
Prelims Exam Topics

ATF PRICE STABILISATION FUND

Context

The Union Cabinet has approved a one-time budgetary support to Oil Marketing Companies (OMCs) for creating an Aviation Turbine Fuel (ATF) Price Stabilisation Fund

About ATF Price Stabilisation Fund

- **Aim:** To stabilise Aviation Turbine Fuel (ATF) prices during periods of extreme volatility in global crude oil markets and to ensure uninterrupted airline operations and protect passengers from steep airfare hikes.
- **Key Features**
 - **Funding:** ₹10,000 Crore one-time budgetary support
 - **Interest-Free Advances:** Fund will be provided to OMCs in the form of interest-free advances.
 - **Revolving Fund Mechanism:** Once international ATF prices moderate, the differential amount will be recovered from OMCs and returned to the government.
 - **Implementation:** MoU-Based Implementation through an agreement between OMCs and participating airlines.
 - **Conditional Procurement:** Participating airlines must procure ATF only from OMCs for up to 3 years, or until the advance amount is fully recovered.
 - **Coverage:** Applicable to scheduled airlines operating domestic flights and International flights

REAL EFFECTIVE EXCHANGE RATE

Context

The Real Effective Exchange Rate of rupee fell to 90.96 in April 2026 which is lowest since Sept 2013.

About REER

- Defined as a weighted average of nominal exchange rates adjusted for relative price differential between the domestic and foreign countries, related to the purchasing power parity (PPP) hypothesis.
- Typically measured against a baseline of 100. This baseline dictates whether a currency is overvalued, undervalued, or in equilibrium:

- **Equilibrium (~100):** A REER hovering around 100 indicates fair value. Demand and supply are balanced, and domestic prices are roughly on par with international competitors.
- **Overvaluation (> 100):** When the REER rises above 100, the currency has become more expensive in real, inflation-adjusted terms compared to its trading partners.
- **Undervaluation (< 100):** When the REER falls below 100, the currency is weaker in real terms, meaning domestic goods are cheaper globally than those from competing nations.

FLEX FUEL VEHICLES

Context

Hero MotoCorp launched its first flex-fuel motorcycle (compatible with E20 to E85 blends) and Maruti Suzuki debuted its first flex-fuel passenger vehicle.

About Flex Fuel Vehicles

- Vehicles equipped with modified internal combustion engines (ICE) capable of running on pure petrol, pure bio-ethanol, or any internal combination of the two within a single fuel tank.
 - **Flex-Fuel:** An alternative fuel created by blending petrol with high concentrations of ethanol, typically ranging from 20% to 85% (E20 to E85).
- **Advantages:** Reduces carbon monoxide emissions by 77% while saving ₹1.44 lakh crore in foreign exchange.
- **Disadvantages:** Ethanol's corrosive nature requires specialized engine components, separate fuel station infrastructure, and causes a drop in vehicle mileage due to lower energy density.

NAVACHAR MANTRA

Context

The Ministry of Skill Development and Entrepreneurship (MSDE) launched 'Navachar Mantra'.

About Navachar Mantra

- **Nodal Ministry:** Ministry of Skill Development and Entrepreneurship (MSDE)
- **Aim:** to identify, nurture, and scale grassroots innovators and early-stage entrepreneurs.
- **Implementing Partners:** Executed by the National Institute for Entrepreneurship and Small Business Development (NIESBUD) alongside FITT, IIT Delhi.
- **Target Geographies:** Focuses on creating growth pathways for innovators from Tier-2/3 towns, aspirational districts, and underserved regions.

- **Industry & Investor Access:** Provides direct access to policymakers, investors, and industry leaders to refine business models and accelerate enterprise growth.

QUARK-GLUON PLASMA (QGP)

Context

Scientists at Large Hadron Collider (LHC) have found the smallest dollop of QGP that behaves like a fluid by smashing together oxygen nuclei.

About Quark-gluon plasma (QGP)

- QGP is an ultra-dense, high-energy state of matter where protons and neutrons "melt," allowing fundamental quarks and gluons to move freely (deconfinement).
- Represents the primordial "soup" that filled the universe during the first few millionths of a second after the Big Bang before cooling into regular matter.
- Despite its subatomic scale, it behaves as a near-perfect fluid rather than a gas, flowing with exceptionally low shear viscosity.

Quark: A quark is an elementary particle and a fundamental constituent of matter. They combine to form composite particles called **hadrons**, the most stable of which are protons and neutrons.

Gluon: A gluon is an elementary particle that acts as the exchange particle (or gauge boson) for the strong nuclear force.

