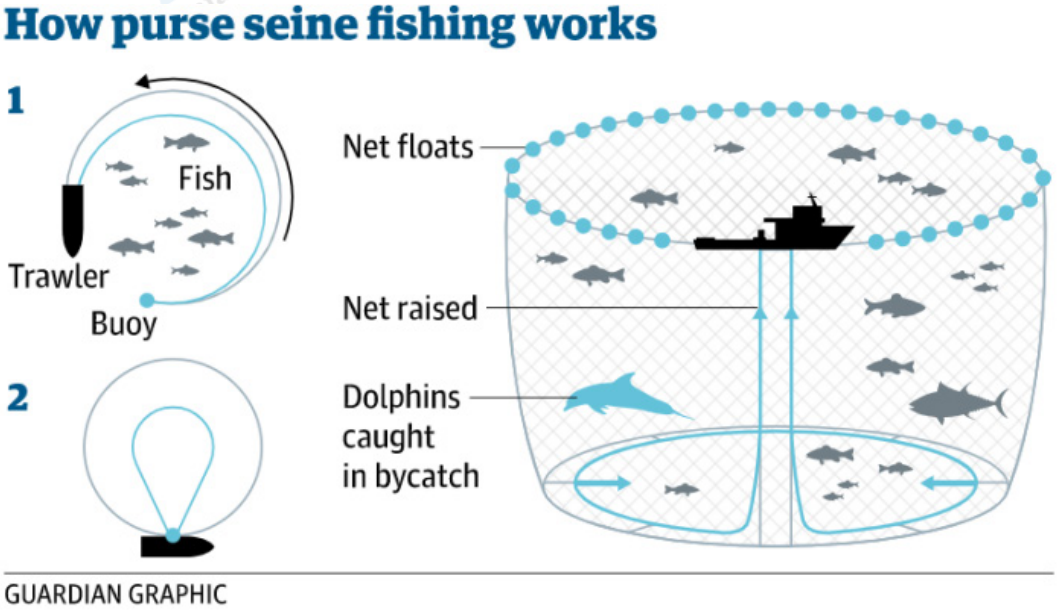
Deep Sea Fishing and its effects

Deep sea fishing refers to fishing activities that take place in the open ocean, beyond the continental shelf.

MAIN TYPES OF DEEP SEA FISHING

Deep sea fishing is a type of fishing that takes place in open water, usually far from the shore. Here are some common methods used in deep-sea fishing:

- Trolling: This is a technique in which a lure or bait is drawn through the water behind a moving boat. The lure is designed to attract fish to bite.
- Bottom fishing: This is a technique in which the bait is dropped to the bottom of the sea. The bait can be left on the bottom or lifted slightly off the bottom to attract fish.
- Jigging: This is a technique in which a weighted lure is dropped to the bottom of the sea and then lifted and lowered to attract fish.
- Drifting: This is a technique in which the boat is allowed to drift along with the current while bait is deployed. The bait can be on the surface or suspended at a depth to attract fish.
- Chumming: This is a technique in which fish bait is scattered over the water to attract fish.
- Deep dropping: This is a technique in which the bait is dropped to the bottom of the sea, usually in depths of several hundred meters, to catch deep-sea species



Deep Sea Fishing

THIS TYPE OF FISHING COMES WITH A RANGE OF ISSUES AND CHALLENGES, SOME OF WHICH INCLUDE

- Overfishing: One of the biggest issues with deep-sea fishing is overfishing. Many species of fish are being caught at a rate faster than they can reproduce, leading to a decline in their populations. This can have a significant impact on marine ecosystems and can lead to the collapse of fish populations.
- Bycatch: Deep sea fishing often results in the unintentional capture of non-target species, known as bycatch. This can include marine mammals, seabirds, and other fish species, many of which are endangered or threatened.
- Habitat destruction: Deep-sea fishing practices can cause significant damage to the seafloor and the habitats of deep-sea species. Bottom trawling, for example, involves dragging heavy nets along the seafloor, which can destroy coral reefs and other important habitats.
- Illegal, unreported, and unregulated fishing: Deep sea fishing is often carried out by vessels that operate outside of national and international fishing regulations. This can lead to overfishing and other unsustainable practices, as well as illegal trade in fish and seafood products.
- Climate change: Climate change is having a significant impact on the oceans and the marine species that inhabit them. Increasing ocean temperatures and acidification can impact the survival of fish and other sea creatures, leading to declines in fish populations and the need to adapt fishing practices to new conditions.
- Technological limitations: Fishing in deep waters can be technically challenging and expensive. The lack of suitable technology and equipment can make it difficult for fishers to access deep-sea fish populations, which can limit the potential for sustainable fishing practices.
- Addressing these issues and challenges requires a comprehensive approach that involves better regulation, improved monitoring and surveillance, and the adoption of sustainable fishing practices that prioritize the long-term health of the ocean and its inhabitants.

