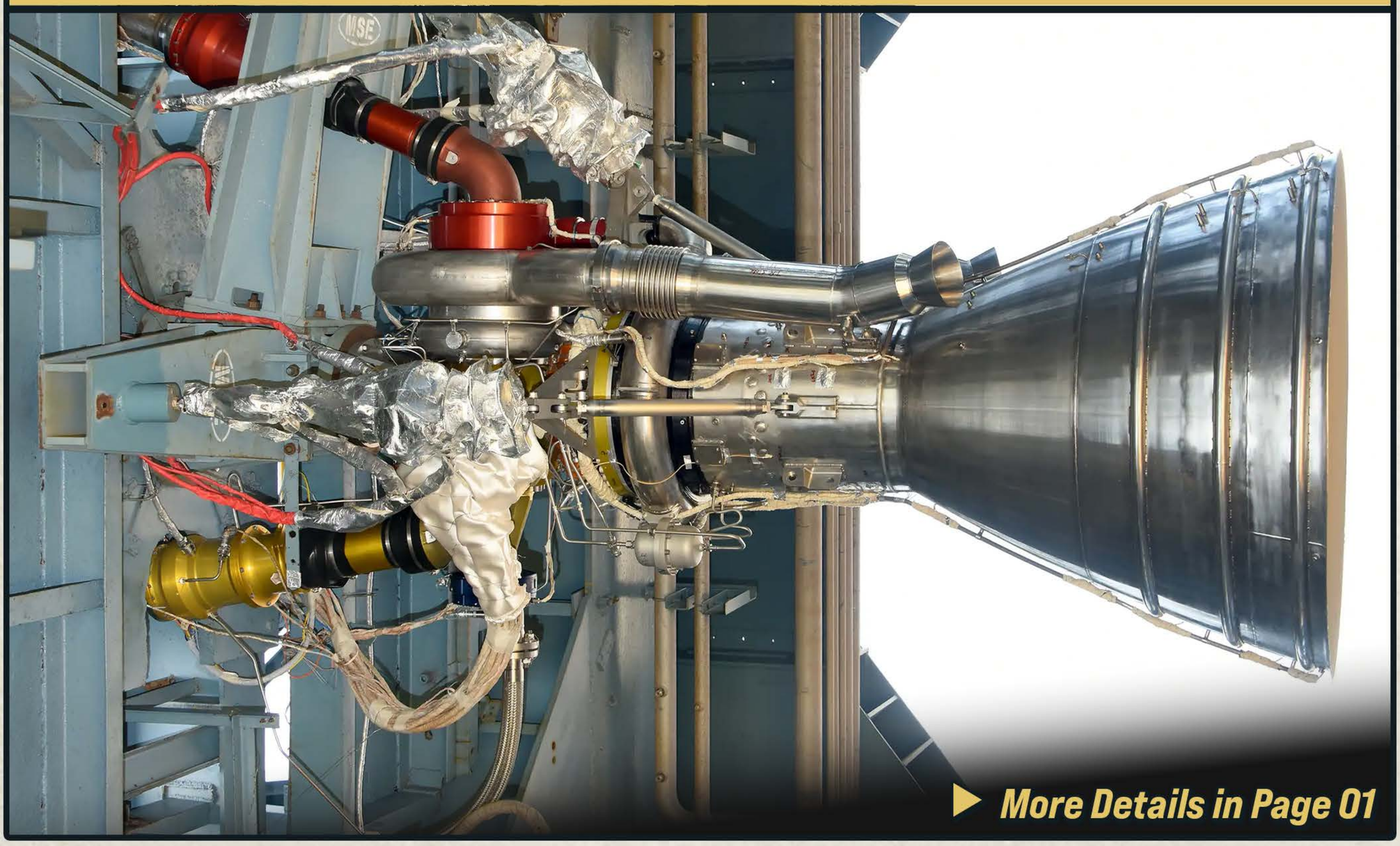
WEEKLY NEWS

January 19-25, 2025

ISRO's Vikas engine



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Quantum Economy Report

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HIGHLIGHTS

- Most Favoured Nation
- Fiscal Health Index

ISRO demonstrated restart capability of Vikas engine

Why in News?

