Samudra Manthan – National Offshore Exploration Scheme

Mains: *GS III – Infrastructure*

Why in News?

Recently, the Union Government approved Samudra Manthan – National Offshore Exploration Scheme, with a Phase-I, to accelerate offshore hydrocarbon exploration and production.

What is Samudra Manthan?

- **Samudra Manthan –** It is a Central Sector Scheme of the *Ministry of Petroleum & Natural Gas.*
- **Funds –** Phase-I outlay of Rs.84,084 crore up to FY 2030-31.
- **Objective –** To facilitate the development of reserves totalling 600 Million Metric Tonnes of Oil Equivalent (MMTOE) and to strengthen domestic energy security.

India's Energy Dependence

• **India is the 3rd largest consumer of crude oil globally.**
• **Import Cost –** Annual crude oil imports amount to approximately USD 144 billion, equivalent to about ₹13 lakh crore.
• **Risk –** Disruptions in global supply highlight the critical need for robust energy security measures.
• **Need –** Expanding domestic energy production is vital to sustain rapid economic growth.

What are the four key components of Samudra Manthan?

- **Seismic Data Acquisition, Processing, and Interpretation**
  - Large-scale 2D and 3D seismic surveys
  - Advanced technology and Artificial Intelligence will speed up processing and interpretation.
  - Older data in the National Data Repository will also be re-processed with modern tools.
- **Accelerated Offshore Exploration**
  - It planned to drill 60 deepwater and ultra-deepwater wells.
  - Financial support – up to 50 percent of eligible drilling cost, or ₹675 crore per well, whichever is lower.
  - Both public and private Exploration and Production (E&P) operators to increase oil and gas reserves.
- **Common Offshore Infrastructure –** It scheme provides fund for *shared production and evacuation facilities in select basins.*
- It lowers project costs and turns idle finds into producing fields.
- **Oil and Gas Manufacturing and Services Zone –** It will build domestic capabilities in manufacturing, repair, warehousing, engineering, and services.
- It directly advances Make in India across the supply chain by supporting monitoring, digital interventions, evaluation, human resources, awareness, outreach, events, and media.

Mahanadi Basin – *India began drilling its first appraisal well (MN-DWN18-1-HD) in the Mahanadi Offshore Basin, using advanced deepwater technology under a four-well programme to evaluate one of its most prospective hydrocarbon basins.*

What are the challenges of Deepsea Exploration?

- **Execution delay –** Exploration and production is a prolonged process, typically requiring five to ten years from block award to commencement of production.
- **High capital –** Deepwater wells require significant capital investment, with costs ranging from approximately USD 125 to 150 million per well.
- **Risk & uncertainties –** The high-risk profile associated with offshore projects further deters potential investment.
- **Output decline –** Production from existing fields typically declines at a rate of 6 to 7 percent per year further deters potential investment.
- **Environmental Concerns –** Deepwater drilling introduces significant ecological risks

and necessitates the implementation of rigorous environmental safeguards.

What are the advantages of the Deepsea Exploration?

- **Larger Reserves –** Increase of over 600 MMTOE of hydrocarbon reserves, expanding the resource base from 1.6 billion to 2.2 billion Tonnes of Oil Equivalent (TOE).
- **Higher Output –** Annual domestic production is targeted to rise from around 62 MMTOE to 80 MMTOE.
- Incremental production of 10–15 MMTOE is expected, with a peak potential of 20 MMTOE.
- **Lower Import Bill –** Additional output can cut crude imports by nearly Rs.1 lakh crore every year, generating significant foreign exchange savings.
- **Investment and Growth –** It will promote investments across the value chain and drive strong GDP expansion.
- **Employment –** Large-scale jobs will be created in exploration, production, and allied activities.
- **Indigenous Strength –** Domestic manufacturing will deepen under Make in India and Atmanirbhar Bharat, fostering a globally competitive ecosystem for offshore technologies.

Geoscientific Databases

• Seismic surveys send sound waves into the earth to map rock layers below the seabed.
• India has made sustained investments in such geoscientific knowledge through several national initiatives. Such as
- Mission Anveshan,
- the National Seismic Programme,
- the Extended Continental Shelf Survey,
- the National Data Repository, and
- the Hydrocarbon Resource Assessment Study.

• Together, these have created one of the world's most comprehensive geoscientific databases.

What lies ahead?

- India's energy future depends on ongoing reforms, scientific advancement, and the commitment of geologists, engineers, and offshore professionals.
- Together, these efforts signal the start of a promising energy era.

Reference

PIB | Samudra Manthan – National Offshore Exploration Scheme

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