

❖ **Why are the fisherfolk demanding to stop the construction of Vizhinjam port project**

❖ **CONTEXT:** Vizhinjam, a small coastal village that lies around 20 km south of Thiruvananthapuram, is on the boil for the past two weeks with fisherfolk and their families laying siege to the under-construction Vizhinjam International Seaport, from both sea and land. The protestors led by the Latin Archdiocese, Thiruvananthapuram, have been holding day-and-night sit-ins in front of the port since August 16, disrupting the construction work by the Adani Vizhinjam Port Private Limited, which is developing the port on Design, Build, Finance, Operate, Transfer (DBFOT) basis. Though the Kerala Government reached out to protestors, the fisherfolk led by the Catholic Church, refused to halt the protest saying any compromise without stopping the work on the Rs.7,500-crore all-weather port is not acceptable.

❖ **What lies at the heart of the protest?**

• According to fisherfolk, the port work has aggravated the coastal erosion along the coast of Thiruvananthapuram. A scientific study to assess the impact of the port work on the shoreline has to be conducted urgently by stopping the construction. Further, around 300 families along the coastline were shifted to relief camps after their houses were destroyed due to high-intensity coastal erosion. The protesters demand a comprehensive rehabilitation package, an assured minimum wage when the sea turns rough due to inclement weather and subsidised kerosene for boats.

❖ **Has the port work aggravated the coastal erosion?**

• In fact, all type of construction works along a coast aggravate sea erosion (loss of beach) and accretion (gain of beach). The longshore drift along the coast of Kerala with waves approaching the beach at a certain angle (mostly from south to northwards) has been transporting the sand along with waves, resulting in erosion and accretion based on the topography of each terrain. Any structure — be it groyne, seawall, or breakwater — intensifies erosion on one side and accretion on the other. Although coastal erosion is dominant in all coastal districts of Kerala, it is more severe along the coastline of Thiruvananthapuram.

• A study ‘shoreline assessment for Kerala coast’ conducted by the National Centre for Sustainable Coastal Management (NCSCM), Society of Integrated Coastal Management, and the Ministry of Environment and Forest by assessing the shoreline changes for a period of 38 years from 1972 to 2010 in Kerala, had noted that the erosion is minimum at Thrissur (1.5 %) and maximum at Thiruvananthapuram (23%), even before the port construction. In the case of Kerala, the seasonal shoreline changes would be more severe during monsoon months due to the high-energy short storm waves that lash the coast almost in a perpendicular position moving the sand offshore.

• The latest report of the expert committee appointed by the National Green Tribunal (NGT) and Shoreline Monitoring Cell formed to monitor the shoreline changes in the project area — within 10 km on either side of the port — observed that erosion in spots such as Valiyathura, Shanghumugham, and Punthura remains the same before and after the commencement of the port construction (December 2015). However, during the October 2020–September 2021 period, spots like Kochuveli and Cheriyaathura to the north of Valiyathura suffered erosion, and accretion was noted in some other spots.

• The report noted that the relatively high number of cyclones formed over the Arabian sea after cyclone Ockhi in 2017 was the main reason for the recent erosion and accretion and that the impact of the port activity on either side of the coast had less significance till date. However, it suggested continuous monitoring of the port activity and its impact on the coast.

• The report by the National Institute of Ocean Technology (NIOT) which assessed the shoreline changes for the committee, provides details of the maximum wave height reported during this period. During the time of Ockhi, the maximum wave height along the coast reached 7.29 m, which rose to 9.44 m during the time of cyclone Tauktae in 2020, compared to around 2.5 m in normal rough sea conditions and 1 m in normal fair-weather times.

❖ **What do the fisherfolk say?**

• The protesters argue that though the coastline of Thiruvananthapuram was already seeing high erosion, it was only after the construction of a breakwater (only 33 percent of the 3.1 km breakwater has been completed to date) as part of the port, that the high-intensity erosion started damaging their houses and livelihood means. They are demanding a study led by experts, including representatives from their community, which, according to them, can only unearth the impact of the port work on the shoreline.