- ISRO successfully tested the restart capability of the **Vikas liquid engine** at the **Propulsion Complex, Mahendragiri.**
- This marks a significant step towards **reusability in future launch vehicles,** reducing the cost of space missions.

About Vikas Engine

- Developed by **ISRO's Liquid Propulsion Systems Centre (LPSC).**
- Named after **Vikram Ambalal Sarabhai**, the father of India's space program.
- A **workhorse engine** powering the liquid stages of ISRO's major launch vehicles.

Role in Indian Launch Vehicles

- **Polar Satellite Launch Vehicle (PSLV)**

  First Indian launch vehicle with liquid stages.

  Four-stage vehicle with multiple satellite and orbit capabilities.

  Second stage powered by Vikas engine, using **UDMH (Unsymmetrical Dimethyl Hydrazine)** as fuel & **N2O4 (Nitrogen tetroxide)** as oxidizer.

- **Geosynchronous Satellite Launch Vehicle (GSLV)**

  Three-stage vehicle used for **communication satellites.**

  Second stage powered by Vikas engine, with a **cryogenic third stage.**

Way Forward

- Development of **reusable launch systems** for cost-efficient space exploration.
- Enhancing **India's capabilities in deep-space and interplanetary missions.**

WEF Releases Report on the Quantum Economy

Why in News?

- The **World Economic Forum (WEF)** released a report titled **"Embracing the Quantum Economy: A Pathway for Business Leaders."**
- The report highlights the **economic potential of quantum technologies** and their transformative impact.
- WEF's **Quantum Economy Network (QEN),** under the **Centre for the Fourth Industrial Revolution,** helps stakeholders prepare for the economic impact of quantum advancements.

About Quantum Technologies

- Quantum technologies leverage **quantum mechanics** to enhance computing, sensing, and communication. It includes:
- **Quantum Computing**
  - Uses **quantum bits (qubits)** to solve problems **beyond classical computing capabilities.**
  - Can revolutionize fields like **drug discovery, logistics, and financial modeling.**
- **Quantum Sensing**
  - Provides **unmatched sensitivity and precision.**
  - **Applications:** Atomic clocks, accelerometers (used in navigation, medical imaging, and geophysics).
- **Quantum Communication**
  - Ensures **ultra-secure data transmission** through **unbreakable encryption.**
  - Vital for **future-proofing cybersecurity** and **developing new digital services.**

Technological Challenges

- **Error Rates:** Qubits are fragile and prone to **errors due to decoherence** and environmental interference.
- **Scalability:** Increasing the number of qubits without **introducing more errors** is complex.
- **Interoperability:** Quantum systems must **integrate seamlessly** with classical computers, requiring hybrid models.

- ***Technological Challenges***
  - **Sensitivity & Precision:** Performance is affected by **temperature variations** and **electromagnetic interference.**
  - **Security & Reliability:** Long-distance **quantum communication** faces **signal loss and noise issues.**

- ***Way Forward***
  - **Public-Private Partnerships** for research and development.
  - **Investment in Quantum Education & Workforce Training.**
  - **Strong Regulatory Frameworks** to ensure ethical and secure adoption.

IEA Releases Report: "A New Era of Nuclear Energy"

Why in News?

- **The International Energy Agency (IEA)** released a report titled **"A New Era of Nuclear Energy."**
- The report highlights the **growing role of nuclear power** in the global energy transition.
- IEA, established in 1974 and headquartered in **Paris, France,** was created to coordinate **global energy security efforts.**

Key Highlights of the Report

- **Increasing Global Acceptance: Over 40 countries** have plans to expand the role of nuclear power in their energy systems.
- **Growth of Small Modular Reactors (SMRs): SMR installations** could reach **80 GW by 2040,** making up **10% of total nuclear capacity.**
- **Rising Investment in Nuclear Energy:** Annual investment in nuclear energy is expected to **double to $120 billion by 2030.**
- **Emerging Economies Leading the Market:** By the end of **2024**, there were **63 nuclear reactors** under construction. **75% of these reactors** are in **emerging economies,** with **half located in China.**

