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सत्यमेव जयते



MK Yadav Sir

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INDIAN EXPRESS

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DEMAND FOR GRANTS

(Syllabus: GS Paper 3 - Govt. Budgeting)

LS passes Budget Demands for Grants without discussion

Appropriation Bill also passed amid din; govt likely to push Finance Bill today

EXPRESS NEWS SERVICE
NEW DELHI, MARCH 23

THE LOK Sabha on Thursday passed the Demands for Grants for Budget 2023-24 and the Appropriation Bill by a voice vote without any discussion.

The business of the House was conducted amid a din, with Opposition members shouting slogans of "Modi-Adani Bhai Bhai" and demanding a JPC on the Adani issue.

The afternoon session of the Lok Sabha was adjourned within five minutes with the announcement that the Demands for Grants would be taken up for passage at 6 pm.

As the House resumed proceedings at 6 pm, Speaker Om Birla first took up various cut motions moved by members to the Demands for Grants and put them to vote together. They were all disallowed by a voice vote. "In relation to Demands for Grants, several cut motions have been received. Due to lack of time, I consider all the proposals as presented," Birla said before putting them to vote.

The Speaker then read out the department-wise submissions for outstanding Demands for Grants in respect of Budget 2023-24 and put them to vote one by one.

Opposition members, meanwhile, stormed the Well of the House shouting slogans on the Adani issue — Prime Minister Narendra Modi, Defence Minister Rajnath Singh and several key ministers of the Modi Cabinet were present in the House at the time.

The Demands for Grants were passed through a voice vote without any discussion.

While not all submissions for Demand for Grants are discussed, those related to key ministries such as Railways and Agriculture are taken up for discussion. After these are voted for, since there is no time to take up demands for grants for each and every department, the Speaker applies guillotine on all such outstanding demands for grants, and they are put up for voting, whether discussed or not.

As per norms, the Union Budget needs to be passed in both Houses of Parliament before the end of the financial year — that is, before March 31.

After passage of Demands for Grants, Finance Minister Nirmala Sitharaman introduced the Appropriation Bill, 2023, seeking approval for withdrawing funds from the Consolidated Fund of India, for consideration and passing. This, too, was passed with a voice vote. The House was then adjourned until 11 am Friday.

The government is likely to push passage of the Finance Bill on Friday even amid a din. Once the Finance Bill is passed, the Budget exercise in Lok Sabha will get over and things will move to Rajya Sabha.

Notably, the Demands for Grants for the Union Territory of Jammu and Kashmir was passed by Lok Sabha two days ago without any discussion.

- **Article 110 - Money bill:** The **imposition, abolition, remission, alteration or regulation** of any tax.
  - The regulation of borrowing of money by the Union government.
  - A Finance Bill is presented to Parliament at the same time as the Annual Financial Statement, in accordance with **Article 110 (1)(a) of the Constitution,** specifying the imposition, repeal, remission, change, or regulation of taxes suggested in the Budget.
- **Articles 117 and Article 274**: A **Presidential recommendation** is also required for tabling a Money Bill in the Lok Sabha.
  - A **certificate signed by the President** is attached to the Finance Bill, which is accompanied by the annual financial statement.

Context: The Lok Sabha passed the **Demands for Grants for Budget 2023-24** and the Appropriation Bill by a voice vote without any discussion.

Demand for Grants in the Parliament - Constitutional provisions

- **Article 113 - Demand for Grants:** It requires expenditure estimates from the **Consolidated Fund of India,** which are included in the Annual Financial Statement.
  - It must be **voted on by the Lok Sabha,** be submitted as Demands for Grants.
  - Article 113 (iii) states that no claim for funds may be presented in the Lok Sabha without **prior permission from the President of India.**
- **Article 112 - Annual Financial Statement (Budget):** It is the estimated **receipts and expenditure** of the Government of India.
  - The **Annual Financial Statement** separates expenditure on the revenue account from expenditure on other accounts. As a result, the Union Budget is made up of the Revenue and Capital parts together.
  - The **receipts and disbursements** are divided into three sections:
    - The Consolidated Fund of India
    - The Contingency Fund of India
    - The Public Account of India
- **Article 114 - Appropriation bill:** The Appropriation Bill is introduced in the Lok Sabha with all of the **grant requests voted upon and charged expenditure.**
  - Only an Appropriation Bill authorized by Parliament can be used to withdraw funds from the Consolidated fund of India.