❖ **What is the stance of Vizhinjam International Seaport Ltd (VISL) and the Kerala Government?**

- Officials argue that Vizhinjam seaport is being constructed inside a natural sediment cell which is a pocket-like area in which interruptions to the movement of sand along the coast do not significantly affect the adjacent coastline. Further, around 5 km north of the port, there are rocky headlands and pocket beaches where sediment transport due to longshore drift is relatively low compared to other parts.
- In fact, any port structure could affect its adjacent shores only by way of blocking the longshore drift happening along its coast, which was not taking place in this case. Had the port been developed on a linear coast, adjacent shores would have seen very visible impact. They further argue that the breakwater structure will not divert the wave energy to other locations leading to erosion. The wave fields after hitting the breakwater, cannot prolong. It dies down immediately, according to VISL.
- However, the port development is likely to cause minor accretion for about 2.6 km to the south of the port, the maximum rate being 21.6 m per year reducing to 0.6 m per year by the tenth year and stabilising thereafter, according to a study conducted by L&T-Ramboll Consulting Engineers Limited.
- The Kerala Government made it clear that since the coastal erosion is due to climate change as reported by various agencies, the demand for stopping the port construction cannot be conceded. However, the Government has expressed willingness to address all other issues raised by the fisherfolk including their rehabilitation and livelihood concerns. Government assured an expert committee would be constituted to study the impact of the port work. Earlier, the High Court had made it clear that the work on the seaport project cannot be halted.
- ❖ **Why is the Vizhinjam project considered important?**
- Located on the southern tip of the Indian Peninsula, just 10 nautical miles from the major international sea route and east-west shipping axis, and with a natural water depth of more than 20 m within a nautical mile from the coast, the Vizhinjam port is likely to play a pivotal role in the maritime development of the country and Kerala. The commissioning of the port is expected to leverage the growth of 17 minor ports in the State along with creating thousands of employment opportunities.

PRELIMS

1. Anti-radiation pills

- ❖ **CONTEX:** With fears of a nuclear disaster at Ukraine's Zaporizhzhia power plant growing, the European Union has decided to pre-emptively supply 5.5 million anti-radiation pills to be distributed among residents in the vicinity. Those being handed out the pills are being told to only take them once a radiation leak has been confirmed.
- ❖ **What is a radiation emergency?**
- These are unplanned or accidental events that create radio-nuclear hazard to humans and the environment. Such situations involve radiation exposure from a radioactive source and require prompt intervention to mitigate the threat. Dealing with such an emergency also involves the use of anti-radiation tablets.
- ❖ **What are anti-radiation pills?**
- Potassium iodide (KI) tablets, or anti-radiation pills, are known to provide some protection in cases of radiation exposure. They contain non-radioactive iodine and can help block absorption, and subsequent concentration, of radioactive iodine in the thyroid gland.
- ❖ **How do these pills work?**
- After a radiation leak, radioactive iodine floats through the air and then contaminates food, water and soil.
- While radioactive iodine deposited during external exposure can be removed using warm water and soap, according to the World Health Organisation, the bigger risk is inhaling it.
- "Internal exposure, or irradiation, occurs when radioactive iodine enters the body and accumulates in the thyroid gland," says the WHO.
- The thyroid gland, which uses iodine to produce hormones to regulate the body's metabolism, has no way of telling radioactive from non-radioactive iodine.
- Potassium iodide (KI) tablets rely on this to achieve 'thyroid blocking'. KI pills taken a few hours before or soon after radiation exposure ensure that non-radioactive iodine in the medicine is absorbed quickly to make the thyroid "full".
- "Because KI contains so much non-radioactive iodine, the thyroid becomes full and cannot absorb any more iodine – either stable or radioactive – for the next 24 hours," says the US Centre for Disease Control and Prevention.