Significance of Nuclear Energy

- **Energy Security:** 9% contribution to global electricity generation in **2023**.
- **Low-Emission Energy Source: Second-largest** source of low-emission electricity after **hydropower** in 2023.
- **Dual Benefits: Electricity & Heat Production:** Nuclear reactors provide both **electricity generation** and **thermal energy** for industrial applications.
- **Potential in Developing Economies:** In **developing economies**, nuclear energy contributed only **5% of total electricity generation in 2023**, compared to **17% in advanced economies.**

- ***Challenges***
  - **Safety & Security Concerns:** Accidents like the **2011 Fukushima Daiichi disaster** have raised concerns over nuclear safety.
  - **High Costs & Infrastructure Challenges**

    Huge construction and financing costs hinder nuclear expansion.

    Decommissioning and disposal of radioactive waste remain key issues.

- ***Way Forward***
  - **Strengthening Supply Chains: Developing efficient and diversified supply chains** to prevent operational disruptions.
  - **Encouraging Private Investment:** Promoting **private sector participation** through **green bonds and other green finance instruments.**
  - **Strengthening Regulations:** Enhancing **environmental and structural safety** regulations for nuclear projects.

India-EU Trade and Investment

Why in News?

- India outlined six broad principles for enhancing trade and investment with the European Union (EU).
- Highlighted by the Minister of Commerce and Industry to foster a mutually beneficial partnership.

Six Broad Principles

- **Common Values:** Emphasis on shared values: democracy, rule of law, and independent judiciary.
- **Trade Agenda:** Focus on a commercially meaningful, fair, and equitable trade framework. Addressing existing trade barriers.
- **Standards and Practices:** Exchange of best practices and harmonization of standards. Aim to Achieving zero-defect and zero-effect production capabilities.
- **Resilient Supply Chains:** Development of cutting-edge technologies. Securing critical raw material supply chains.
- **Sustainable Development:** Cooperation in trade aligned with sustainable development principles. Conformance to **Common But Differentiated Responsibilities (CBDR).**
- **Mutual Growth:** Building partnerships that foster mutual growth and development.

Significance of EU for India

Addressing China Concerns

EU partnership to counter China's global expansion via the Belt and Road Initiative, Military adventurism in Asia, and Misuse of multilateral trading systems.

Economic De-risking

India faces trade deficit with China and dependence on China for key strategic inputs.

Critical Technologies

EU offers expertise in critical and emerging technologies like Cybersecurity, Space, Quantum Technology, Synthetic Biology, etc.

- ***India-EU Relations***
  - **Background**

    Strategic Partnership established in 2004.

    EU-India Joint Action Plan (2005) for political, economic, and development cooperation.
  - **Economic Relations**

    Bilateral trade: Over **$180 billion (2023-24).**

    EU: A significant source of FDI, with cumulative FDI at **$117.34 billion.**
  - **Challenges**

    Stalled negotiations on **EU-India Free Trade Agreement (FTA).**

    Disagreements over labour and environmental standards.

- ***Way Forward***
  - Finalize the **EU-India FTA** to unlock trade potential.
  - Strengthen collaboration in technology and supply chains to reduce strategic dependencies.
  - Enhance partnerships in critical sectors like green energy, sustainable development, and advanced manufacturing.

Uttarakhand Cabinet Approves UCC Manual

Why in News?

- **Uttarakhand Cabinet** has approved the **manual for the implementation of the Uniform Civil Code (UCC).**
- Earlier, the **Uttarakhand Assembly's UCC Bill** received **President's assent,** making it the first state in India to enact the UCC.

About Uniform Civil Code (UCC)

- **Meaning**

  UCC aims to establish a **uniform set of personal laws** applicable to all citizens, **irrespective of religion, gender, or caste.**

  It covers **marriage, divorce, adoption, inheritance, and succession.**

- **Constitutional Provisions**

  Article 44 (Directive Principles of State Policy) directs the State to secure a UCC across India.

  Currently**, personal laws are governed by religious customs.**

  Goa's Portuguese Civil Code, 1867, has provisions similar to the UCC.

Need for UCC

- **Gender Equity:** Personal laws related to **marriage and divorce** often discriminate against women.
- **Social Cohesion:** India's **diverse legal framework** can create **social divisions.**
- **Reforming Society:** Helps **eliminate superstitions** and **ultra-conservative practices** in the name of faith.

