

NEWS TODAY

ISRO demonstrated restart capability of Vikas engine

ISRO successfully carried out demonstration of **restarting its Vikas liquid engine** at a test facility at Propulsion Complex, Mahendragiri.




➤ It is a step towards developing technologies for recovery of stages, **leading to reusability in future launch vehicles** which could substantially **reduce cost of future space missions**.

About Vikas (Vikram Ambalal Sarabhai) Engine

- It has been conceptualized and designed by ISRO's **Liquid Propulsion Systems Centre (LPSC)**.
 - ⊖ LPSC is centre for **design, development and realisation of liquid propulsion stages** for ISRO's Launch Vehicles.
- It is **workhorse engine** that **powers liquid stages of ISRO's launch vehicles**.
- It improves payload capability of **Polar Satellite Launch Vehicle (PSLV), Geosynchronous Launch Vehicle (GSLV) and GSLV Mk-III launch vehicles**.

PSLV (Third generation launch vehicle)

- First Indian launch vehicle to be **equipped with liquid stages**.
- **Four stage vehicle with multiple satellite launch capability** and multiple orbit capability. **Second and fourth stages** are powered by **liquid propulsion engines**.
 - ⊖ **Second stage** is powered by a **Vikas engine**. It uses UDMH (Unsymmetrical Dimethyl Hydrazine) as fuel and Nitrogen tetroxide (N₂O₄) as oxidiser.

Types of Rocket Engines		
 Liquid-Fuel Rocket Engines	 Solid-Fuel Rocket Engines	 Hybrid Rocket Engines
<ul style="list-style-type: none"> • Most common type and use liquid fuel and liquid oxidizer that is stored in separate tanks. • Fuel and Oxidizer are pumped in an oxygen chamber where they are mixed and burned. 	<ul style="list-style-type: none"> • Simpler and less expensive than liquid-fuel rocket engines. • Use a solid propellant that contains both fuel and oxidizer. 	<ul style="list-style-type: none"> • More efficient and more controllable, than solid and liquid rocket engines. • Use solid fuel and liquid oxidizer. • Solid fuel is stored in a casing, and liquid oxidizer is pumped into combustion chamber where it is mixed with fuel and burned.

GSLV

- **Three stage vehicle** used to launch communication satellites in geo transfer orbit using cryogenic third stage.
 - ⊖ Its **second stage** is **powered by Vikas engines**.

New Study highlights Comprehensive Analysis of Food Systems Transformation

Study titled "**Governance and resilience as entry points for transforming food systems in countdown to 2030**" was conducted by **Food Systems Countdown Initiative** in collaboration with global experts/organizations including FAO, Global Alliance for Improved Nutrition etc.




- It tracks **42 global food system indicators** across **five themes** i.e.
 - ⊖ Diets, nutrition, and health; Environment, natural resources, and production; Livelihoods, poverty, and equity; Resilience; and Governance.

Key findings

- **20 indicators show positive trends**. E.g. **access to safe water, increased availability of vegetables, and conservation of plant and animal genetic resources** etc.
- **7 indicators show significant decline**. E.g. **food price volatility, deteriorating government accountability, and reduced civil society participation** etc.
- **15 indicators showed no change** (undesirable). E.g. **ultra-processed food sales, food systems emissions, agriculture water withdrawal** etc.
- **Governance indicators** (Public access to information etc.) and **resilience indicators** (food price volatility etc.) are **pivotal leverage points** for catalyzing food system transformation.

About Food System

- **Definition:** It encompasses **entire range of actors and their interlinked value-adding activities** involved in production, processing, distribution, consumption and disposal of food products that originate from agriculture, forestry or fisheries.
- **Challenges:** Lack of access to **safe, nutritious, and affordable diets**; **Geopolitical shocks** disrupting supply chains; Climate change induced **Pests attacks**, and **reduced crop productivity** etc.

Components of Food Systems		
 Food Supply Chains	 Individual Factors	 Food Environments
<ul style="list-style-type: none"> • Food Production System & Inputs • Food Storage, Loss, Distribution & Transport • Food Processing & Packaging • Retail, Markets & Waste 	<ul style="list-style-type: none"> • Economic E.g. Purchasing Power • Cognitive E.g. Information & Knowledge • Aspirational E.g. Values & Preferences • Situational E.g. Home & Work Environment 	<ul style="list-style-type: none"> • Food Availability • Food Affordability • Food Sustainability, Quality & Safety • Food Promotion & Advertisement

India Shows Economic Resilience amid Global Challenges: World Bank Report 2025

World Bank's latest **Global Economic Prospects Report** gives overview of Global Economy for the 1st quarter of 21st Century (refer to the infographic).