- But KI pills are preventive only and cannot reverse any damage done by radiation to the thyroid gland. Once thyroid gland absorbs radioactive iodine, those exposed are at a high risk of developing thyroid cancer.
- ❖ **Is the method fool-proof?**
- Anti-radiation pills do not provide 100% protection. “The effectiveness of KI also depends on how much radioactive iodine gets into the body and how quickly it is absorbed in the body.
- Also, the pills are not meant for everybody. They are recommended for people under 40 years of age. Pregnant and breastfeeding women are also advised to take them. While it can protect the thyroid against radioactive iodine, it cannot protect other organs against radiation contamination.
- ❖ **Substitutes for KI?**
- The US Food and Drug Administration advises against using salt or iodine supplements as they do not contain enough iodine to trigger thyroid blocking.
- 2. **Bhang, ganja, and criminality in the NDPS Act**
- ❖ **CONTEXT: While granting bail to a man arrested on June 1 for possessing 29 kg of bhang and 400 g of ganja, Karnataka High Court recently observed that nowhere in the Narcotic Drugs and Psychotropic Substances (NDPS) Act is bhang referred to as a prohibited drink or prohibited drug. Since the ganja recovered was below commercial quantity, the accused was given bail on a personal bond of Rs 2 lakh.**
- ❖ **The single judge Bench relied on two earlier judgments, Madhukar vs the State of Maharashtra, 2002 and Arjun Singh vs State of Haryana, 2004, where the courts had ruled that bhang is not ganja, and is therefore not covered under the NDPS Act.**
- ❖ **What is bhang?**
- Bhang is the edible preparation made from the leaves of the cannabis plant, often incorporated into drinks such as thandai and lassi, along with various foods. Bhang has been consumed in the Indian subcontinent for centuries, and is frequently consumed during the festivals of Holi and Mahashivratri. Its widespread use caught the attention of Europeans, with Garcia da Orta, a Portuguese physician who arrived in Goa in the 16th century, noting that, “[Bhang] is so generally used and by such a number of people that there is no mystery about it”.
- ❖ **Bhang and the law**
- Enacted in 1985, the NDPS Act is the main legislation that deals with drugs and their trafficking. Various provisions of the Act punish production, manufacture, sale, possession, consumption, purchase, transport, and use of banned drugs, except for medical and scientific purposes.
- The NDPS Act defines cannabis (hemp) as a narcotic drug based on the parts of the plant that come under its purview. The Act lists these parts as:
 - **Charas:** “The separated resin, in whatever form, whether crude or purified, obtained from the cannabis plant and also includes concentrated preparation and resin known as hashish oil or liquid hashish.”
 - **Ganja:** “The flowering or fruiting tops of the cannabis plant (excluding the seeds and leaves when not accompanied by the tops), by whatever name they be known or designated.”
 - **“Any mixture,** with or without any neutral material, of any of the above forms of cannabis or any drink prepared therefrom.”
 - The Act, in its definition, excludes seeds and leaves “when not accompanied by the tops”. Bhang, which is made with the leaves of the plant, is not mentioned in the NDPS Act.
 - As a “special provision”, the Act states that the government “may allow cultivation of any cannabis plant for industrial purposes only of obtaining fibre or seed or for horticultural purposes”.
- ❖ **Cannabis and criminal liability**
- Section 20 of the NDPS Act lays out the punishment for the production, manufacture, sale, purchase, import and inter-state export of cannabis, as defined in the Act. The prescribed punishment is based on the amount of drugs seized.
- Contravention that involves a small quantity (100 g of charas/hashish or 1 kg of ganja), will result in rigorous imprisonment for a term that may extend to one year and/or a fine which may extend to Rs 10,000.
- For a commercial quantity (1 kg charas/ hashish or 20 kg ganja), rigorous imprisonment of not less than 10 years, which may extend to 20 years, including a fine that is not less than Rs 1,00,000 but may extend to Rs 2,00,000.