Challenges in Implementing UCC

- **Balancing Individual Rights & State Intervention: Article 25** ensures **freedom of religion,** while **5th and 6th Schedules** protect **tribal customs.**
- **Opposition from Religious Groups:** Religious leaders argue that **UCC interferes with religious laws,** leading to **social and political tensions.**

- ***Way Forward***
  - **Secular & Inclusive Approach:** The UCC should focus on **upholding constitutional principles** of **equality, justice, and inclusivity** rather than enforcing uniformity.

US Withdraws from Key Global Institutions

Why in News?

- **US President signed an executive order** to withdraw from **major global institutions** like the **World Health Organization (WHO)** and the **Paris Agreement.**
- The decision aligns with the **"America First" policy** and could **reshape international cooperation.**

Impact of USA's Withdrawal

- **Shortage of Funds**

  The US exit could create **financial constraints** for global institutions.

  Example: **During 2024-25, the US contributed 19% of WHO's total revenue.**

- **Weakening of Climate Actions**

  2024 was recorded as the hottest year, and the **US is the world's second-largest greenhouse gas emitter** after China.

  Withdrawal from the **Paris Agreement** could slow down **global climate efforts.**

Challenges Faced by Global Institutions

- **United Nations (UN):** The **UN Security Council (UNSC)** has not been expanded to include **developing countries,** reducing its global representation.
- **World Health Organization (WHO):** Allegations of **institutional inefficiencies, political bias, and partiality** during the **COVID-19 pandemic.**
- **World Trade Organization (WTO):** Disagreements over **agricultural subsidies, trade barriers, e-commerce, and trade wars,** especially **between the US and China.**
- **United Nations Framework Convention on Climate Change (UNFCCC):** At **COP-29 (Azerbaijan),** only **$300 billion** was committed by **2035**, whereas **developing countries demanded $1.3 trillion.**

- ***Impact of Weak Global Institutions***
  - **Emergence of regional trade blocs** as alternatives.
  - **Harm to Least Developed Countries (LDCs)** due to reduced aid and climate financing.
  - **Shift toward deglobalization,** affecting trade and economic ties.
  - **Weakening of global climate discussions**, impacting coordinated efforts.
  - **Fragmentation of global governance,** leading to inefficiencies in decision-making.

- ***Way Forward***
  - **Structural Reforms**

    Strengthening institutions with **greater accountability, transparency, and legitimacy.**

    Ensuring **inclusive decision-making** with representation from **developing countries.**
  - **Increased Financial Support for Developing Nations:** More **funding for poverty alleviation and climate action** to bridge financial gaps.
  - **Addressing Emerging Challenges:** Formulating frameworks for **cybersecurity, regional coordination, and new economic models.**

Diamond Imprest Authorization (DIA) Scheme

Why in News?

- The Department of Commerce introduced the **Diamond Imprest Authorization (DIA) Scheme** under the **Foreign Trade Policy 2023.**
- Aims to support MSME diamond exporters, generate employment, safeguard domestic industry, and enhance global competitiveness.

About the DIA Scheme

- **Objective**

  To facilitate duty-free imports of **Natural Cut and Polished Diamonds** (less than ¼ Carat or 25 Cents).

- **Key Features**

  Export Obligation: Mandatory export value addition of 10%.

  Eligibility:

  Two Star Export House status or above.

  Annual diamond exports of USD 15 million or more.

  Exemptions: Basic Customs Duty, Additional Customs Duty, Education Cess, Anti-dumping Duty, Countervailing Duty, etc.

  Non-Applicability: Not applicable to **Lab-Grown Diamonds (LGDs).**

Challenges in the Diamond Industry

- **Global Challenges**

  Declining demand for polished diamonds in key markets: **US, China, and Europe.**

  Shift in consumer preference towards **Lab-Grown Diamonds.**

- **Internal Challenges**

  High corporate tax regime and **reduced credit availability.**

  Large unsold inventories of polished diamonds.

  Rising operational costs and declining profit margins in global trade.