Key Highlights

- **Rising influence of EMDEs:** Emerging Market and Developing Economies (EMDEs), led by the **EM3 nations** (China, India, and Brazil), have significantly increased their share in the global economy from 2000 to 2025.
- **India's Growth Leadership:** India remains the **fastest-growing economy**, with **projected 6.7% annual growth** through FY26–FY27, slightly below the 7% achieved in 2022.

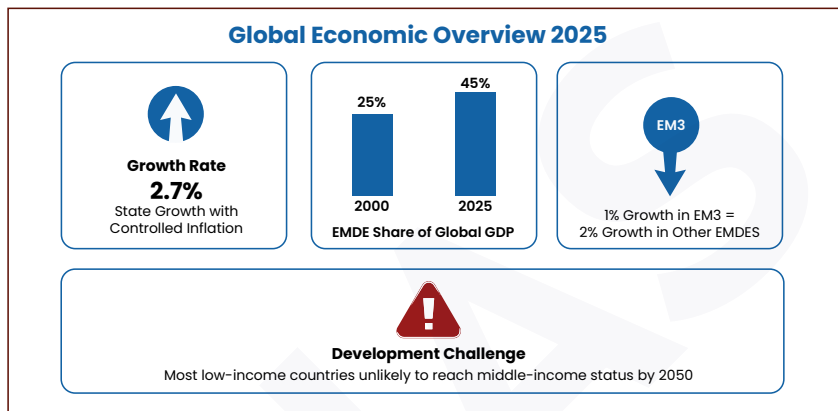
Factors reflecting robustness of Indian Economy

➤ Strong Sectoral Performance:

- ⊕ **Services:** The services sector is set for **sustained expansion**, with rising service exports boosting trade integration in South Asia since 2000.
- ⊕ **Manufacturing:** Manufacturing is **strengthened** to grow, driven by government initiatives to improve logistics and tax reforms.

➤ Solid Economic Foundation

- ⊕ **Fiscal Health:** Shrinking fiscal deficits and increasing tax revenues.
- ⊕ **Investment Outlook:** Investment growth overall is expected to be **steady**, with **rising private investment**, supported by healthy corporate balance sheets and easing financing conditions.
- ⊕ **Consumption outlook:** **Private consumption** growth is expected to be boosted by a **strengthening labor market, expanding credit, and declining inflation**.
 - ◆ However, **government consumption** growth is likely to remain contained.



The report identifies key challenges, including **rising protectionism, geopolitical tensions, mounting debt burdens, and climate change-related costs**. Success requires **focused policies on boosting investment, productivity, and macroeconomic stability** while effectively managing external pressures.

World Economic Forum (WEF) Released Report on the Quantum Economy

The report titled “**Embracing the Quantum Economy: A Pathway for Business Leaders**” sheds light on the **economic potential for quantum technologies** (refer to the infographic).

- **WEF's Quantum Economy Network (QEN)**, part of the **Centre for the Fourth Industrial Revolution**, facilitates stakeholders to **understand and prepare for the economic impact of quantum technologies**.

About Quantum technologies

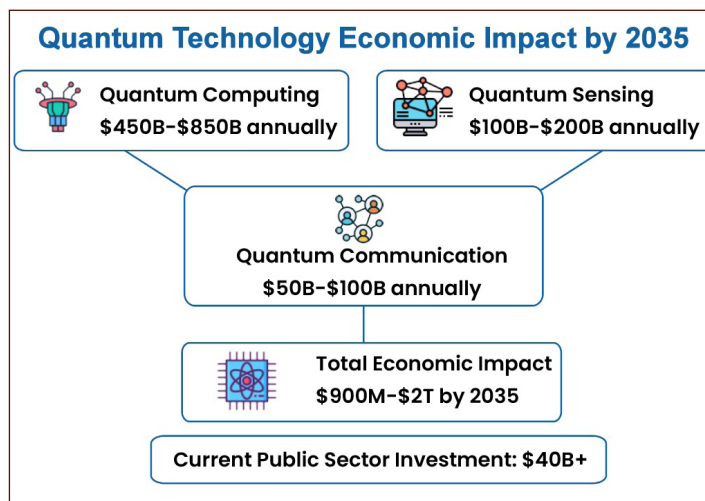
It incorporates:

- **Quantum computing:** An emerging field of computer science that uses **quantum mechanics to solve problems** beyond the capabilities of classical computers.
- **Quantum sensing:** Quantum sensors, which have been in use for decades, offer **unprecedented sensitivity and precision**.
 - ⊕ It includes tools like **atomic clocks and accelerometers**, used in navigation, medical imaging, and geophysics.
- **Quantum communication:** It ensures secure data transmission through **theoretically unbreakable encryption**, crucial for future-proofing cybersecurity and creating new products and services.