LIVE MINT

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ONDC

(Syllabus: GS Paper 3 - Infrastructure)

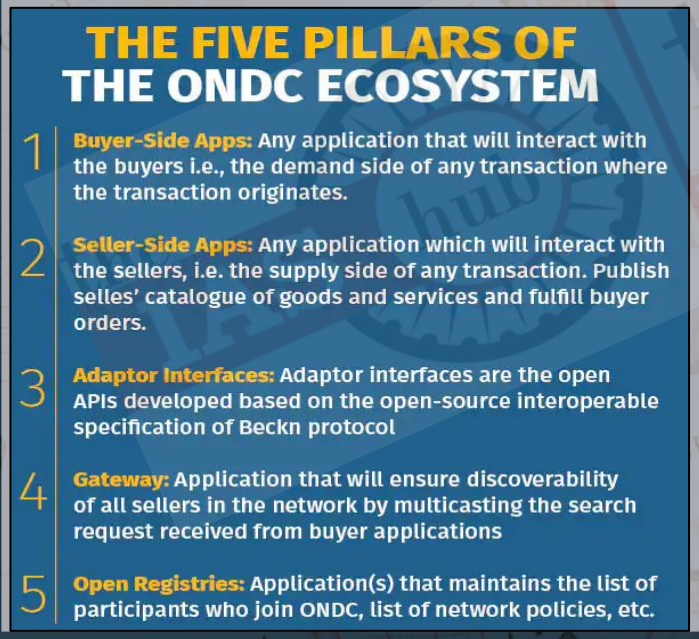
ONDC to expand open mobility

The Open Network for Digital Commerce (ONDC), launched last year to enable small merchants across India tap into the e-commerce segment, on Thursday announced that it has onboarded auto-rickshaw booking application 'Namma Yatri' on its platform as a step to foray into the mobility sector.

Following its launch in Bengaluru, ONDC looks to offer the open mobility service in other cities as well, offering mobility solutions charging zero commission to customers.

The Namma Yatri application was launched as a corporate social responsibility initiative by fintech platform Juspay Technologies, in a market dominated by large ride-hailing players like Uber, Ola and Rapido. It claims to clock about 100,000 weekly trips currently, aiming to further amplify its reach after its integration with ONDC.

PRIYAL MAHTTA



Context: The **Open Network for Digital Commerce (ONDC)**, launched last year to enable small merchants across India tap into the e-commerce segment, announced that it has onboarded auto-rickshaw booking application, 'Namma Yatri' on its platform as a step to foray into the mobility space.

- The **Namma Yatri application** was launched as a corporate social responsibility initiative by fintech platform Juspay Technologies, in a market dominated by large ride-hailing players like Uber, Ola, and Rapido.
- It claims to clock about 1 lakh weekly trips currently, aiming to further amplify its reach after its integration with ONDC.

Open Network for Digital Commerce (ONDC)

- **About**: The ONDC is an **open technology network based** on an open protocol.
  - It is a **not-for-profit organisation** that will offer a network to enable local digital commerce stores across industries to be discovered and engaged by any network-enabled applications.
  - It is **neither an aggregator application nor a hosting platform,** and all existing digital commerce applications and platforms can voluntarily choose to adopt and be a part of the ONDC network.
- **Aim**: To **enable buying of products** from all participating e-commerce platforms by consumers through a single platform.
  - Under ONDC, it is envisaged that **a buyer registered on one participating e-commerce site** (for example, Amazon) may purchase goods from a seller on another participating e-commerce site (for example, Flipkart).
  - The platform **will allow buyers and sellers to connect and transact** with each other online, regardless of what other applications they use.
- **ONDC Model:** It is trying to replicate the success of the **Unified Payments Interface (UPI)** in the field of digital payments.
  - The open network concept also **extends beyond the retail sector**, to any digital commerce domains including wholesale, mobility, food delivery, logistics, travel, urban services, etc.