- ***Key Statistics***
  - **India's Global Leadership:**
    - Largest exporter of polished diamonds.
    - Processes ~90% of the world's rough diamonds (by volume).
    - Accounts for **33% of global diamond exports by value.**
  - **Significance of the Scheme**
    - Strengthens India's position as a global diamond hub.
    - Ensures sustainability and competitiveness of the domestic diamond industry.

- ***Way Forward***
  - Extend export credit periods for cut and polished diamond exporters.
  - Exempt **Foreign Rough Diamond Sellers** from Corporate Tax.
  - Regulate and promote the **Lab-Grown Diamond Industry** effectively.

Most-Favoured-Nation (MFN) Principle in Global Trade

Why in News?

- **WTO highlighted that over 80% of global merchandise trade** operates on the **Most-Favoured-Nation (MFN) basis.**
- Despite the rise of **Preferential Trade Agreements (PTAs)** since the 1990s, **MFN remains central to global trade.**

About MFN

Meaning and Principle

Countries **cannot discriminate** between their trading partners.

If a country **grants a special favour** (e.g., lower tariffs), it must extend the same to **all WTO members.**

The principle is primarily enshrined in:

Article I of the General Agreement on Tariffs and Trade (GATT), 1994

General Agreement on Trade in Services (GATS)

Trade-Related Aspects of Intellectual Property Rights (TRIPS)

Implementation Mechanism

Member countries **automatically extend MFN status** unless exceptions are specified in WTO agreements.

India has granted MFN status to several countries.

Exceptions to MFN

Trade Pacts

Regional Trade Agreements (RTAs) and Preferential Trade Arrangements (PTAs) allow **differentiated trade benefits.**

Example: **Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).**

Generalized System of Preferences (GSP)

Developed countries offer preferential tariffs to imports from **developing and least developed countries (LDCs).**

- ***Exceptions to MFN***

  - **Other Exceptions**

    Anti-dumping duties: Additional tariffs imposed on **imports sold below market price.**

    Countervailing duties: Tariffs levied to counter **unfair subsidies** that harm domestic industries.

- ***Way Forward***

  - **Strengthening WTO rules** to balance **MFN with preferential trade agreements.**
  - **Encouraging fair trade practices** to prevent misuse of **anti-dumping and countervailing duties.**
  - **Enhancing support for developing countries** through **GSP and other trade facilitation measures.**

India's Digital Economy: Estimation and Growth Report

Why in News?

- The **Ministry of Electronics & Information Technology (MeitY)** released the report **'Estimation and Measurement of India's Digital Economy.'**
- India is the first developing country to adopt the **OECD framework** for digital economy assessment.
- The report also evaluates the digital share in traditional industries like trade, BFSI, and education.

Key Findings

Current Status

Digital economy contributed **11.74%** to the national income in 2022-23.

Expected growth to **13.42%** by 2024-25.

India ranks as the **third-largest digitalized economy globally** (as per the State of India's Digital Economy Report, 2024).

Sector-Wise Breakdown

Digitally Enabling Industries: Major contributor, accounting for **7.83% of GVA** (e.g., ICT services, telecom).

New Digital Industries: Includes big tech firms and digital platforms.

Digitalization of Traditional Sectors: Added an additional **2% to national GVA.**

Employment

Digital economy employed **14.67 million workers** (2.55% of India's workforce) in 2022-23.

Projected Growth

By 2029-30, the digital economy is expected to surpass agriculture and manufacturing, contributing **one-fifth of India's GDP.**

- ***Key Drivers of Growth***
  - **Digital Literacy:** Initiatives like **PMGDISHA** empower citizens.
  - **Government Programs:** Programs such as **Digital India** drive adoption.
  - **Infrastructure Development:** Projects like **Bharat Net** improve connectivity.
  - **Financial Inclusion:** Boosted by **PMJDY** and similar schemes.
  - **E-commerce Expansion:** Enabled by platforms like **Open Network for Digital Commerce** (ONDC).
  - **Startup Ecosystem:** Supported by initiatives like **Startup India.**

- ***Challenges***
  - **Limited Broadband Access:** Broadband availability remains uneven across rural and remote areas.
  - **Data Gaps:** Lack of harmonized and updated data impacts accurate measurement.