THE RECENT JUDGMENT OF THE SUPREME COURT

The Exclusive Economic Zone (EEZ) of Tamil Nadu (200 nautical miles) and outside territorial seas (12 nautical miles), subject to certain limits, have been approved for fishing by the Supreme Court of India. The supreme court has also given permission to use the purse seine method of fishing. The Tamil Nadu government had banned the purse seine method of fishing earlier.

A purse seine is formed of a long wall of netting that is framed by floating and leadline and has purse rings hanging from the bottom of the gear. A purse line made of steel wire or rope passes through the purse rings and allows the net to be pulled through.

Source:

- The Hindu
- Theguardian.com
- Earth.com

South China Sea Conflict

This article covers "Daily current events "and the topic is about the 'South China Sea Conflict' which is in news, it covers "International Relations" In GS-2, the following content has relevance for UPSC.

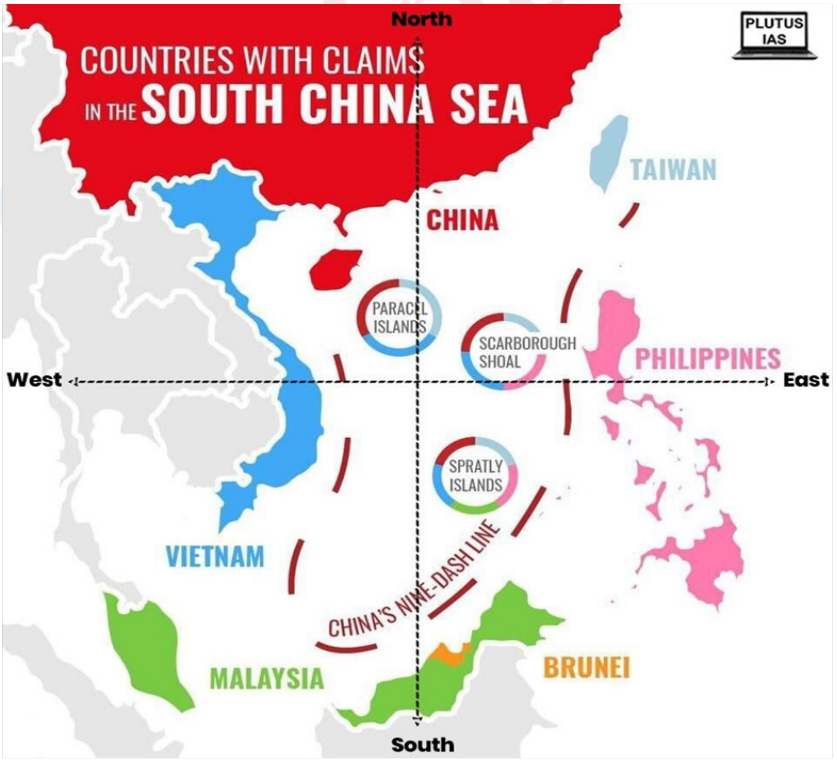
For Prelims: South China Sea Geographical location
For Mains: GS-2, International Relations

Why in the news:

Chinese Coast Guard vessel hits Filipino crew with laser light in South China Sea

ABOUT SOUTH CHINA SEA

The South China Sea is one of the busiest waterways in the world and is famously known for trade and merchant shipping. The sea Disputes are maritime and island claims between different sovereign countries in the region. These countries are China, Taiwan, Vietnam, Malaysia, Philippines, and are geopolitically located in the Indo-Pacific region.



South China Sea

HISTORICAL BACKGROUND

- During World War II, the Imperial Japanese Army and Navy had used several

islands for military reasons and stated that these islands were unclaimed, despite historical records that showed.