DTE MARCH 24

NANO-FERTILISERS

(Syllabus: GS Paper 3 - Agrotech)

Nano fertilisers: Parliamentary report suggests close audit of field trials to see long-term effects

An audit by Department of Fertilisers found 25-50% variation in saving nitrogen use after applying nano urea



Nano fertilizers	Conventional fertilizers
Improve solubility and dispersion of insoluble nutrients in soil, reduce soil absorption and fixation and increase the bioavailability	Less bioavailability to plants due to large particle size and less solubility
Might increase fertilizer efficiency and uptake ratio of the soil nutrients in crop production and save fertilizer resource	Bulk composite is not available for roots and decrease efficiency
Release rate and release pattern of nutrients for water-soluble fertilizers might be precisely controlled through encapsulation in envelope forms	Excess release of fertilizers may produce toxicity and destroy ecological balance of soil
Nanofertilizers can extend effective duration of nutrient supply of fertilizers into soil	Used by the plants at the time of delivery, the rest is converted into insoluble salts in the soil
Reduce loss rate of fertilizer nutrients into soil by leaching and/or leaking.	High loss rate by leaching, rain off and drift.

Context: The committee on chemicals and fertilisers, in its report titled **'Nano-Fertilisers for Sustainable Crop production and Maintaining Soil Health',** recommended a thorough audit of the field trials on applying nano fertilisers.

- Research trials on the effects of nano fertilisers on the nutritional quality of crops have only been conducted for a year and just one season for most cases. **Long-term effects, therefore, can not be drawn at this stage.**

Key Points

- Nano fertilisers exploit the **nanoscale porous domains** on plant surfaces to deliver nutrients.
- They also **improve the effectiveness of nitrogen** delivery and reduce the losses to the environment.
- The savings in **topdress nitrogen** with the application of nano urea during field trials was found to vary between 25 to 50 per cent,.
    - **Topdressing** is the process of adding a second round of nitrogen to crops to compensate for any deficiencies.
- The panel suggested an audit for different crops in different regions by the Department of Fertilisers in coordination with other ministries/organisations to assess the reasons behind the **huge variation in nitrogen saving while topdressing.**
- The reasons for variance and effects should be **scientifically analysed.**
- **Crop-specific procedures** on how to appropriately apply nano urea to minimise or remove the variance range should be formulated.

Nano-Fertilisers

- **About**: Nano-formulations or nano-sized fertilisers are made from a**mmonium humate, ammonia, urea, peat, plant wastes, and other synthetic fertilisers.**
    - An example of nano-formulation is **nano-sized nitrogen (N) fertiliser** which is prepared as a result of deposition of urea on calcium cyanamide.
- **Formulation**: Nano-fertilisers are developed using **both mechanical and biochemical processes,** i.e., materials are grounded to obtain nano-sized particles through mechanical means and biochemical techniques are employed to obtain effective nanoscale formulations.
- **Key Development: Nano urea liquid** was developed in 2022 by the biggest cooperative in the world, **Indian Farmers and Fertiliser Cooperative (IFFCO)**, to replace conventional urea and curtail its requirement by 50 per cent.
    - A 500-millilitres spray bottle can substitute a full 45-kilogramme bag of urea.

THE HINDU

Page 1

DEFAMATION IN INDIA

(Syllabus: GS Paper 2 - Polity & Governance)

Rahul gets two-year jail term in defamation case

Congress to appeal against the Surat court order, as Mr. Gandhi's Lok Sabha membership hangs in the balance; Parliamentary Affairs Minister says legal experts will study the verdict

The Hindu Bureau
SURAT/NEW DELHI

A Surat court on Thursday convicted former Congress chief Rahul Gandhi in a criminal defamation case and awarded him a two-year jail term over his "why all thieves have Modi surname" comment.

