

Blue Economy of India

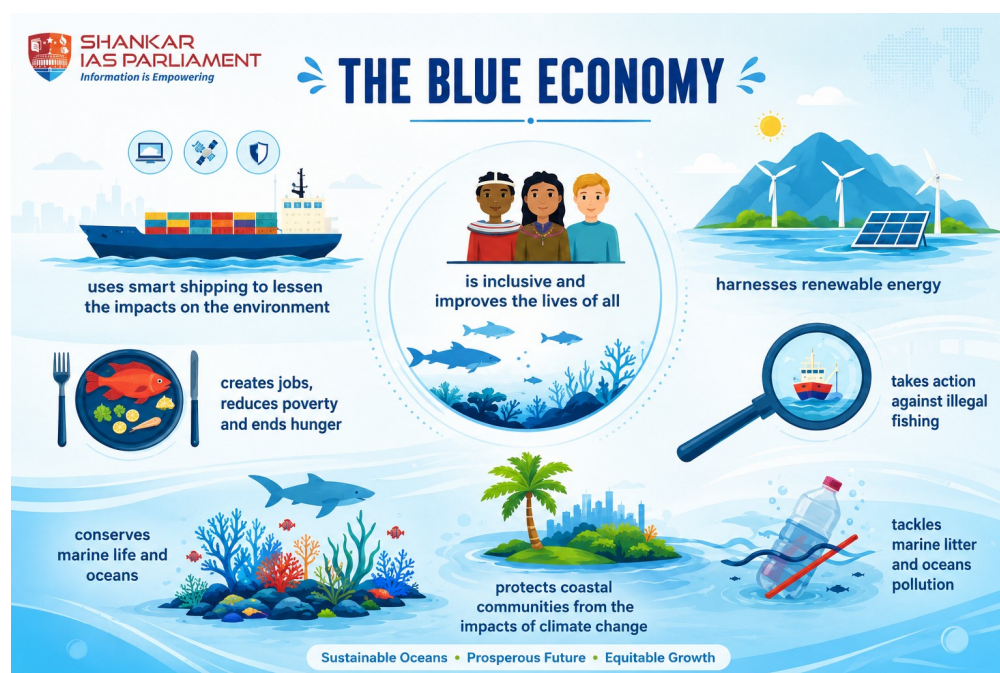
Mains: GS III – Economy

Why in News?

India's blue economy is at a critical juncture, with growing economic dependence on oceans and coastal resources alongside increasing ecological pressures.

What is Blue Economy?

- **Definition** – The blue economy refers to the sustainable use of ocean and marine resources for economic growth, livelihoods and employment while maintaining the health of marine ecosystems.



- **Components** – For India, it encompasses:
 - Marine and inland fisheries and aquaculture
 - Ports and shipping
 - Coastal and cruise tourism
 - Offshore renewable energy
 - Marine biotechnology and pharmaceuticals
 - Deep-sea mineral resources
 - Coastal infrastructure and related services
- **Potential of India** – India has a coastline of around **11,100 km** and an **Exclusive Economic Zone (EEZ) exceeding 2 million sq km**, providing significant

opportunities for sustainable economic development.

What are the Significance of Blue Economy for India?

- **Economic Growth and Trade** - The marine sector contributes roughly **4%** to India's Gross Domestic Product (GDP).
- Major ports and shipping lanes handle nearly all international trade, making efficient maritime infrastructure critical for exports.
- **Livelihoods and Employment** - Millions of people living along the coast depend on fishing, boat building, port work, and tourism.
- India ranks as one of the top global fish producers, sustaining a vast workforce.
- **Food Security** - Seafood provides affordable animal protein and vital nutrition for millions of citizens, helping reduce malnutrition.
- **Clean Energy and Climate Action** - Offshore wind farms, tidal energy, and solar projects help diversify India's power supply.
- Coastal ecosystems like mangroves capture carbon and protect shorelines from severe storms.
- **National Security** - A strong maritime presence helps India protect its ocean territory, secure offshore assets, and build regional partnerships in the Indian Ocean.

Significance of Fisheries for India

- Fisheries constitute an important component of India's blue economy and provide livelihoods to nearly 30 million people, directly and indirectly.
- According to the data cited in the MoSPI concept paper:
- India produced about 19.77 million metric tonnes (MMT) of fish in FY2024-25.
- Around 77% came from inland fisheries and 23% from marine fisheries.
- Marine fish production reached approximately 4.615 million tonnes (46.15 lakh tonnes) in 2024-25, compared with 3.443 million tonnes in 2013-14.
- Fisheries contributed an estimated ₹1.76 lakh crore, or about 1.09% of India's Gross Value Added (GVA) in 2023-24.
- India exports more than 350 varieties of marine products to around 130 international markets.
- In FY2024-25, marine product exports were approximately 1.7 MMT, valued at ₹62,408.45 crore.
- However, production and export statistics alone do not reveal whether the natural resource base supporting fisheries is being conserved for future generations.