- Before the Japanese took control of their colonial possessions, France held jurisdiction over some of the islands.
- Upon the end of the war, the 1951 Treaty of San Francisco forced Imperial Japan into giving up any territory they had conquered during the war.
- The People's Republic of China made various claims to the islands during the 1951 treaty negotiations.
- Chinese claims in the south china sea are described in part by the nine-dash line. Originally an "eleven-dashed-line," this line was first indicated by the Kuomintang government of the Republic of China in 1947, for its claims to the South part of the Sea.
- The Paracels and Spratly Islands were included in the Vietnamese regions south of the 17th Parallel that were under South Vietnam's authority as a result of the Geneva Accords of 1954, which put an end to the First Indochina War.
- Two years later the North Vietnamese government claimed that the People's Republic of China is the lawful claimant of the islands, while South Vietnam took control of the Paracel Islands.

SIGNIFICANCE OF THE SOUTH CHINA SEA

- Natural Resources: The Sea is said to be a major source of natural resources for the different territories. About 10% of the nation's fisheries come from there, making it a vital source of food for hundreds of people. This is also a major reason why people from different countries are claiming their rights over the sea.
- Trade Route: The route passing through it, Malacca Strait is home to 55% of the trade. It is one of the busiest routes for trade.

REASONS FOR THE DISPUTE

- Claims over Islands: China's Nine Dash Line – claiming the largest portion of the Sea.

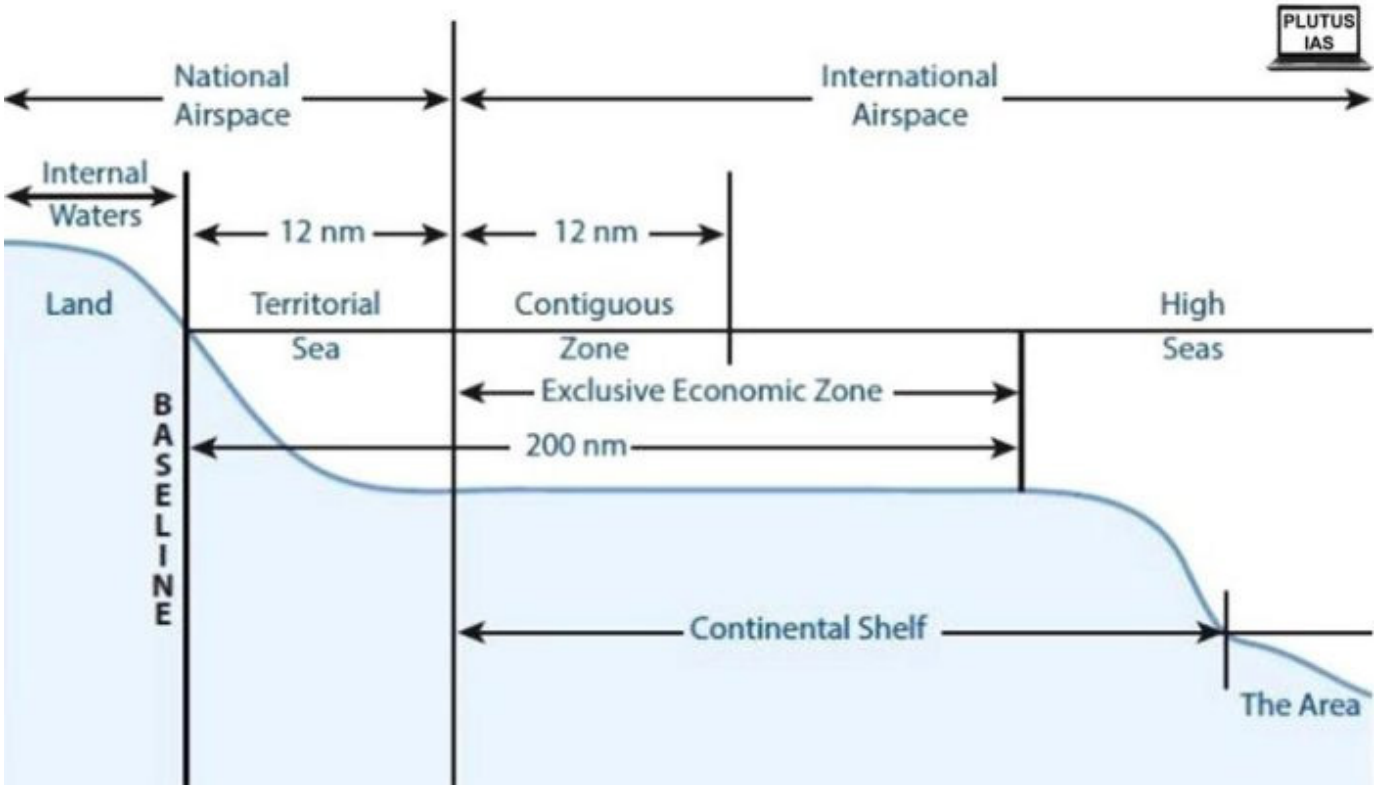
S.no	Islands	Claimed by
1.	The Paracel Islands	China, Taiwan, and Vietnam
2.	The Spratly Islands	China, Taiwan, Vietnam, Brunei, and the Philippines.
3.	The Scarborough Shoal	Philippines, China, and Taiwan