Mr. Gandhi was present at the court when the judge passed the verdict. The court suspended the sentence for 30 days, so that Mr. Gandhi can appeal in a higher court. The court has given bail to him on ₹10,000 bond. The Congress has said that it will appeal against the verdict.

Mr. Gandhi had allegedly made the remarks during campaigning for the 2019 parliamentary polls. The criminal defamation case was filed against him by BJP MLA Purnesh Modi, who was earlier president of the BJP unit of Surat city. In his complaint, Mr. Purnesh Modi alleged that Mr. Gandhi while addressing a poll rally in 2019 in Karnataka defamed the entire Modi community with his remark, "How come all the thieves have Modi as the common surname?"

Chief Judicial Magistrate H.H. Varma had last week concluded hearing final arguments from both sides. Mr. Gandhi had last appeared before the Surat court regarding the case, filed under Indian Penal Code (IPC) Sections 499 and 500 (dealing with defamation), in October 2021 to record his statement.

Thursday's developments have put a question mark over Mr. Gandhi's Lok Sabha membership from Wayanad.

In the landmark 2013 *Lily Thomas v Union of India* judgment, the Supreme Court had clearly spelt out that a lawmaker stands immediately disqualified on attracting a sentence of two years or more unless the conviction is stayed by a higher court.



Rahul Gandhi arrives at the New Delhi airport after appearing before a court in Surat, Gujarat. REUTERS

CONTINUED ON
» PAGE 12
CONGRESS TO FIGHT BACK
» PAGE 13

Context: A Surat court convicted former Congress chief Rahul Gandhi in a **criminal defamation** case and awarded him a two-year jail term over his "why all thieves have Modi surname" comment which has put a question mark over his Lok Sabha membership from Wayanad.

- In the landmark **2013 Lily Thomas v Union of India Judgment,** the Supreme Court had clearly spelt out that a lawmaker stands immediately disqualified on attracting a sentence of two years or more unless the conviction is stayed by a higher court.
- The top court had struck down **Section 8 (4) of the Representation of the People's Act** as "unconstitutional" that provided a three-month window to file an appeal and continue as a lawmaker until the case is disposed off.

Defamation in India

- **About**: Defamation is the **communication of a false statement** that harms the reputation of an individual person, business, product, group, government, religion, or nation.
- **Legal provisions**: In India, defamation can **both be a civil wrong and a criminal offence.**
  - **Criminal defamation** has been specifically defined as an offence under **section 499 of the Indian Penal Code (IPC).**
    - **Section 499** states defamation could be through words, spoken or intended to be read, through signs, and also through visible representations.
      - **Section 499 also cites exceptions**: These include "imputation of truth" which is required for the "public good" and thus has to be published, on the public conduct of government officials, the conduct of any person touching any public question and merits of the public performance.
    - **Section 500 of IPC**, which is on punishment for defamation, reads, "Whoever defames another shall be punished with simple imprisonment for a term which may extend to two years, or with fine, or with both."
  - **Civil defamation** is based on tort law (an area of law which does not rely on statutes to define wrongs but takes from ever-increasing body of case laws to define what would constitute a wrong).

Supreme Court View

- **Subramanian Swamy vs Union of India case (2014):** The Court approved the Constitutional validity of sections 499 and 500 (criminal defamation) in the Indian Penal Code, underlining that an individual's fundamental right to live with dignity and reputation "cannot be ruined solely because another individual can have his freedom".
- **J Jayalalithaa case (2016):** The court passed strictures on Tamil Nadu Chief Minister J Jayalalithaa for misusing the criminal defamation law to "suffocate democracy" and, the court said, "public figures must face criticism".

ECONOMIC TIMES

Page 13

FINANCIAL SERVICES INSTITUTIONS BUREAU

(Syllabus: GS Paper 2 - Polity & Governance)

FSIB Recommends Siddhartha Mohanty as New LIC Chairman

Appointment still pending final approval from the government

Our Bureau

Mumbai: An autonomous body tasked with selecting top managers of state-run financial institutions and lenders has recommended the candidature of Siddhartha Mohanty, one of the four managing directors at Life Insurance Corp (LIC), as the next chairman of the insurer that is India's biggest institutional investor.