To Know More about India's Blue Economy Click [Here](#)

What is the Recent Initiative?

- **Assigning Monetary Value Marine Fisheries** - In an important step towards sustainable resource management, the Ministry of Statistics and Programme Implementation (**MoSPI**) has initiated an experimental exercise to **assign monetary value to India's marine fish resources**.
- **International Commitment** - The initiative is based on the **United Nations System of Environmental-Economic Accounting (UN SEEA) framework**, which seeks to integrate environmental resources with conventional economic accounts.
- By valuing marine fish stocks as natural capital, India aims to assess not merely the

income generated from fisheries but also whether the underlying natural resource base is being maintained, depleted or regenerated.

Why Natural-Capital Accounting is Necessary?

- **Issues with traditional accounting** - Traditional national accounting mainly records the economic flow generated by fisheries—for example, the value of fish caught and sold.
- However, fish stocks themselves constitute a form of natural capital.
- If excessive fishing reduces the stock, current production may remain high for some time even though the underlying wealth of the country is declining.
- **Advantages of Natural-capital accounting** - It attempts to answer significant questions such as:
 - Is a fish stock increasing, stable or declining?
 - What is the economic value of the remaining stock?
 - How does overfishing affect national wealth?
 - What is the economic cost of climate-induced changes in marine ecosystems?
 - Is investment in additional fishing capacity economically and ecologically sustainable?
- Thus, it shifts policy from merely measuring annual production to measuring the long-term sustainability of the resource base.
- **Importance for Climate-Risk Assessment** - Climate change is altering marine ecosystems through:
 - Rising sea temperatures,
 - Ocean acidification,
 - Changes in fish distribution,
 - Changes in breeding and migration patterns,
 - Extreme weather events, and
 - Degradation of coastal and marine habitats.
- These changes can affect both the physical quantity of fish stocks and the future income of fishing communities.
- Natural-capital accounting can therefore help estimate the economic consequences of climate-induced changes and incorporate environmental risks into development planning.
- **Blue Economy and Competing Uses of Marine Space** - India's ocean space has multiple competing users.
- Fisheries may compete with Ports and shipping, Tourism, Offshore renewable energy, Coastal infrastructure, Conservation areas, and other emerging marine industries.
- An integrated environmental-economic accounting framework can provide a common database for assessing these trade-offs.
 - **For instance**, a project that generates high short-term economic returns but significantly damages fish stocks may impose large long-term costs on fishing communities and national wealth.
- Thus, natural-capital accounting can strengthen evidence-based marine spatial planning.

What is the Proposed Methodology of India?

- **The Concept Paper** - MoSPI's concept paper, 'Methodological Approach for Compilation of Experimental Monetary Asset Accounts of Marine Fish Resources', proposes an experimental methodology based on the SEEA framework.
- **Identification of Accounting Units** - The first step is to identify commercially, economically or ecologically important marine fish species that can be included in the accounts.
- **Assessment of Resource Condition** - For each selected species, the objective is to determine whether the stock is Regenerating, Relatively stable, or Being depleted.
- Due to limitations in species-specific stock data, MoSPI proposes using species-wise landing data for the preceding ten years as an initial proxy, comparing current landings with historical peaks.
- **Estimation of Asset Life** - The estimated asset life of a fish resource provides a link between fisheries science and economics.
- It represents the expected period over which the resource can generate economic benefits.
- **Calculation of Resource Rent** - The concept of resource rent is central to valuation.
- It represents the income attributable to the natural resource after accounting for Labour costs, Operating expenses, Depreciation, and a normal return on fishing vessels and other produced capital.
- **Discounting Future Benefits** - Expected future resource rents are projected over the estimated asset life and discounted to their present value. MoSPI proposes a 2% real discount rate for the experimental exercise.
- **Preparation of Marine Fish Asset Accounts** - The final outcome is a marine fish asset account, combining:
 - The physical condition of the fish resource, and
 - Its estimated monetary value.
 - This would allow policymakers to track whether marine natural capital is being maintained, depleted or regenerated.
- **India and the Global Experience** - India's initiative is significant because only a limited number of countries have attempted monetary accounting of aquatic resources.
- Countries such as Australia, the Netherlands, Norway, Canada, the United Kingdom, France, the United States and New Zealand have undertaken or experimented with forms of natural-capital or fisheries-related asset accounting.
- However, unlike accounting for forests or mineral resources, monetary valuation of aquatic resources remains relatively experimental because fish are living, mobile and continuously changing biological assets.
- Therefore, India's initiative can contribute to the evolution of methodologies for integrating marine ecosystems into national economic accounting.

