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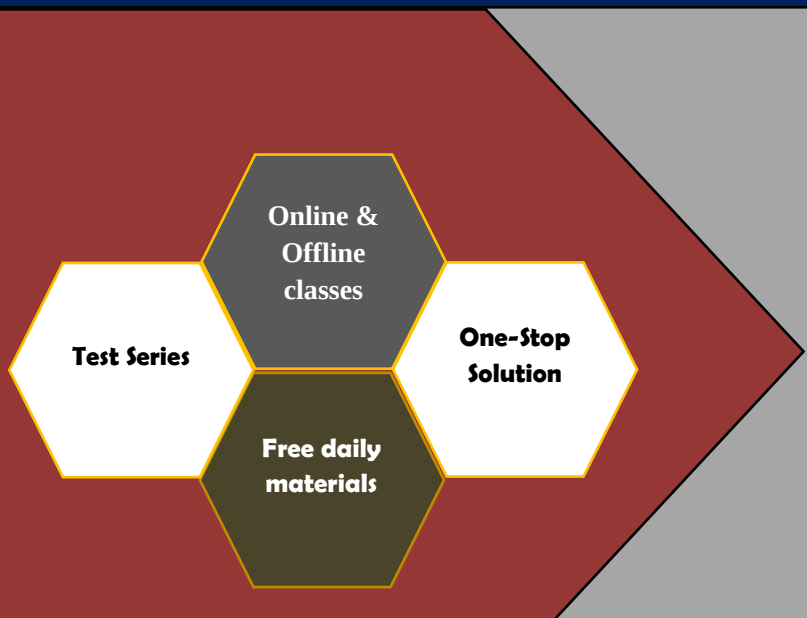
Jaitapur Nuclear Reactors: Maharashtra

Notes for civil services preparation



UPSC

General Studies

Jaitapur Nuclear Reactors: Maharashtra

Why in News

Recently, the Centre has given **in-principle (first step) approval for setting up ofsix nuclear power reactors** at Jaitapur in Maharashtra.

- The Jaitpur Project is a **key component of the strategic partnership** between

India and France.

Nuclear Power

- **About:**
  - Nuclear power is **clean and environment friendly**, apart from having a"huge potential to ensure the country's long-term energy security on a sustainable basis.
  - The nuclear power plants have so far generated about **755 billion unitsof electricity,** saving about 650 million Tonnes of **CO_2 emission.**
- **Contribution in Achieving Net Zero:**
  - **Net zero targets** are expected to be **met through a combination of various clean energy sources,** including nuclear power.
  - The present nuclear power capacity of **6,780 MW is expected to be increased to 22,480 MW by 2031** on completion of projects.

Key Points

- **About:**
  - Jaitapur would be the **world's most powerful nuclear power plant**. There would be six state-of-the-art **Evolutionary Power Reactors** withan installed capacity of 9.6 GWe that will produce low carbon electricity.
    - The six nuclear power reactors, which will have a **capacity of 1,650 MW each**, will be set up with technical cooperation fromFrance.
  - It would **provide electricity to seven crore households.** That's huge.It's a complex project. Both countries are dedicated to reaching an agreement.
  - This project will **embody the strong partnership between India and France**, a commitment to low carbon future, and will directly benefit Maharashtra with thousands of local jobs
- **Status of Nuclear Energy in India:**
  - India has consciously **proceeded to explore the possibility of tapping nuclear energy** for the purpose of power generation.
  - In this direction a **three-stage nuclear power programme** was formulated by Homi Bhabha in the 1950s.

- The **Atomic Energy Act, 1962** was framed and implemented with the set objectives of using two naturally occurring elements **Uranium andThorium** having good potential to be utilised as nuclear fuel in IndianNuclear Power Reactors.
- Other measures taken to **enhance the generation from nuclear powerplants:**
  - Administrative approval and financial sanction for **10 indigenous 700 MW Pressurised Heavy Water Reactors(PHWR).**
    - PHWR is a **nuclear power reactor,** commonly using **unenriched natural uranium as its fuel.** It uses heavy water (Deuterium oxide D_2O) as its coolant and moderator.
    - Presently, India has **22 operating nuclear power reactors**,with an installed capacity of 6780 MegaWatt electric (MWe).
      - Among these eighteen reactors are Pressurised Heavy Water Reactors (PHWRs) and four are LightWater Reactors (LWRs).
  - The **Atomic Energy Act 1962 has also been amended** to enable joint ventures of public sector companies to set up nuclear powerprojects.