Technological Challenges in Unlocking Quantum Technologies

- **Error Rates:** Qubits (Quantum Bits) are fragile and prone to errors due to environmental interference and decoherence.
- **Scalability:** Building large-scale quantum computers is difficult without increasing errors and resource demands.
- **Interoperability:** Quantum systems need seamless integration with classical systems, requiring hybrid models and new software.
- **Sensitivity and Precision:** Real-world performance is hindered by temperature changes and electromagnetic interference, affecting sensor accuracy.
- **Security and Reliability:** Ensuring secure, reliable quantum communication over long distances faces challenges like signal loss and noise.

To unlock the potential of the quantum economy, the report emphasizes **public-private partnerships, investment in education, and strong regulatory frameworks**.



International Energy Agency (IEA) released Report titled 'A new era of nuclear energy'

IEA (HQ: Paris, France) is an **autonomous body**, established in 1974 to help co-ordinate a collective response to major disruptions in oil supply.

Key highlights of report

- **Increasing acceptance:** Over 40 countries have plans to expand role of nuclear power in energy systems.
- **Small modular reactors (SMRs) installations:** Could reach **80 GW by 2040**, accounting for 10% of overall nuclear capacity globally.
- **Expansion in annual investment:** Double to \$120 billion by 2030.
- **Emerging economies as market leaders:** As of the end of 2024, there were 63 nuclear reactors under construction, of which three-quarters are in emerging economies and half in China alone.

Significance of Nuclear Energy

- **Energy security:** 9% contribution to global electricity generation in 2023.
- **Low-emissions source:** **Second-largest source of low-emissions electricity in 2023** after hydropower.
- **Source of heat:** Dual benefits of harnessing thermal energy and electricity generation from nuclear reactors.
- **Opportunities in developing economies:** Nuclear energy accounted for just 5% of total electricity generation in 2023 as compared to 17% in advanced economies.

Challenges

- **Safety and security:** 2011 Great East Japan Earthquake and the accident at Fukushima Daiichi plant.
- **Other issues:** Huge construction and financing costs; Decommissioning and disposal of radioactive materials etc.



Recommendations

- **Efficient and diversified supply chains** to address operational disruptions.
- **Encourage private sector participation, green bonds** and other green debt instruments to strengthen financial environment.
- **Enhanced regulation** to ensure environmental and structural safety of the projects.

Also in News



Electoral Trusts

After the Supreme Court scrapped electoral bonds last year, political donations through electoral trusts surged.

About Electoral Trusts

- Electoral Trusts is governed by the **Electoral Trusts Scheme, 2013 and Rule 17CA of the Income-tax Rules 1962.**
- **Trusts are set up by companies to distribute donations from individuals and firms to political parties.**
- Unlike electoral bonds, trusts **must report donor and recipient details annually to the Election Commission.**
- **Trusts must renew registration every three years.**



BRICS

Nigeria has been admitted as "**partner country**" of BRICS grouping.

- It is the **9th BRICS partner country**, joining **Belarus, Bolivia, Cuba, Kazakhstan, Malaysia, Thailand, Uganda, and Uzbekistan.**

About BRICS

- **Total members: 11**
 - ⊕ **Informal grouping** formed by **Brazil, Russia, India and China** in 2009, with **South Africa added in 2010.**
 - ⊕ **Other Full Members: Egypt, Ethiopia, Iran, Saudi Arabia, UAE, Indonesia.**
- **Three pillars of Cooperation:** Political and Security; Economic and financial; Cultural and people to people exchanges.
- Represents **~40% of global population** and an estimated **37.3% of global GDP.**
- **India hosted 4th (2012), 8th (2016) and 13th (2021) BRICS Summit.**

SVAMITVA Scheme

Prime Minister distributed over 65 lakh property cards under SVAMITVA Scheme to property owners.