- Where the contravention involves quantity less than commercial, but greater than small quantity, rigorous imprisonment up to 10 years is prescribed, along with a fine which may extend to Rs 1,00,000.
- 3. **Naval ensign**
- ❖ **CONTEXT: Prime Minister will unveil the new naval ensign (flag) for the Indian Navy in Kochi on September 2 on the sidelines of the commissioning of India's first indigenous aircraft carrier INS Vikrant at Cochin Shipyard Limited.**
- ❖ **Replacing the ensign with colonial past**
- The new naval ensign which the unveiled in Kochi will replace the present ensign that carries the Saint George's Cross with the Tricolour in the canton. This ensign is essentially a successor to the pre-Independence ensign of the Indian Navy which had the red George's Cross on a white background with the Union Jack of the United Kingdom on the top left corner.
- After Independence, on August 15, 1947, the Indian defence forces continued with the British colonial flags and badges and it was only on Jan 26, 1950 that a changeover to Indianised pattern was made. The Navy crest and flag were changed but the only difference made to the flag was that the Union Jack was replaced with the Tricolour, and the George's Cross was retained.
- ❖ **Is this the first time the naval ensign is being changed?**
- A change in the naval ensign was made in 2001 when the George's Cross was replaced with the naval crest in the middle of the white flag while the Tricolour retained its place on the top left corner. There had been a long pending demand for a change in the naval ensign with the original suggestion for change having come from Vice Admiral VEC Barboza who retired from the Navy as the Flag Officer Commanding-in-Chief Western Naval Command.
- However, in 2004, the ensign was again changed back to the Red George's Cross as there were complaints that the new flag was indistinguishable because the blue of the Navy crest merged with the skies and the sea. A change was made in the flag and the red George's Cross now had the state emblem derived from the Lion capital of Ashoka in the middle.
- In 2014, yet another change was made when the words 'Satyamev Jayate' were included on the flag below the Ashoka emblem in Devanagari script.
- ❖ **What is the Saint George's Cross?**
- The Red Cross on white background is known as the Saint George's Cross and is named after a Christian Warrior Saint who is believed to have been a crusader during the third crusade.
- This cross also serves as the flag of England which is a constituent of the United Kingdom. The flag was adopted by England and the city of London in 1190 to identify English ships entering the Mediterranean. The Royal Navy adopted the George's Cross to fly on their ships in various shapes and forms and the present pattern of the British White Ensign (as it is known) was adopted around 1707.
- ❖ **Countries which discarded George's Cross as naval ensign**
- Most Commonwealth countries retained the Red George's Cross at time of their independence, but several have done away with it on their respective naval ensigns over the years. Prominent among them are Australia, New Zealand and Canada.
- The Royal Canadian Navy adopted a new design in 2013 which has the Canadian flag in top left corner and the Canadian naval crest on a white background.
- The Australian navy changed its ensign in 1967 and it now has the Union Jack and six blue stars positioned, as in the Australian national flag, on a white background.
- The New Zealand navy also did away with the George's Cross in 1968 and replaced it with a white flag bearing Union Jack in top left corner and four red stars.
- The South African naval ensign has a green cross instead of the Red George's Cross. Pakistan navy has its naval crest on the ensign while Bangladesh navy has a white flag with Bangladesh national flag in top left corner.

ANSWER WRITTING

Q. What are rare earth materials? Discuss their strategic and environmental significance with respect to India. (150 words)

Introduction

The Rare Earth Elements (REE) are a set of seventeen metallic elements. These include the fifteen lanthanides on the periodic table plus scandium and yttrium. They are also referred to as "rare earth oxides" because many of them are sold as oxide compounds.

- Rare-earth elements (REE) are necessary components of products across a wide range of applications, especially high-tech consumer products, such as cellular telephones, computer hard drives, electric and hybrid vehicles, and flat-screen monitors and televisions. The demand for them is small, although rising. They are mined and produced in small quantities and hence the name.
- Environmental Significance: Due to their unique magnetic, luminescent, and electrochemical properties, REE help technologies to reduce emissions, and energy consumption; therefore provide them greater efficiency, performance, speed, durability, and thermal stability. They have distinctive electrical, metallurgical, catalytic, nuclear, magnetic and luminescent properties. The futuristic technologies will need these REEs for high-temperature superconductivity, safe storage and transport of hydrogen for a post-hydrocarbon economy, environmental global warming, and energy efficiency issues.
- Strategic: Permanent magnets which are used in defence equipment, including actuators, to control guidance systems for airborne smart missiles, as well as in aerospace applications for aircraft components and airstrip maintenance equipment are derived from rare earth minerals.
- With growing global trends in clean technologies, the demand for critical rare earth minerals will grow. While late in joining the race, the Government of India is taking steps to develop and strengthen India's position in the rare earth market. Moreover, if India wants to position itself as a global leader in renewable energy and be more self-sufficient in defence equipment, it should seek to reduce its dependence on imports of renewable energy equipment like solar panels and modules as well as defence equipment.

