NITI Aayog Report on Chemical Industry

For Prelims: NITI Aayog, Global Value Chains, Chemical Industry, Viability Gap Funding (VGF), Free Trade Agreements (FTAs), PLI Scheme, Extended Producer Responsibility (EPR), Anti-dumping, Carbon Border Adjustment Mechanism (CBAM), MSME.

For Mains: Status and challenges associated with the chemical industry in India, NITI Aayog proposed policy interventions to promote chemical industry.

Source: PIB

Why in News?

NITI Aayog **released** its report titled **'Chemical Industry: Powering India's Participation in Global Value Chains'**, outlining an **ambitious roadmap** for India to become a **global chemical manufacturing powerhouse.**

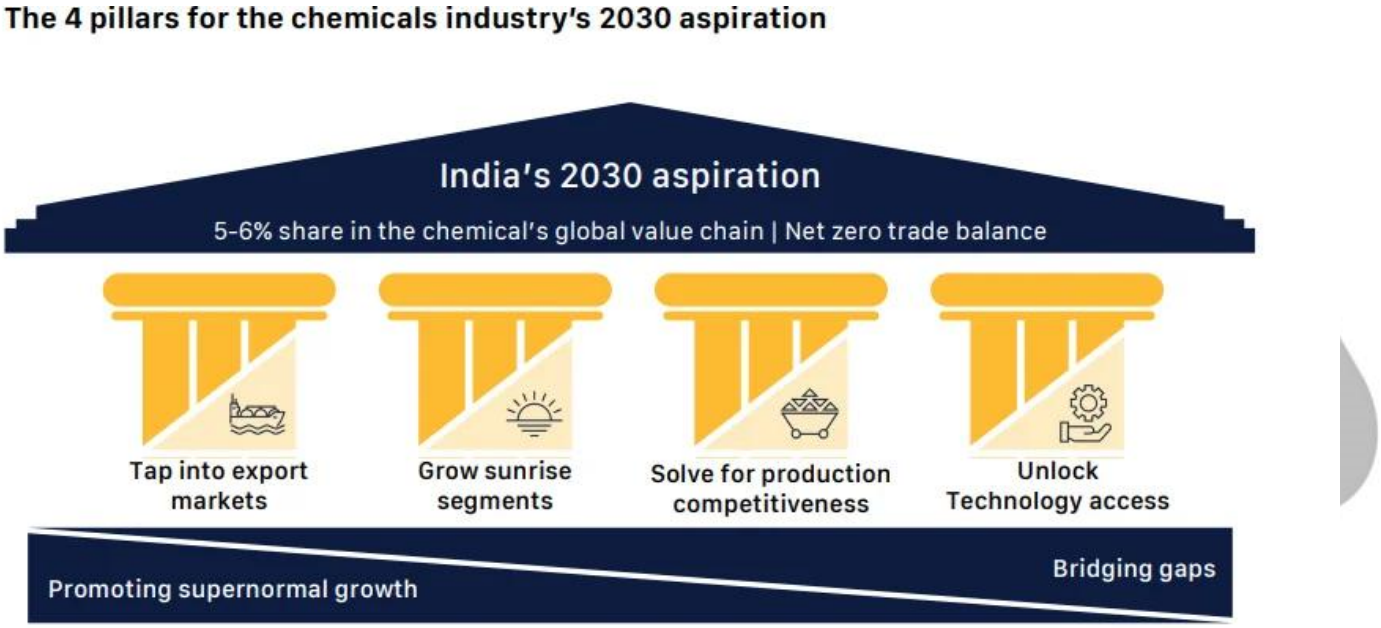
- The report envisions India achieving a **12% share in global chemical value chains (GVC**) and a **USD 1 trillion output by 2040.**

What is the Status of the Chemical Industry in India?

- **Global Standing:** India ranks as the **6th largest chemical producer globally**, contributing over **7% to the manufacturing GDP.**
  - The chemical sector supports critical industries such as **pharma, textiles, agriculture, and construction.**
- **Feedstock Utilization:** India shows **over-concentration in bulk chemical production**, with **87% of benzene** used for **alkylbenzene, chlorobenzene, and cumene**, unlike the **global trend** where only **25%** is used similarly and more goes to **complex derivatives.**
- **Low Share in Global Value Chains (GVC):** India holds only a **3.5% share in global chemical value chains**, with a **USD 31 billion trade deficit (2023)**.
  - The sector remains **fragmented**, dominated by **MSMEs**, with growth concentrated in **Gujarat**, **Maharashtra**, and **Tamil Nadu.**
- **Skill and Innovation Gaps:** There is a **30% shortage of skilled professionals**, especially in **green chemistry**, **nanotechnology**, and **process safety**.
  - **R&D investment** is just **0.7% of industry revenue**, well below the **global average of 2.3%**, limiting innovation in **high-value** and **sustainable chemicals.**
- **Import Dependence:** The sector is heavily **import-dependent**, sourcing over **60% of critical Active Pharmaceutical Ingredients (APIs)** from **China**, and other feedstocks from **Gulf countries**.
- **Regulatory Bottlenecks:** clearances and regulatory delays add to operational costs, with delays of up to **12-18 months for approvals.**

What are the Opportunities in India's Chemical Industry?