- ***Way Forward***
  - **Universal Broadband Access:** Ensure high-quality broadband reaches all regions.
  - **Enhanced Data Collection:** Harmonize existing datasets and introduce new methodologies.
  - **Support Traditional Sectors:** Facilitate digital transformation of conventional industries.
  - **Strengthen Ecosystems:** Enhance support for startups, digital platforms, and tech adoption.

- India's digital economy is poised to lead the global stage, leveraging robust policy frameworks and innovative technologies for sustainable growth.

India's First Human Underwater Submersible Launch under Deep Ocean Mission

Why in News?

- **India is set to launch its first Human Underwater Submersible** as part of the **Deep Ocean Mission (DOM).**
- The submersible will initially operate at **500 meters depth**, with the aim to reach up to **6,000 meters** in future.
- The announcement was made by the **Union Minister** alongside India's earlier **launch of the Samudrayan mission** for deep ocean exploration.

Deep Ocean Mission (DOM)

Overview

Launched in 2021, the **DOM is a flagship program** by the **Ministry of Earth Sciences.**

The mission spans **five years** and aims to unlock resources and explore the **marine ecosystem.**

It is one of the **nine missions under the Prime Minister's Science, Technology, and Innovation Advisory Council (PMSTIAC).**

Mission Goals

Unlock resources such as **critical minerals, rare metals,** and **undiscovered marine biodiversity.**

Develop **technologies for deep-sea mining** and a **manned submersible** capable of reaching **6,000 meters.**

Establish an **ocean climate change advisory service** and create **innovations for deep-sea biodiversity conservation.**

Conduct **deep-ocean surveys** for potential sites of **multi-metal hydrothermal sulphides** mineralisation in the Indian Ocean.

Explore ways to **harness energy and freshwater** from the ocean.

Create an advanced Marine Station for Ocean Biology to drive new opportunities in **blue biotechnology.**

- ***Way Forward***
  - **Develop cutting-edge technologies** for deep-sea exploration, mining, and conservation.
  - Foster **international collaboration** for ocean research and sustainable use of marine resources.
  - Expand **ocean-related educational programs** to build expertise in deep-sea sciences and technologies.

GPAP Welcomes New Members

Why in News?

- Seven new members join the World Economic Forum's (WEF) Global Plastic Action Partnership (GPAP):
- **Angola, Bangladesh, Gabon, Guatemala, Kenya, Senegal, and Tanzania.**

About Global Plastic Action Partnership (GPAP)

- **Launched:** 2018 at WEF's Sustainable Development Impact Summit.
- **Purpose:** Serves as a plastic-focused initiative under the Platform for Accelerating the Circular Economy and Friends of Ocean Action.
- **Current Membership:** 25 members (including Maharashtra, India).
- **Objectives:**

  Address the global plastic pollution crisis by uniting governments, businesses, and civil society.

  Promote a circular plastics economy to reduce emissions and protect ecosystems.

- **Key Activities:**

  Develop National Action Roadmaps.

  Mobilize investments for waste management solutions.

Challenges in Global Plastic Waste Management

- **Scalability**

  Increase in Waste: Plastic waste has more than doubled globally since 2000 (OECD, 2022).

  India: Became the world's largest plastic emitter in 2024.

- **Limited Recycling**

  Only **9% of plastic waste** is recycled.

  19% is incinerated, and nearly **50%** ends up in sanitary landfills.

- ***Impact of Plastic Waste***
  - **On Environment**

    Affects land, freshwater, and marine ecosystems, leading to:

    Biodiversity loss.

    Ecosystem degradation.

    Climate change.

    Responsible for **1.8 billion tonnes of greenhouse gas emissions annually** (e.g., methane from landfills).
  - **On Health**

    Microplastics enter the food chain, harming animal and human health.
  - **On Economy**

    Declines in income from sectors like tourism, fisheries, agriculture, and water safety.

- ***India's Initiatives for Plastic Waste Management***
  - **Plastic Waste Management Rules, 2016:**

    Introduced Extended Producer Responsibility (EPR).

    Focused on reducing the plastic footprint and encouraging recycling.
  - **National Circular Economy Roadmap (2023):**

    Developed in collaboration with Australia.

    Aims to minimize plastic waste and promote sustainable practices.

