



NITI Aayog Report on Seaweed Value Chain Development

For Prelims: [Seaweed](#), [NITI Aayog](#), Red algae, Blue algae, Major Seaweed Beds in India, Commercialised Seaweed Products in India.

For Mains: Distribution and Significance of Seaweeds, Seaweed Cultivation in India.

[Source: NITI Aayog](#)

Why in News?

Recently, NITI Aayog has laid down a comprehensive roadmap to promote [seaweed](#) cultivation in India in its report published titled **“Strategy for the development of Seaweed Value Chain”**.

- This includes steps for research, investment, training, infrastructure development, and market promotion to increase seaweed production, which can benefit the environment, economy, and local communities.

What are Seaweeds?

- **About Seaweeds:**
 - They are the **primitive, marine non-flowering algae** without root, stem and leaves and play a major role in marine ecosystems.
 - Large seaweeds form dense underwater forests known as kelp forests, which act as underwater nurseries for fish, snails and sea urchins.
 - Some species of seaweeds are ***Gelidiella acerosa*, *Gracilaria edulis*, *Gracilaria crassa*, *Gracilaria verrucosa*, *Sargassum spp.* and *Turbinaria spp.***
 - It is classified into **green (Chlorophyta), brown (Phaeophyta), and red (Rhodophyta)** groups.
- **Production Scenario:**
 - **Global:**
 - **Global Seaweed production (cultivation+collection)** amounted to around 35.8 million tonnes in 2019, of which wild collection remained at 1.1 million tonnes.
 - Eastern and Southeastern Asia regions dominated the cultivation landscape with 97.4% of global production, while Americas and Europe primarily depend on wild collection. **Indonesia is a major producer of seaweed.**
 - Globally, the species ***Kappaphycus alvarezii*** and ***Eucheuma denticulatum*** account for 27.8% of total seaweed production through farming.
 - The seaweed **industry is projected to grow** at a **CAGR of 2.3% from 2022 to 2030.**
 - **India:**
 - India harvests approximately **33,345 tonnes** (wet weight) of seaweeds annually from natural beds, primarily in **Tamil Nadu**, involving 5,000 families.
 - India's **annual seaweed revenue**, around Rs 200 crores, contributes **less than 1% of global production.**

- The government aims to increase the allied sector's share of gross value added in agriculture **to 9% in 2024-25** from 7.28% in 2018-19.

▪ **Import and Export:**

- In 2021, the global seaweed market stood at **USD 9.9 billion**.
- Major trading countries included **China, Indonesia, the Philippines**, the Republic of Korea, and Malaysia.
- **Korea leads in seaweed exports with over 30%** market share, while **China** holds a similar share in **seaweed-based hydrocolloids** (thickening and gelling agents derived from various types of seaweed).

▪ **Major Seaweed Beds in India:**

- Abundant seaweed resources are found along the Tamil Nadu and Gujarat coasts, as well as around Lakshadweep and the Andaman & Nicobar Islands.
- Notable seaweed beds exist around Mumbai, Ratnagiri, Goa, Karwar, Varkala, Vizhinjam, and Pulicat in Tamil Nadu, Andhra Pradesh, and Chilka in Orissa.

▪ **Related Government Initiatives:**

- **Seaweed Mission:** This initiative, launched in 2021, aims to commercialise seaweed farming and processing for value addition. It also aims to increase cultivation along India's 7,500-kilometre coastline.
- **Pradhan Mantri Matsya Sampada Yojana (PMMSY):** The government is also promoting seaweed cultivation in the country through this initiative.
- **Commercialisation of Seaweed Products:** The Indian Council of Agricultural Research (ICAR)- **Central Marine Fisheries Research Institute (CMFRI)** has successfully commercialised two seaweed-based nutraceutical products, CadalminTM Immunalgin extract (CadalminTM IMe) and CadalminTM Antihypercholesterolemic extract (CadalminTM ACe).
 - These products, developed with eco-friendly 'green' technology, aim to boost anti-viral immunity and combat high cholesterol or dyslipidemia (imbalance of cholesterol).
- **Multi-Purpose Seaweed Park in Tamil Nadu.**

What are the Uses and Benefits of Seaweeds?