Conclusion

While a beginning has been made with the announcement of a National Mineral Policy 2019, covering non-fuel and non-coal minerals, India must strive to acquire expertise in valorising these minerals and shift to developing its downstream sector. To that end, India should seek to leverage its ties with Japan and other countries that have the requisite technology for manufacturing downstream equipment so that it can set itself up as an alternative source of the REE-based technology, with its own supply chain of minerals and metals required for the same.

MCQs

- With reference to Coastal Plains of India, consider the following statements:
 - The western coastal plains are an example of emergent coastal plain while the Eastern coastal plains are the example of submerged coastal plains.
 - The rivers flowing through western coastal plain do not form any delta.
 - Eastern coastal plains are more suitable for the development of good ports and harbors.
 Which of the above statements is NOT correct?
 - 1 and 2 only
 - 1 and 3 only**
 - 3 only
 - 1,2,3
- Consider the following statements with regards coastal erosion in India
 - The eastern coast underwent more erosion due to frequent Cyclonic Activities from Bay of Bengal in the past three decades, compared to the western coast, which remained largely stable.
 - Odisha on the eastern coast is the only state where the coast witnessed an expansion of more than 50%.
 Choose the correct statement/s using the codes given below
 - 1 only
 - 2 only
 - Both 1 and 2**
 - Neither 1 nor 2
- Consider the following sea ports seen in news recently
 - Ennore Port – Kamarajar Port.
 - Kandla Port – Deendayal Port Trust.
 - Kolkata Port – Dr. Syama Prasad Mukherjee Port.
 - Nhava Sheva – Jawaharlal Nehru Port.
 - Panambur Port – New Mangalore Port.
 - Tuticorin Port – V.O. Chidambaram Port.
 How many above pairs is/are correctly matched?

- a) Three pairs
 - b) Five pairs
 - c) Two pairs
 - d) All pairs**
4. Consider the following pairs
1. Kashiwazaki-Kariwa Nuclear Power Plant - South Korea
 2. Bruce Nuclear Generating Station - Canada.
 3. Hanbit Nuclear Power Plant - Japan
 4. Zaporizhzhia Nuclear Power Plant - Ukraine.
- How many above pairs is/are correctly matched?
- a) Only one pair
 - b) Only two pairs**
 - c) Only three pairs
 - d) All the four pairs
5. World coconut day celebrated on which date?
- a) 30th August
 - b) 1st September
 - c) 31st August**
 - d) 2nd September
6. With reference to Coconut Development Board consider the following
1. Coconut Development Board (CDB) is a statutory body
 2. The board can undertake activities outside the country also.
- Choose the correct statement/s using the codes given below
- a) 1 only
 - b) 2 only
 - c) Both 1 and 2**
 - d) Neither 1 nor 2
7. Consider the following statement with reference to Potassium iodide (KI)
1. Potassium iodide is a salt, similar to table salt
 2. Potassium iodide (KI) radiation pills provide 100% protection.
- Choose the correct statement using the codes given below
- a) 1 only**
 - b) 2 only
 - c) Both 1 and 2
 - d) Neither 1 nor 2
8. India's first indigenously developed vaccine, called "CERVAVAC" for the prevention of which of the following disease?
- a) Cervical cancer**
 - b) Chicken pox
 - c) Coccidioidomycosis
 - d) Cholera
9. Which of the following statements regarding Rashtriya Vayoshri Yojana is not correct?
- a) It is a scheme launched by the Ministry of Social Justice
 - b) It is a scheme for providing physical aids and assisted living devices.
 - c) It is a scheme for senior citizens belonging to BPL category.
 - d) It is a pension scheme.**
10. Priority Sector Lending by banks in India constitutes the lending to
- a) Agriculture
 - b) Micro and small enterprises
 - c) Weaker sections
 - d) All of the above