- **Rising Domestic Demand:** India's **consumer and industrial growth** is fueling demand in **agrochemicals** (4th-largest producer), **pharmaceuticals** (3rd-largest drug producer), and **construction & automotive** (**paints, adhesives, polymers**).
    - **Refinery expansions** (e.g., Reliance, Nayara, BPCL) will further **boost petrochemical** production.
- **Job Creation:** The sector is expected to generate **7 lakh skilled jobs by 2030**, particularly in areas such as **petrochemicals, research, and logistics**.
- **Global Supply Chain Shift:** India can capture the **shifting global chemical trade from China**, especially in **dyes & pigments**, **surfactants**, **textile chemicals**, and **electronic chemicals** used in **semiconductor** and **EV battery manufacturing**.
- **Green & Sustainable Chemicals:** The global shift toward **bio-based and green chemicals** is creating demand for **bio-plastics**, and **bio-lubricants** where **India's sugar and biomass resources** can support the production of **bio-based chemicals.**



What are the Proposed Policy Interventions by NITI Aayog to Promote Chemical Industry?

- **World-Class Chemicals Hubs**: Establish hubs by forming an **Empowered Committee** with a **dedicated Chemical Fund** for **shared infrastructure** and **Viability Gap Funding (VGF)**.
- **Port Infrastructure**: Set up a **Chemical Committee for ports** and develop **8 high-potential chemical clusters** near ports to enhance **logistics** and **export capabilities**.
- **OPEX Subsidy Scheme**: Introduce an **OPEX Subsidy Scheme** to incentivize **incremental production** based on **import reduction**, **export potential**, **single-source dependency**, and **end-market criticality**.
- **Develop & Access Technologies**: Promote **self-sufficiency and innovation** by disbursing **R&D funds** for **industry-academia collaboration** via **DCPC** and partnering with **MNCs** to bridge **technological gaps**.
- **Fast-Track Environmental Clearances**: Simplify and expedite **Environmental Clearances (EC)** through an **audit committee under DPIIT** to ensure **compliance**.
- **Secure FTAs**: Pursue **targeted FTAs** with **tariff quotas** and **duty exemptions** on **critical raw materials** and **feedstocks**; improve **FTA awareness**, **origin proof procedures**, and **export competitiveness**.
- **Talent & Skill Upgradation**: Expand **ITIs** and **specialized training institutes** to meet the growing demand for **skilled labor**, and strengthen **industry-academia partnerships** for courses in **petrochemicals**, **polymer science**, and **industrial safety**.

India’s Initiatives to Support the Chemical Industry

- **Production linked incentive (PLI) Scheme: PLI Scheme for Promotion of Domestic Manufacturing of Critical Key Starting Materials (KSMs), Drug Intermediates** and **APIs** aims to boost domestic production by encouraging the establishment of **Greenfield plants.**
- **PCPIR:** The **Petroleum, Chemicals and Petrochemicals Investment Region (PCPIR)** set up at **Paradip** has attracted investments worth **USD 8.84 billion**, resulting in **employment of about 40,000 people.**
- **Jan Aushadhi Kendras:** The **Government** aims to open **25,000 Jan Aushadhi Kendras** to ensure **affordable access to medicines.**

What Steps are Needed to Strengthen the Chemical Industry?

- **Global Integration:** Sign **Mutual Recognition Agreements (MRAs)** to align **Indian chemical standards** with **global norms**, and establish a **dedicated chemical export promotion council** for **market access** and **brand building**.
- **Strengthen Safety Standards:** Enforce **strict safety norms** and implement **real-time monitoring systems** in **chemical clusters** to enhance safety and compliance.
    - Promote **green and sustainable chemistry** through **waste recycling**, **low-emission processes**, and incentivize adoption of **zero liquid discharge (ZLD)** and **clean production technologies.**
- **Financial & Investment Support: Ease access to capital** by offering **lower interest loans** to **MSME chemical manufacturers** and promoting **venture capital funding** for **specialty chemical startups**, while ensuring **risk mitigation** through **subsidized insurance.**
- **Skill Development: Upskill the workforce** through **industry-aligned chemical engineering courses** focusing on **process safety** and **green technology**.
    - **Enhance safety protocols** by mandating **Process Safety Management (PSM) audits** and enforcing the **Chemical Accidents Rules, 1996** more strictly.

Conclusion

India's **chemical industry**, a **GDP growth driver**, aims to become a **global manufacturing hub by 2030** through policy interventions like **chemical hubs**, **OPEX subsidies**, **FTAs**, and an **R&D push**. Overcoming **import dependency**, **regulatory hurdles**, and **sustainability challenges** requires **global integration**, **safety enforcement**, **green chemistry**, and **skill development** to achieve **USD 1 trillion market potential**.

Drishti Mains Question:

Q. Discuss the status, challenges, and policy measures required to make India a global leader in the chemical industry.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. In India, 'extend producer responsibility' was introduced as an important feature in which of the following? (2019)

(a) The Bio-medical Waste (Management and Handling) Rules, 1998

(b) The Recycled Plastic (Manufacturing and Usage) Rules, 1999

(c) The e-Waste (Management and Handling) Rules, 2011

(d) The Food Safety and Standard Regulations, 2011

Ans: (c)