- **For Nutrition:** Seaweed is a source of calcium, phosphorus, sodium, and potassium, along with **vitamins A, B1, B12, C, D, E, niacin, folic acid, pantothenic acid, and riboflavin**. They also contain essential amino acids crucial for metabolism and overall health.
- **Medicinal Purposes:** Seaweeds contain anti-inflammatory and antimicrobial agents, with medicinal effects. Certain seaweeds have cancer-fighting properties, potentially effective against **malignant tumours and leukaemia**.
- **Manufacturing Uses:** They are used as binding agents (emulsifiers) in products like **toothpaste and fruit jelly** and as **softeners (emollients)** in organic cosmetics and skincare products.
- **Commercial Value:** Commercially, seaweeds are valued for bioactive metabolites, manure, fodder, and cell wall polysaccharides like agar, algin, and carrageenan.
 - They are used in the food, pharmaceutical, cosmetic, and mining industries and as raw materials for extracting marine chemicals.
- **Agricultural Benefits:** It also serves as crop biostimulants to enhance agricultural productivity, and animal feed additives.
 - Seaweed cultivation enhances marine production, boosts fish farmers' incomes, and diversifies coastal livelihoods. Under optimal conditions, one hectare (400 bamboo rafts) can generate up to Rs 13,28,000 per year, with a family of two managing 45 rafts, creating valuable income opportunities.
- **Bioindicator:** Seaweeds absorb excess nutrients from agricultural, industrial, aquaculture, and household waste, preventing algal blooms and balancing the marine ecosystem.
- **Environmental Benefits:** Seaweeds help reduce carbon footprints. Mariculture seaweed's estimated carbon sequestration rates amount to 57.64 metric tonnes of CO₂ **per hectare per year**, while pond-cultured seaweeds sequester 12.38 metric tonnes of **CO₂ per hectare**.

What are the NITI Aayog's Recommendations for Promoting Seaweed Production in India?

- **Amendment in the Allocation of Business Rules, 1961:** Currently, seaweed is classified as "fish" under the Maritime Zones of India Act, 1981, and its global production is tracked by the FAO. Assign seaweed value chain development to the Department of Fisheries for better management.
- **Exports and Certification of Seaweed and its Products:** Transfer seaweed exports and certification oversight to MPEDA under the Ministry of Commerce & Industry, with [National Cooperative Development Corporation \(NCDC\)](#) handling sales through FPOs and SHGs.
 - Implement international certification harmonisation, with MPEDA establishing protocols and an independent body managing certification.
- **Priority Sector Lending:** The RBI should consider adding seaweed-related credit to the list of priority sector lending (PSL) for banks, given its role in addressing climate change.
- **Comprehensive risk Cover through Insurance:** To address risks from weather events in seaweed farming, a comprehensive insurance scheme should be developed. This scheme should include crop insurance, life insurance for farmers, and coverage for capital infrastructure.
- **Financial Support:** The [PM-KISAN](#) and [PMFBY](#) schemes should be expanded to include seaweed farmers, with the Ministry of Agriculture & Farmers Welfare (MoA&FW) formulating the necessary guidelines for financial and input support
 - Also incorporating them into the **Kisan Credit Card (KCC) scheme and promoting joint liability groups (JLGs)** to facilitate group financing should be promoted.
- **Investment and Ease of Doing Business:**
 - Increase investments in coastal seaweed sectors by encouraging both **public and private investments**, leveraging reforms and initiatives like Stand-up India and Startup India.
 - Develop a **dynamic data portal with geo-tagged sites** for seaweed cultivation to support **cluster development** and access for various stakeholders.
 - Include seaweed and its products in **e-NAM and state agriculture mandis**, and explore PPPs for sales interventions.
 - Scale up the **Seaweed Farmer Service Platform (SFSP)** for data-based decision-making.
 - Establish **seed banks** across maritime states and UTs for immediate availability of quality seed material after monsoon.
 - Create **Logistics and Processing Centers** at cluster levels for primary processing, including warehouses, transport, and packaging facilities.
- **Skill Development:** Offer certificate and diploma courses on seaweed cultivation, harvesting, and post-harvest management through agriculture and fisheries universities, MPEDA-RGCA, and ICAR institutes.

Drishti Mains Question:

What are Seaweeds and its uses? What are the government initiatives to promote its cultivation in India?