Reasons for Dispute in the Sea

- China's Assertion:
  - China has been converting uninhabited islets into artificial islets i.e "great wall of sand" to bring it under UNCLOS.
  - China established airstrips on Parcel and Spratly.
  - China continues coast guard targeting vessels with military-grade laser
  - Instead of fishing, Chinese fishing boats are involved in paramilitary activities.
- Additional Facts:

UNCLOS: United Nations Convention on the Law of the sea also known as the Law of the Sea Convention or the Law of the Sea Treaty.

- Adopted in 1982.
- Divided into Maritime Zones:
  - Internal Water – Bays, Ports, Inlets, Rivers, and lakes.
  - Territorial Sea – up to 12 nautical miles
  - Contiguous Zone – up to 24 nautical miles
  - Exclusive Economic Zone – up to 200 nautical miles
  - High Seas – the common heritage of all mankind



Additional Facts of the Sea disputes

Other Major Issues

- The undefined geographic scope of the South China Sea.
- Disagreement over dispute settlement mechanisms.
- The Code of Conduct's position under the law is unclear.
- Uninhabited archipelagos make matter more complicated and multifaceted.

RESPONSE OF COUNTRIES TOWARDS RISING AGGRESSION IN THE SOUTH CHINA SEA

- The countries like Vietnam, the Philippines, and Indonesia wants political insurance, strengthen their navies and deepen military relations, and avoid a direct military confrontation with China owing to their economic ties with China.
- Vietnam has added six-kilo class Russian-origin submarines to its navy. India has also provided Brahmos to Vietnam.
- The Philippines wrote to the UN secretary-general on the violation of Filipino sovereignty. Same with Indonesia.

IMPACT ON INDIA DUE TO THE SOUTH CHINA SEA DISPUTE

- India's more than 50% of the trade passes through the Strait of Malacca which opens into the Sea.
- If China controls the region, it can hamper India's foreign trade passing through that region.
- Ensuring freedom of navigation is also important for India's energy needs.

INDIA'S STAND

- Protect your own economic interests, particularly your need for energy security.
- India has started internationalizing disputes in the Indo-Pacific region to oppose China's threatening tactics in the South China Sea. The Key element is Act East Policy in this direction.
- Use Soft Power – Using India's Buddhist legacy to make a strong bond with the South East Asian Region.
- In order to defend maritime lanes of communication (SLOC) and counteract Chinese aggressiveness in the area, India has stationed its navy in the Sea alongside Vietnam.

WAY FORWARD

- In order for regional stability to thrive and be recognized by all, it is crucial to uphold and encourage peace, stability, and development in the South China Sea region.
- At the same time, bigger countries in the region should be mindful of the views of their smaller neighbors and mediate to find peaceful solutions.
- The other nations should volunteer to act as mediators and should push the ASEAN group nations to hold talks with China and Taiwan, the two non-ASEAN nations, to resolve the issue.

Source:

The Hindu

Digital Lending

This article covers "Daily current events "and the topic is about 'Digital Lending' which is in news, it covers "Economics" In GS-3, the following content has relevance for UPSC.

For Prelims: Digital Lending
For Mains: GS-3, Economics

Why in news:

In the absence of clarification regarding the contractual agreement with the Reserve Bank of India, banks and non-banking financial firms (NBFCs) have almost halted partnerships with fintech players, or digital lending apps, under the first loan default guarantee (FLDG) structure for lending (RBI).