GENE-SILENCING

Context

Scientists at the Agharkar Research Institute (ARI), Pune have developed an innovative, biodegradable nanocarrier platform that utilizes a dual gene-silencing strategy to effectively target and inhibit breast cancer tumors while minimizing systemic toxicity.

About Gene Silencing

- A natural cellular regulation process where an organism reduces or halts the expression of a specific gene.
- It functions by intercepting the genetic instructions encoded in DNA, stopping the translation of disease-driving proteins.

Nanomedicine

- The application of nanotechnology in healthcare that utilizes engineered nanoparticles ranging between 1 and 100 nanometers in size.
- Designed to diagnose, monitor, prevent, and treat complex diseases with enhanced cellular

precision.

- E.g., Ultra-small semiconductor or magnetic nanoparticles act as high-contrast imaging probes.
- Key Advantage: By targeting specific diseased cells, it significantly reduces the off-target side effects associated with conventional medical treatments.

MOUNTBATTEN PLAN

Context

On June 3, 1947, the likes of Viceroy Louis Mountbatten, Jawaharlal Nehru, and Muhammad Ali Jinnah announced that British India would be partitioned.

About the Mountbatten Plan

- Provided for the creation of two separate, independent nations, India and Pakistan, each equipped with its own distinct Constituent Assembly.
- The transfer of power was aggressively pushed forward from the original June 1948 deadline to August 15, 1947.
- The concept of independent status was rejected; princely states were given the choice to accede to either India or Pakistan.
- Proposed the creation of a Boundary Commission (later headed by Sir Cyril Radcliffe) to draw the geographical borders in the event of a partition.
- The plan mandated that Punjab and Bengal assemblies vote by majority districts on partition, the Sindh assembly vote on dominion choice, and popular referendums decide the alignment of NWFP and Sylhet.

Viceroy Louis Mountbatten

- He was the 34th and last Viceroy of British India (February 12, 1947 – August 15, 1947)
- Subsequently served as the first Governor-General of independent India (August 15, 1947 – June 21, 1948).
- The "Dickie Bird Plan): Prior to his final partition blueprint, he formulated an initial proposal allowing major provinces (like Madras, Bombay, Bengal, Punjab) to declare independence individually before choosing whether to join a constituent assembly.
- He set up and presided over the Partition Committee (later upgraded to the Partition Council)

Places in News

KRONSTADT

News: Ukraine's Unmanned Systems Forces (USF) hit a Russian warship at the Kronstadt naval base in Russia's Leningrad Oblast.

About Kronstadt

- Historic port city on Kotlin Island, part of Saint Petersburg.
- UNESCO World Heritage Site
- **Kotlin Island:** Located near the head of the Gulf of Finland, in the Baltic Sea.

Russia

- **Location:** Transcontinental country spanning Eastern Europe and Northern Asia, extending from the Baltic Sea in the west to the Pacific Ocean in the east.
- **Bordering Countries:** Norway, Finland, Estonia, Latvia, Lithuania, Poland, Belarus, Ukraine, Georgia, Azerbaijan, Kazakhstan, China, Mongolia, and North Korea.
- **Major Rivers:** Volga (Europe's longest river), Ob, Yenisei, Lena, and Amur.



NABATIEH

News: The Israeli army has struck several areas in Nabatieh

About Nabatieh

- City of the Nabatieh Governorate, in southern Lebanon.

Lebanon

- **Location:** Situated on the eastern coast of the Mediterranean Sea in Western Asia (the Levant region).
- **Bordering Countries:** Syria to the north and east, and Israel to the south. It also shares a maritime boundary with Cyprus to the west.
- **Major Rivers:** Litani (the longest river, irrigating the fertile Bekaa Valley), Orontes (Asi), and Nahr al-Kabir (forming part of the northern border with Syria).
- **Blue Line:** The UN-recognized withdrawal line between Israel and Lebanon.
 - Monitored by UNIFIL (United Nations Interim Force in Lebanon)
- **Shebaa Farms:** A small, contested strip of land located at the junction of the Lebanese-Syrian border and the Israeli-occupied Golan Heights.
- **Dahieh (Beirut Suburb):** Heavily populated area in southern Beirut, focal point of intense regional geopolitical conflict and targeted airstrikes