- ***Way Forward***
  - **Strengthen Recycling Efforts:** Promote innovative recycling technologies.
  - **Enhance Circular Economy:** Expand EPR frameworks and adopt sustainable production models.
  - **Collaborative Solutions:** Encourage global partnerships for waste management strategies.
  - **Awareness Campaigns:** Educate stakeholders on the harmful impacts of plastic waste.

Executive Order on Ending Birthright Citizenship

Why in News?

- The **U.S. President signed an executive order** to end birthright citizenship.
- A **federal judge temporarily blocked** the order, maintaining the existing provisions for now.

About Birthright Citizenship in the U.S.

- **Definition:** Grants automatic citizenship to anyone born on U.S. soil, based on the **14th Amendment (1868).**
- **Historical Precedent:** Upheld in **United States v. Wong Kim Ark (1898)**, even for children of non-citizen parents.

Implications for India

- **Impact on H-1B Visa Holders:**

  Children born to Indian professionals on **H-1B visas** or those awaiting **Green Cards** will lose the automatic citizenship privilege.

  H-1B Visa: Temporary visa allowing foreign professionals to work in specialized fields in the U.S.

- **Challenges for Temporary Visa Holders:**

  Indian students (a major group of international students) and families on temporary visas may struggle to secure citizenship for their U.S.-born children.

- **Effect on Immigration Patterns:**

  Likely to discourage migration of Indian professionals, students, and families to the U.S.

  Increased preference for immigration-friendly nations like **Canada** and **Australia**.

- **Curbing "Birth Tourism":**

  Limits the practice of traveling to the U.S. for childbirth to secure citizenship for children.

- ***Way Forward***
  - **Policy Consideration:** Address concerns of immigrants and businesses relying on skilled professionals.
  - **International Student Engagement:** Enhance bilateral educational ties to mitigate impact on Indian students.
  - **Alternate Migration Pathways:** Explore opportunities in other immigration-friendly nations to support Indian diaspora needs.

- ***Contextual Insight***
  - This policy shift reflects broader debates over immigration and its socio-economic impacts on host countries.

Fiscal Health Index (FHI) 2025

Why in News?

- The **16th Finance Commission** launched the **inaugural issue** of NITI Aayog's **Fiscal Health Index (FHI) 2025.**
- The index assesses **state-wise fiscal health**, crucial for national development.

Key Findings

- **Top Performing State: Odisha** ranks highest in overall **Fiscal Health** and leads in **Debt Index & Debt Sustainability.**
- **Revenue Mobilization Leaders: Goa, Telangana, Odisha** top revenue generation.

Capital Expenditure Trends:

- **Achiever & Front Runner States** invest **~27%** of developmental spending in capital expenditure.
- **Performer & Aspirational States** allocate only **~10%**.
- **Debt Sustainability Concerns: West Bengal & Punjab** face rising debt burdens.

About Fiscal Health Index (FHI) 2025

- **Purpose:** Evaluates state fiscal health to support **balanced regional development & economic stability.**
- **Assessment:** Covers **18 major states** based on five key sub-indices:
  - **Quality of Expenditure**
  - **Revenue Mobilization**
  - **Fiscal Prudence**
  - **Debt Index**
  - **Debt Sustainability**

State Rankings by Financial Health

- **Achievers (FHI Score > 50):** Odisha, Chhattisgarh, Goa, Jharkhand, Gujarat
- **Front Runners (FHI Score 40-50):** Maharashtra, UP, Telangana, MP, Karnataka
- **Performers (FHI Score 25-40):** Tamil Nadu, Rajasthan, Bihar, Haryana
- **Aspirational (FHI Score ≤ 25):** Kerala, WB, AP, Punjab

- ***Significance of FHI***
  - ➪ Promotes **fiscal transparency & consolidation.**
  - ➪ Aligns with **"Viksit Bharat @2047"** for economic transformation.
  - ➪ Helps policymakers ensure **fiscal discipline & sustainable growth.**

- ***Way Forward***
  - ➪ Strengthen revenue mobilization strategies.
  - ➪ Boost capital expenditure for long-term growth.
  - ➪ Implement debt control mechanisms in high-burden states.
  - ➪ Improve financial management in **Aspirational States.**

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