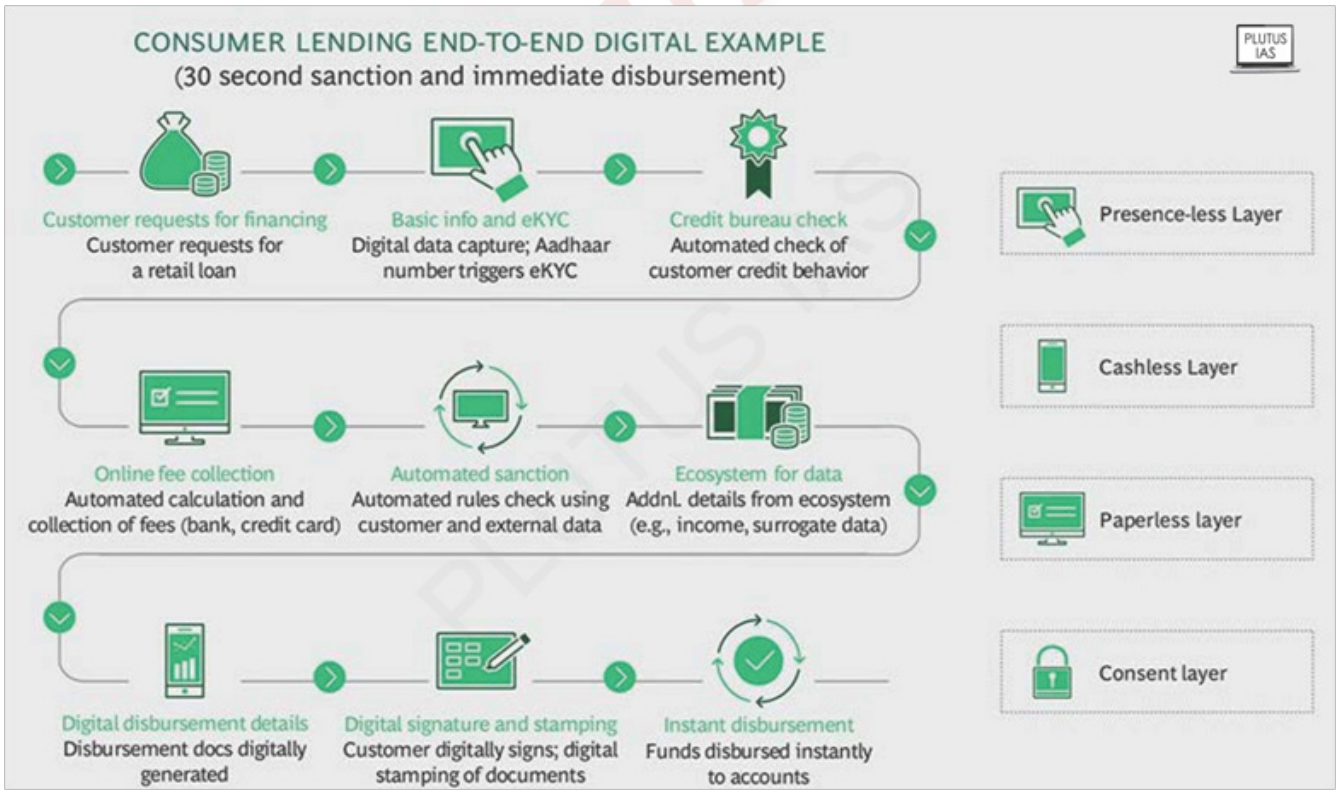
ABOUT DIGITAL LENDING

- With the help of technology, financial institutions may increase production, increase loan earnings, and provide quicker service at the point of sale (POS).
- Digital Lending incorporates credit evaluation and authentication using online lending platforms or mobile apps.
- Digital lending makes the best use of technology where sensitive information is kept private.
- Borrowers can apply for any consumer or corporate loan product using Digital Lending from any internet-capable device and from any place.
- Loan application processes will become more effective and less time-consuming with the use of services like video-KYC, Aadhaar-based KYC, and websites and applications with cutting-edge functionality.
- Lenders will progressively gather and assess data from many sources using cutting-edge technologies like AI, ML, and big data analytics.
- With the help of this information, an applicant's creditworthiness can be evaluated more swiftly and effectively.

BENEFITS OF DIGITAL LENDING

- Streamlining Application Process: Borrowers will have a better experience if consumer information is consolidated and digitalized.
    - Customer frustration is mitigated via increased process openness and quicker decision-making.
    - The possibility of incomplete files is decreased, which slows down the application screening process.
    - Digital Lending promotes improved communication with the client regarding the upfront disclosure of information.