News in Short

<p>UPI Payments in Cambodia</p>	<ul style="list-style-type: none"> ● NPCI International Payments Limited (NIPL), the international arm of the National Payments Corporation of India (NPCI), has officially partnered with ACLEDA Bank Plc. to launch Unified Payments Interface (UPI) acceptance in Cambodia. ● UPI Coverage around the world: UPI is accepted in nine countries - Singapore, the United Arab Emirates, France, Mauritius, Nepal, Bhutan, Qatar, Sri Lanka and Cambodia.
<p>Food Planet Prize 2026</p>	<ul style="list-style-type: none"> ● The Andhra Pradesh Community Managed Natural Farming programme (APCNF), launched in 2016 by Rythu Sadhikara Samstha to transition farmers to natural agriculture, won the 2026 Food Planet Prize. ● Awarded by Sweden's Curt Bergfors Foundation, the Food Planet Prize is the world's largest environmental accolade dedicated to transforming global food systems.
<p>Clean Mobility Scheme</p>	<ul style="list-style-type: none"> ● The Union Cabinet approved a ₹9,585 crore, two-year clean mobility scheme to curb severe air pollution in the Delhi-NCR region. ● Jointly executed by MoRTH, MoPNG, and the NCR Planning Board across Delhi, Haryana, Rajasthan, and Uttar Pradesh, the scheme provides a 5% interest subvention, monthly fuel vouchers, and manufacturer discounts to transition older vehicles into BS-VI compliant models or electric vehicles (EVs).

Mains Exam Topics

INDIAN STARTUPS

Context

DPIIT-recognised startups increased from 288 in 2016 to cover 77% of all startups in 2025, reflecting increasing formalisation of the startup ecosystem.

Why Are Startups Significant for India?

- 1. Employment Generation:** Unlike capital-intensive heavy industries, startups generate employment at relatively low capital cost per job, critical for absorbing ~12 million new entrants annually.
 - a. The DPIIT estimates that recognised startups have directly created over 15 lakh jobs.
- 2. Fostering Innovation and Technology Diffusion:** Fintech ventures such as Razorpay and PhonePe democratised digital payments while agri-tech platforms like DeHaat and Ninjacart have compressed supply chains, reducing post-harvest losses.
- 3. Harnessing Demographic Dividend:** With 66% of male founders and 59% of female founders below 40 years of age, startups are transforming India's youth from job seekers into job creators.
- 4. Promoting Balanced Regional Development:** Startup activity has shifted from Tier-I cities (65% in 2016 to 18% in 2025) to Tier-III towns (15% to 71%), reflecting the democratization of entrepreneurship and innovation across India.
- 5. Women Empowerment:** Women founders are growing at a faster pace (20% CAGR compared to 14% for men), with their share rising to 33% among founders aged 50+, highlighting the increasing role of women-led entrepreneurship in inclusive growth.
- 6. Export Earnings:** IT and SaaS startups constitute a growing share of services exports, which crossed \$338 billion in FY2024.
- 7. Import Substitution and Strategic Autonomy:** In strategic sectors like semiconductors, defence electronics, space technology, deep-tech, etc startups are reducing import dependence.
 - a. Agnikul Cosmos (semi-cryogenic launch vehicles), Pixxel (hyperspectral earth observation satellites), and Sagar Defence Engineering (autonomous naval platforms)

Important Government Initiatives

1. **Startup India Initiative (2016):** Flagship DPIIT initiative to build a strong ecosystem for innovation, entrepreneurship, funding, mentorship and startup growth.
2. **Credit Guarantee Scheme for Startups (CGSS):** Provides collateral-free loans to startups through eligible financial institutions.
3. **Startup India Seed Fund Scheme (SISFS):** ₹945 crore scheme providing early-stage funding for proof of concept, prototype development and commercialization.
4. **Atal Innovation Mission (AIM):** NITI Aayog's flagship programme to foster a nationwide culture of innovation and entrepreneurship.
5. **GENESIS (Gen-Next Support for Innovative Startups):** MeitY's ₹490 crore deep-tech startup programme focused on Tier-II and Tier-III cities.
6. **Technology Incubation and Development of Entrepreneurs (TIDE 2.0):** Supports ICT startups working in AI, IoT, blockchain, robotics and emerging technologies.
7. **NIDHI (National Initiative for Developing and Harnessing Innovations):** DST umbrella programme nurturing knowledge-based and technology-driven startups.
8. **Startup Village Entrepreneurship Programme (SVEP):** DAY-NRLM sub-scheme promoting rural entrepreneurship and local enterprises.
9. **ASPIRE (A Scheme for Promotion of Innovation, Rural Industries and Entrepreneurship):** MSME scheme promoting rural innovation, incubation and micro-enterprise development.
10. **Innovations for Defence Excellence (iDEX):** Supports startups developing innovative solutions for defence and aerospace sectors (mentioned in Startup India ecosystem initiatives).

What Are the Key Challenges Facing India's Startup Ecosystem?