SVAMITVA scheme

- **Nodal Ministry:** Ministry of **Panchayati Raj**
- **Purpose:** To enhance the economic progress of rural India by providing 'Record of Rights' to households owning houses in inhabited areas in villages
- **Type:** Central Sector Scheme
- **Technology Implementation Agency:** Survey of India
- **Key Activities**
 - ⊕ Large Scale mapping using Drones
 - ⊕ **SVAMITVA Dashboard** for real-time progress monitoring
 - ⊕ Establishment of **Continuous Operating Reference Station (CORS)**

Internet Governance Internship and Capacity Building (IGICB) Scheme

National Internet Exchange of India (NIXI) has launched IGICB Scheme.

- Set up in 2003, NIXI is a not-for-profit company under MeitY.
- NIXI is tasked with increasing internet penetration and adoption in India.

About Internet Governance Internship and Capacity Building Scheme

- **Ministry:** MeitY.
- **Aim:** To build awareness and develop expertise in Internet Governance (IG) among Indian citizens.
- **Participants can engage in global IG processes with I-Star organisations** like Internet Corporation for Assigned Names and Numbers etc.
 - ⊕ **I-star organizations** used to describe organizations that share responsibilities for coordinating the Internet technical infrastructure.
- **Offers bi-annual internship** (six and three-month program).

La Perouse: Multilateral Exercise

Navies of nine Indo-Pacific countries, including India, are taking part in a multilateral exercise, La Perouse.

About La Perouse

- It is hosted by France in strategic straits of Malacca, Sunda, and Lombok, between Indian Ocean and Pacific Ocean.
- **Participating countries:** Australia, Canada, USA, France, India, Indonesia, Malaysia, United Kingdom, Singapore.
- **Aim:** Develop common Maritime Situational Awareness by enhancing cooperation in field of maritime surveillance, maritime interdiction operations and air operations.

Dark oxygen

Dark oxygen is believed to reshape human understanding of how life might be sustained on other planets without direct sunlight.

About Dark Oxygen

- In July 2024, scientists discovered "dark" oxygen 13,100 feet deep in the Clarion-Clipperton Zone of the Pacific Ocean.
- **Metallic nodules** on the seafloor, rich in manganese and iron, were found to generate oxygen by splitting seawater (H₂O) without sunlight.
- This challenges the belief that photosynthesis is the sole source of oxygen and suggests oxygen-rich environments could exist on other planets, potentially supporting life.
- It also hints that oxygen production on Earth may have occurred before photosynthesis, reshaping our understanding of life's origins.

National Disaster Response Force (NDRF)

NDRF has celebrated its 20th Raising Day.

About NDRF

- It was established in 2006 under Disaster Management Act, 2005 aimed at specialized response to natural and man-made disasters.
- **General superintendence, direction and control of NDRF** is vested and exercised by **National Disaster Management Authority (NDMA)**.
- **Function:** In charge of carrying out rescue operations during calamities like landslides, floods etc.
- **Composition:** Comprises 16 Battalions drawn from Central Armed Police Forces (CAPF), i.e., Border Security Force (BSF), Central Industrial Security Force (CISF), Central Reserve Police Force (CRPF), Indo-Tibetan Border Police (ITBP), Sashastra Seema Bal (SSB) and Assam Rifles.

Sun Temple, Konark

Ministry of Mines, in collaboration with the Government of Odisha, has set up the District Mineral Foundation Exhibition at Sun Temple, Konark in Odisha.

About the Temple

- **Built by:** Narasimha Deva I (1238–1264) of the Ganga dynasty.
- **Architecture:** Kalingan temple architecture showcases
 - ⊕ **Vimana:** Once topped by a magnificent shikhara (collapsed in 19th century)
 - ⊕ **Jagamohana** - Pyramidal audience hall
 - ⊕ **Natmandir** - Elevated, roofless dance platform
- **Symbolic Design:** Symbolizes Surya's chariot, featuring 24 intricately carved wheels and 7 horses.
- **Heritage Status:** Recognized as a UNESCO World Heritage Site

Personality in News | **Sree Narayana Guru (1856-1928)**

IIT Bombay is set to unveil an online archival project dedicated to Narayana Guru this May.

- He was a revered social reformer and spiritual leader from Kerala.

Contribution

- He propagated the idea of 'One Caste, One Religion, One God'.
- He and Padmanabhan Palpu founded the 'Sree Narayana Dharma Paripalana Yogam' (SNDP) for upliftment and education of Ezhava community.
- He launched the "Aruvipuram movement, one of the first moments for equal rights to temple entry.
- He lent support to Vaikom Satyagraha for temple entry (1924-25) in Travancore.
- His works include DaivaDasakam, Anukampadasakam etc.

Values – Equality, Non-violence, Compassion, Integrity, Courage etc.