- Digitizing the Lending Information: The entire credit team benefits significantly from digitizing the information flow and access. Transparency is increased, and bottlenecks are decreased. With a single interface, many digital lending systems let loan processors get data from other sources, including credit agency reports and bank and financial information. Faster decision-making is made possible by this method, which reduces errors and gets rid of pointless manual activities.
- Using Lending Information for Analysis: Also, the analytics and intelligence portions of the loan process can be digitalized by financial organizations. Lenders and analysts frequently use a range of estimates and evaluations. These differences frequently lead to flawed computations, which then produce bad credit choices and false reporting.
- Providing Loan Options for Poor or No Credit Customers: With their conventional lending procedures, financial organizations heavily rely on credit scores. Credit scores give lenders a detailed look at a potential customer's previous borrowing habits.
- Increases Efficiency: A digital lending platform improves efficiency by cutting overhead costs by 30 to 50%, which frees up time, boosts revenue, and creates high growth opportunities.



Digital Lending

DIGITAL LENDING TREND

- By 2030, digital lending is anticipated to have increased by more than four times from its present $270 billion value to $1.3 trillion.
- By 2030, it predicts that the market for financial technology in the nation would be 60% dominated by digital lending.
- The typical customer is in the age range of 22 to 45.
- The typical loan amount is $168, or roughly 18,000 rupees.

CHALLENGES IN DIGITAL LENDING

- By providing credit to borrowers in excess of their ability to repay it, LSPs frequently engage in risky lending practices.
  - By distributing the risk to overall customers and charging higher interest rates, the risk is reduced.
- The assessment of a participant's operational legitimacy was difficult due to the lack of standardized disclosure and regulatory standards.
- For Android users in India, there were over 1,100 loan apps accessible, of which 600 were illicit.
  - They were either not under RBI regulation or had NBFC partners with assets worth less than $1 billion, raising concerns about their viability.
- The sector is predominantly controlled by NBFCs, which serve small borrowers that lack credit history and are therefore underserved by conventional financial institutions.
- Other: The main issues of the digital lending Process include the unrestrained use of third parties, mis-spelling, data privacy violations, unfair business practices, the imposition of exorbitant interest rates, and unethical recovery methods.

WAY FORWARD

- This law would also address issues raised by TechFin, or businesses that primarily provide tech-based services, like e-commerce, but also provide financial services.
- Although the percentage of digital lending is now limited, given their scalability, they have the potential to quickly become key participants.
- Despite increasing inflation and interest rates, it is anticipated that this fiscal's demand for loans across the credit ecosystem would increase due to the economy's recovery from the pandemic and our projections of GDP growth

of 7.3%.

- The rules are intended to stop the growing number of unethical actions in the ecosystem of online lending.

Source:

- Indian Express
- The Hindu
- RBI

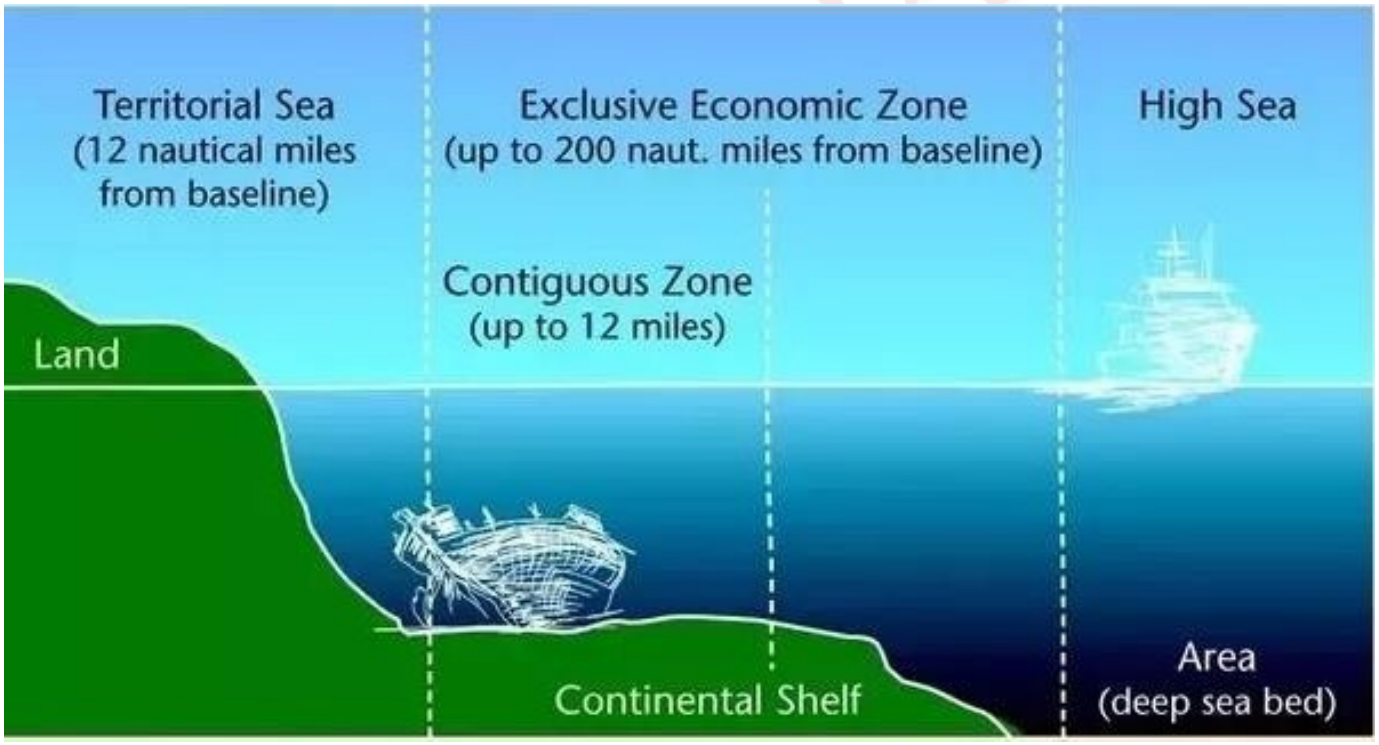
Purse Seine Fishing

Relevance for Mains: What is Purse Seine Fishing, Impact on maritime biodiversity and related environmental issues.

Relevance for Prelims: Territorial waters, UNCLOS, Exclusive Economic Zone.

WHY IN NEWS

The Exclusive Economic Zone (200 nautical miles) of Tamil Nadu has been authorized for use by fishermen employing purse seine fishing gear to conduct their operations outside of India's territorial seas, or beyond 12 nautical miles. On the other hand, the Supreme Court has also given purse-seine fishing boats a few limitations.