1. **Funding Constraint:** India's startup funding landscape remains skewed at multiple levels. Geographically, Maharashtra, Karnataka, and Delhi-NCR account for over 70% of total venture investment.
 - a. Sectorally, consumer tech and fintech attract disproportionate capital while deep-tech, climate-tech, and agri-tech remain undercapitalised.
 - b. The Indian startup ecosystem witnessed a 55% year-on-year fall in total funding till May 2026.

2. **Regulatory Complexity:** Startups in sectors like healthtech, edtech, and fintech navigate overlapping jurisdictions between Central government (SEBI, RBI, etc) and state governments with no unified regulatory framework.
3. **Talent Scarcity:** Despite producing around 1.5 million engineering graduates annually, India faces shortages of skilled professionals in AI, Machine Learning, Quantum Computing, Chip Design and Cybersecurity.
4. **Limited Exit Opportunities:** India's startup ecosystem still lacks mature exit avenues such as IPOs, mergers & acquisitions (M&A), and secondary markets, limiting liquidity for founders and investors.
5. **Gender and Social Inclusion Gaps:** Despite rapid growth in women-led startups, women and entrepreneurs from marginalized communities continue to face barriers in accessing funding, mentorship and investor networks.
6. **Weak Intellectual Property enforcement:** India's startup ecosystem continues to face challenges in patent generation, commercialization of research and industry-academia collaboration.

What Is the Way Forward for India's Startup Ecosystem?

1. **Unified Regulatory Sandbox:** A unified National Innovation Sandbox (NIS), operated by an inter-ministerial body under DPIIT.
 - a. **For example,** UK's Financial Conduct Authority (FCA) Regulatory Sandbox, Singapore's MAS Sandbox Express, etc
2. **Sovereign Deep-Tech Fund:** A dedicated Sovereign Deep-Tech Fund can provide early-stage financial support and accelerate innovation in strategic technologies.
3. **Strengthening Technology Transfer Ecosystem:** Stronger industry-academia linkages through Technology Transfer Offices (TTOs) in premier institutions to facilitate the commercialization of research and innovation.
4. **Deepen Public Procurement:** Institutionalise dedicated procurement budgets (beyond the existing 25% MSME/startup reservation on GeM) at every Central Ministry and CPSE for startups, with simplified tender conditions under ₹5 Crore.
 - a. **For example,** US Small Business Innovation Research (SBIR) programme and UK's GovTech Catalyst.
5. **Build an Inclusive Startup Pipeline:** Provide collateral-free debt and equity to women-led startups; reserve 15% of Startup India Seed Fund tranches for SC/ST-led ventures; mandate that at least 30% of government-funded incubators operate in Tier-2/3 geographies.

Prelims Fact Box: Startups

1. **Official Definition (DPIIT Criteria):** An entity is recognized as a startup up to **10 years**

from its date of incorporation. It must be incorporated as a Private Limited Company, Partnership Firm, or Limited Liability Partnership (LLP) with an annual turnover not exceeding ₹100 crore in any financial year since incorporation.

2. **Core Mandate:** The entity must work towards innovation, development, or improvement of products, processes, or services, or have a scalable business model with a high potential for employment generation or wealth creation.
3. **Tax Holiday (Section 80-IAC):** Eligible recognized startups can claim a 100% tax rebate on profits for **3 consecutive years** out of their first 10 years, subject to certification by the Inter-Ministerial Board of Certification.
4. **Angel Tax Relief (Section 56(2)(viib)):** Capital raised by DPIIT-recognized startups from investors (including foreign investors and non-residents) is exempted from Angel Tax, easing early-stage equity funding.
5. **National Startup Day:** Celebrated annually on January 16th to mark the anniversary of the launch of the Startup India Initiative in 2016.

THE GEOPOLITICAL AND ECOLOGICAL DILEMMA OF GREAT NICOBAR

ISLAND

Context

The Great Nicobar Island (GNI) project has brought one of India's most intense developmental dilemmas to the forefront.

Why is Infrastructure Development on Great Nicobar Island Strategically Vital for India?

1. **Countering China's 'String of Pearls':** Developing Great Nicobar prevents a strategic security vacuum and counters Chinese naval encirclement east of Port Blair.
 - a. *E.g.* China has secured footholds around India by investing in ports like Gwadar, Hambantota, Kyaukphyu, and Chittagong.
2. **Watching the Malacca Strait:** A naval base at Great Nicobar places Indian surveillance right at the mouth of the world's busiest shipping lane.
 - a. *E.g.* Unlike INS Baaz which is too far to track Chinese submarines, GNI mirrors the forward-basing style of Diego Garcia.
3. **Ending Dependence on Foreign Ports:** A domestic transshipment hub stops a risky commercial dependency and keeps vital shipping revenues within India.
 - a. *E.g.* Much of India's international cargo is currently routed through Colombo's southern terminal, where China holds a 70-year lease.