The Financial Services Institutions Bureau (FSIB) recommendation came Thursday after it evaluated four candidates for the top LIC job.

Earlier this month, Mohanty was given the additional charge as chairman for three months, ending mid-June. However, the appointment is still pending final approval from the government. In February 2021, Mohanty became managing director.

Mohanty began his career at LIC as a direct recruit officer in 1985, and gained experience in various departments — marketing, HR, investments, legal, and personnel. Before taking over as MD of LIC, he was MD and CEO of LIC Housing Finance.

LIC's Q3FY23 gross premium income rose 14.6% YoY to ₹1.12 lakh crore, driven by a 31.2% YoY increase in single premium, a 10.8% rise in first-year premium, and a 5.9% uptick in renewal premium.

The insurer's gross VNB margin for individual business in 9MFY23 was 20%, up from 19.96% in FY22, primarily due to a slight improvement in par business.

"LIC can target a VNB margin of 25-30% in 3-5 years," said Ansuman Deb and Ravin Kurwa of ICICI Securities in a research note on February 13.

Context: Financial Services Institutions Bureau (FSIB) has recommended the candidature of Siddhartha Mohanty, one of the four managing directors at Life Insurance Corp (LIC), as the next chairman of the insurer that is India's biggest institutional investor.

Financial Services Institutions Bureau (FSIB)

- **About**: It's a **autonomous government body** set up under the department of financial service by central government in 2022.
  - It replaced Banks Board Bureau (BBB).
- **Objectives**: It aims to **identify manpower capabilities** and ensure proper selection of talent for senior positions at financial institutions owned by the government.
  - The board is **entrusted to making recommendations of full-time appointment of directors** and non-executive chairman of state-run financial services / Public sector organization and on other matters relating to personnel management in the institution.
- **Composition**: It comprises of **Ex-Officio members from Government** other the Regulatory Bodies and experts from the respective field.
  - The **Secretariat of the Bureau** currently comprises of Secretary and four officers.
- **Function of FSIB:**
  - To advise the Government on matters relating to **appointments, transfer or extension** of term of office and termination of services of the said directors.
  - To advise the Government on the **desired management structure at the Board level** for Public Sector Bank, Public financial institution and Public Sector Insurers.
  - To advice government for **performance appraisal system** and code of conduct and ethics for the directors.
  - To ensure **suitable training and development programmes** for management in PSBs, FIs and PSIs.
  - To Help institution for **developing business strategy** and raising capital plan.

BUSINESS STANDARD

Page 4

CEPA

(Syllabus: GS Paper 2 - International Relations)

CEPA review to focus on data sharing

SHREYA NANDI
New Delhi, 23 March

India and the United Arab Emirates (UAE) are gearing up for a review of the Comprehensive Economic Partnership Agreement (CEPA) that may see discussions towards integration of key portals of both nations to boost trade, a senior commerce department official said.

The review is expected to take place in May, a year after the trade agreement kicked in.

"We will see how to integrate our portals. They have a single window portal; we have ULIP (Unified Logistics Interface Platform). We are talking to the Department for Promotion of Industry and Internal Trade regarding this. This will help in real-time sharing of data, regarding movement of container ships, berths can be prioritised, and entry into the port can be prioritised," the official cited above said.

"Such trade facilitation can also help in enhancing our exports; logistics cost will also come down," the official said.

According to the provisional data compiled by the commerce department, India exported goods worth $2.72 billion in February, up 5 per cent year-on-year (YoY), at a time when the country's overall merchandise exports contracted 10 per cent at $33.9 billion.

The commerce department is hoping that exports to the UAE will be the highest ever at around $32 billion in FY23 compared to $28 billion in FY22, due to higher demand for sectors, such as gems and jewellery, machinery and automobiles.

Electrical machinery, gems and jewellery, cereals, automobiles were the top gainers from the FTA during June-February. Export of products, such as iron and steel and textiles, witnessed a contraction during the same time period.