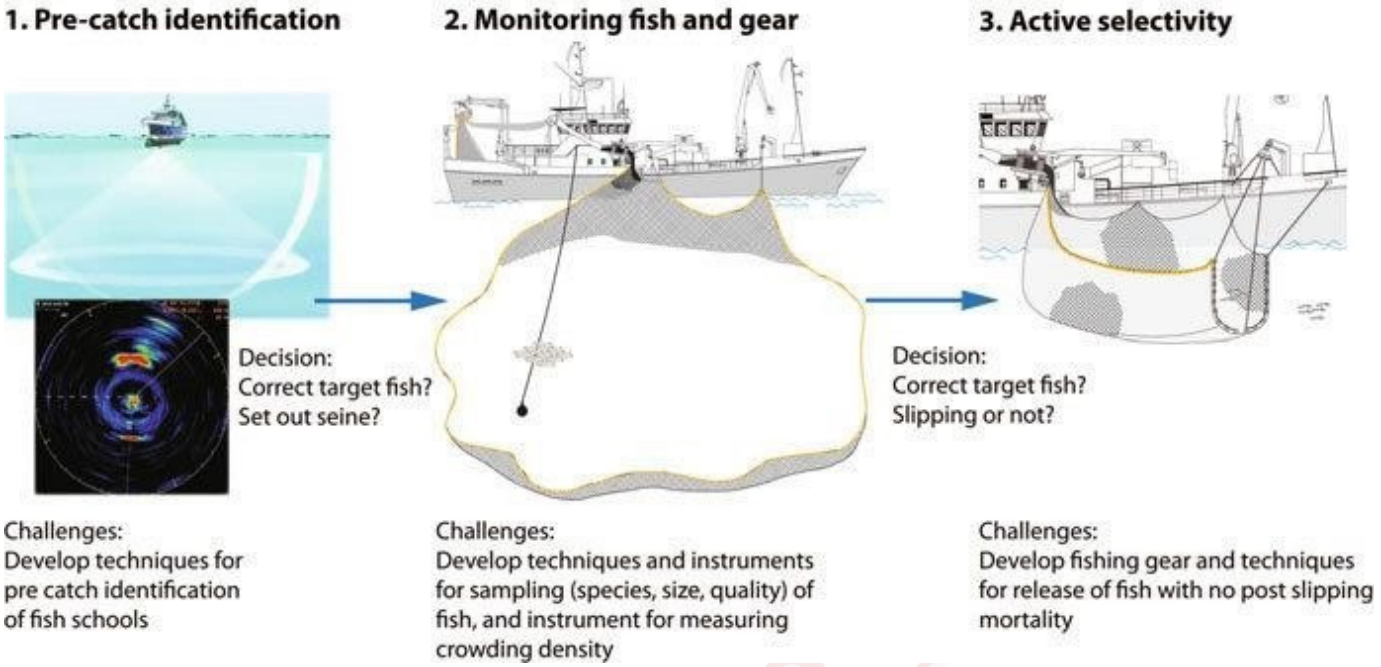


Purse Seine Fishing

WHAT IS PURSE SEINE FISHING

- In the open ocean, purse seines are used to catch large schools of pelagic (midwater) fish, such as tuna and mackerel, that belong to a single species.
- A vertical net "curtain" is used to confine the school of fish, and the bottom of the curtain is then dragged together, like how drawstring bag ropes are pulled taut.

- Open-water purse-seine fishing is typically regarded as an effective method It has no touch with the seafloor and only minimal bycatch (unintentional capture of undesirable species).



Purse Seine Fishing Technique

LAWS AND CONVENTIONS IN PURSE SEINE FISHING

- In accordance with UNCLOS Articles 1(a) and (b)(iii), coastal nations have the sovereign right to control how the living and non-living resources of the EEZ are utilized, managed, and protected from overexploitation.
- To prevent overexploitation, coastal States must establish the total allowable catch (TAC) in the EEZ (Articles 61(1) and (2) of UNCLOS) based on the best scientific evidence available.
- Access to the zone by foreign fleets is also solely at the discretion of the coastal state and subject to its laws and regulations. There are various regional groups that either restrict the deployment of large drift nets or at least demand their abolition, such as the 1989 Tarawa Declaration of the South Pacific Forum.

UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

Article 61 – Conservation of the living resources

Article 56 – Rights, jurisdiction, and duties of the coastal State in the exclusive economic zone.

Article 17 – Right of innocent passage Subject to this Convention, ships of all States, whether coastal or landlocked, enjoy the right of innocent passage through the territorial sea.

Article 18 – Meaning of passage

Passage means navigation through the territorial sea for the purpose of (a) traversing that sea without entering internal waters or calling at a roadstead or port facility outside internal waters; or (b) proceeding to or from internal waters or a call at such roadstead or port facility.

Article 19 – Meaning of innocent passage

The passage is innocent so long as it is not prejudicial to the peace, good order, or security of the coastal State.

ISSUES ON PURSE SEINE FISHING

- This method was connected to worries in certain States about the diminishing stocks of tiny, pelagic shoaling fish on the western shores, including sardines, mackerel, anchovies, and trevally.
- According to the scientific community, the El Nino phenomena and other climatic factors are to blame for the decrease in such fish catches during the past 10 years.
- Nevertheless, fishermen who use more conventional techniques have directly blamed the increase in purse seine fishing and worry that if the restriction is overturned, the abundance of these little fish may further decline.
- They have also requested that the Government reveal the expert committee report on which it based its support for the removal of the prohibition.
- The diminishing supply of oil sardines, a favorite of fish lovers in Kerala, is serious Only 3,297 tonnes of sardines were taken in Kerala in 2021, a significant drop from the 3.9 lakh Tonnes taken in 2012.
- A purse seine is a type of non-targeted fishing gear that can catch any fish that gets in the way of the net, including young fish. As a result, they seriously harm aquatic resources.

WHAT COULD BE DONE

- In accordance with UNCLOS Articles 56.1(a) and 56.1(b)(iii), coastal nations have the sovereign right to control how the living and non-living resources of the EEZ are exploited, managed, and protected from Foreign fleet entry into the zone is likewise exclusively at the discretion of the coastal state and is governed by its rules and regulations.
- The supreme court should take cues from the duties resulting from the multilateral and regional accords that are intended to implement sustainable fishing methods over a specific length of time, allowing a shared resource like fish to be renewed organically.
- The most reliable scientific evidence must be used to calculate the total permissible catch (TAC) in the EEZ by coastal States to prevent overexploitation (see UNCLOS Articles 61(1) and (2)). The Supreme Court may have consulted the Southern Bluefin Tuna Conservation Convention of 1993 (SBT) for directions to help fishing populations that have been depleted recover.

Source:

The Hindu

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