4. **Fixing Past Neglect:** Actively utilizing Great Nicobar's strategic geography corrects decades of administrative neglect that turned a natural asset into a vulnerability.
 - a. *E.g.*, Admiral Arun Prakash called this a "failure of strategic imagination," a gap exposed during the under-resourced 2004 tsunami response.

Why Does the Great Nicobar Island Project Pose a Threat to Ecological Sustainability?

1. **Permanent Loss to a Biodiversity Hotspot:** Planting replacement trees far away in landlocked states like Haryana or Madhya Pradesh cannot bring back Nicobar's unique tropical plants and wildlife.
2. **Threat to Leatherback Turtle Breeding Grounds:** Building a deep-water port directly over the Galathea Bay nesting grounds violates the Convention on Biological Diversity (CBD) and India's own Marine Turtle Action Plan.
3. **Displacing the Shompen Tribe:** Forcing displacement on the Shompen tribe without obtaining genuine Free, Prior, and Informed Consent (FPIC) violates the Forest Rights Act of 2006
 - a. In the 2013 Niyamgiri case, the Supreme Court ruled that tribal councils have the final say over their forests.
4. **Flawed Environmental Studies:** The project's environmental report is weak because it only looked at a single season, completely ignoring monsoon wildlife and migrating species.
5. **High Earthquake and Tsunami Risk (Zone V):** Building heavy concrete structures on a volatile, disaster-prone coast without climate-proof designs risks wasting billions of rupees if a disaster hits.

How to Balance National Security and Environment?

1. **Redesign the Port's Location:** Hire experts to alter the layout of the port so India gets its deep-water naval capacity without destroying Galathea Bay.
 - a. *E.g.*, : Oman moved its Duqm port 3 kilometers away from turtle nesting zones after marine surveys.
2. **Demand a Thorough 2-Year Environmental Study:** Order a fresh, independent environmental review that spans all seasons and is led by wildlife experts.
 - a. *E.g.*, Australia's EPBC Act mandates Strategic Environmental Assessments for projects of national significance.
3. **Make the Shompen Tribe Guardians of the Forest:** Treat local indigenous communities as legal partners and protectors of the island rather than treating their consent as a bureaucratic checkbox.
 - a. *E.g.*, Colombia's Atrato River judgment (2016) granted the river legal personhood and established indigenous communities as its custodians.
4. **Build a Nature-First Eco-Military Base:** Construct the naval base to be net-zero by using solar or hydrogen power, turtle-friendly dark-sky lighting, and zero-waste systems.

- a. *E.g., HMAS Stirling in Australia runs on 70% renewable energy*
5. **Keep Environmental Adjustments Local:** Ensure that any tree-planting or habitat restoration happens right within the Andaman and Nicobar islands, backed by public data tracking.
 - a. *E.g., Costa Rica's National Biodiversity Institute publishes real-time deforestation and compensation data as a governance standard.*

Prelims Fact Box- Great Nicobar

Island

1. Houses **Indira Point**, India's southernmost territory, located at **6°45' N** latitude.
2. Positioned 45 km north of the **Six Degree Channel**, a vital global shipping lane separating India from Sumatra, Indonesia.
3. Located roughly 90 km from Sumatra and near the western entry of the **Malacca Strait**.
4. **Geography:** Formed as part of the continuous submarine mountain range extending from the Arakan Yoma (Myanmar) to Sumatra.
5. **Rivers:** Galathea, Alexandra, Amrit Kaur, Dogmar, and Jubilee.
6. **Climate Type:** Equatorial/Tropical Monsoon climate
7. **Biosphere Reserve:** Great Nicobar Biosphere Reserve which contains Galathea and Campbell Bay National Parks.
8. **Endemic Fauna:** Nicobar Megapode and the Nicobar Crab-eating Macaque.
9. **Legal Safeguards:** Protected under the **Fifth Schedule** configurations, **Forest Rights Act (2006)**, and the Andaman and Nicobar Islands (Protection of Aboriginal Tribes) Regulation.
10. Monitored under the **Andaman and Nicobar Command (ANC)** at Port Blair, India's only operational tri-services theater command.
11. Anchored by **INS Baaz** (naval air station at Campbell Bay)
12. Acts as the primary staging area for the tri-services joint amphibious exercise: **Exercise**



KAVACH.