What are the Major Challenges to Capital Accounting?

- **Difficulty in Valuing Living Resources** - Fish are mobile and reproduce naturally.
- Their population varies according to ecological, climatic and human factors, making valuation more complex than that of static assets such as minerals.
- **Data Limitations** - India lacks sufficiently detailed and continuous species-wise data

on:

- Biomass,
- Stock health,
- Catch composition,
- Recruitment,
- Mortality, and
- Ecosystem conditions.
- Using landing data as a proxy can therefore introduce uncertainty.
- **Risk of Over-Monetisation** - Not every ecological value can or should be reduced to monetary terms.
- Marine ecosystems provide biodiversity, cultural, ecological and climate-regulation services that may not be adequately captured through market-based valuation.
- **Climate Uncertainty** - Future fish stocks depend on uncertain changes in ocean temperature, currents, habitat quality and species distribution.
- Consequently, projections of future resource rents can involve significant uncertainty.
- **Risk of Policy Misinterpretation** - A high monetary value of a fish stock should not automatically be interpreted as justification for increased exploitation.
- Monetary valuation must remain subordinate to ecological sustainability and scientific catch limits.
- **Fragmented Governance** - India's marine resources involve multiple institutions dealing with fisheries, environment, shipping, ports, coastal regulation and disaster management.
- Effective natural-capital accounting therefore requires better institutional coordination.

What are the Government Initiatives Supporting the Blue Economy?

- **Pradhan Mantri Matsya Sampada Yojana (PMMSY)** for fisheries development and value-chain improvement.
- **Deep Ocean Mission** for exploration of deep-sea resources and marine science.
- **Sagarmala Programme** for port-led development.
- **Blue Revolution** initiatives for fisheries and aquaculture.
- **National Coastal Mission** and related coastal ecosystem conservation measures.
- **EnviStats India**, through which environmental-economic accounts have been developed for resources such as land, water, forests and minerals.
- The proposed marine fish asset accounts can complement these initiatives by providing a stronger statistical foundation for sustainable resource management.

Way Forward

- **Improve Fisheries Data** - India should strengthen regular assessment of Species-wise biomass, Stock health, Catch and effort, Fish mortality and recruitment, and Ecosystem indicators.
- **Integrate Scientific Stock Assessments** - Landing data should progressively be replaced or supplemented by scientifically robust biomass and stock-assessment models.
- **Develop Climate-Risk Scenarios** - Marine asset accounts should incorporate

different climate scenarios to estimate possible changes in fish stocks, livelihoods and future economic benefits.

- **Strengthen Marine Spatial Planning** - Natural-capital accounts can be integrated with marine spatial planning to balance fisheries, conservation, ports, tourism and offshore renewable energy.
- **Protect Fishing Communities** - Economic valuation should ultimately support better livelihoods, sustainable catch limits, insurance mechanisms, alternative employment and social protection for small-scale fishers.
- **Follow the Precautionary Principle** - Monetary valuation should never become a justification for overexploitation.
- Scientific sustainability thresholds and ecosystem carrying capacity must remain the basis for fisheries management.
- **Comprehensive Blue-Economy Accounting** - India should eventually develop a comprehensive statistical framework covering fisheries, coastal ecosystems, tourism, shipping, offshore energy and other marine economic activities while avoiding double counting.

What lies ahead?

- India's move towards natural-capital and climate-risk accounting of marine fish resources represents an important evolution in economic policymaking.
- It recognises that the ocean is not merely a source of annual economic output but also a stock of natural wealth whose condition determines future prosperity.
- The success of the initiative, however, will depend on the quality of data, scientific stock assessments and the ability to translate accounting results into policy.
- The objective should not be to put a price tag on every element of nature, but to ensure that economic development does not come at the cost of irreversible ecological depletion.
- By combining economic valuation with ecological science, community participation and the precautionary principle, India can build a blue economy that is productive, resilient, inclusive and sustainable.

Reference

[The Hindu| Natural-Capital and Climate-Risk Accounting Of Blue Economy](#)