Similarly, non-oil exports to the UAE grew nearly 19 per cent YoY at $2.14 billion, while global non-oil exports contracted 4.2 per cent at $28.8 billion.

As many as 6,944 certificates of origin were issued in February to exporters to avail concessional duty advantage under the trade pact. The number is expected to cross 7,500 by the end of the current fiscal year.



INDIA-UAE PARTNERSHIP

	Feb '23 (in $bn)	YoY change (in %)
India's global exports	33.88	-10
Exports to the UAE	2.72	4.90
Global non-oil exports	28.84	-4.20
Non-oil exports to the UAE	2.14	19
Imports from the UAE	4.58	5.50
Non-oil imports from the UAE	2.37	4.50

Source: Department of Commerce

Types of Trade Agreements

- **Preferential Trade Agreement (PTA)** is an agreement in which two or more partners give preferential right of entry to certain products. Here a **positive list is maintained** i.e. list of the products on which two partners have agreed to provide preferential access.
- **Free Trade Agreement:** Here a **negative list of products and services** is maintained by the negotiating countries on which the terms of FTA are not applicable hence it is more comprehensive than PTA.
- **Comprehensive Economic Cooperation Agreement (CECA)** is wider than above two and covers negotiation on trade tariff.
- **Comprehensive Economic Partnership Agreement (CEPA)** is more comprehensive than CECA and encompasses trade facilitation and customs cooperation, competition, and IPR etc.

Context: India and the United Arab Emirates (UAE) are gearing up for a review of the **Comprehensive Economic Partnership Agreement (CEPA)** that may see discussions towards integration of key portals of both nations to boost trade.

- On February 18, 2022, India and the UAE signed the historic **Comprehensive Economic Partnership Agreement (CEPA),** which became effective in March 2022.

CEPA

- **About**: It is a kind of **free trade pact** that covers negotiation on the trade in services and investment, and other areas of economic partnership.
- **Functions**: It may even consider negotiation in areas such as **trade facilitation and customs cooperation, competition, and IPR.**
  - **Partnership agreements or cooperation agreements** are more comprehensive than Free Trade Agreements.
  - CEPA also looks into the **regulatory aspect of trade** and encompasses an agreement covering the regulatory issues.

EXERCISE KONKAN 2023
(Syllabus: GS Paper 2 - International Relations)

ANNUAL BILATERAL MARITIME EXERCISE KONKAN 2023

Context: Konkan 2023, the annual bilateral maritime exercise between the I**ndian Navy and the Royal Navy of the United Kingdom** (UK), was held from 20 to 22 Mar 23 off the Konkan coast in the Arabian Sea.

Key Points

- **INS Trishul,** a guided missile frigate, and **HMS Lancaster,** a Type 23 guided missile frigate, participated in this edition and undertook multiple maritime drills to enhance interoperability and imbibe best practices.
- The exercises **covered all domains of maritime operations,** air, surface and subsurface, and included gunnery shoots on surface inflatable target 'Killer Tomato', helicopter operations, anti-air and anti-submarine warfare drills, **Visit Board Search and Seizure (VBSS),** ship manoeuvres and exchange of personnel.

INS Trishul (F43)

- It is the second frigate of the **Talwar class** of the Indian Navy.
- Trishul, the **guided missile frigate,** joined the arsenal of Indian Navy in 2003.
- In contrast to the lead ship **INS Talwar**, the sea trials of **Trishul** were considerably shortened as the ship performed well.
- The Talwar-class guided missile frigates are modified **Krivak III-class frigates built by Russia.**
- These ships use **stealth technologies** and a special hull design to ensure a reduced radar cross section.
- Much of the equipment on the ship is **Russian-made,** but a significant number of systems of Indian origin have also been incorporated.

PIB MARCH 24

NISAR MISSION

(Syllabus: GS Paper 3 - Sci & Tech)

Union Minister Dr Jitendra Singh informs that NASA and ISRO have jointly manufactured an earth science satellite named, NISAR (NASA-ISRO Synthetic Aperture Radar) at a cost of about Rs 470 crore

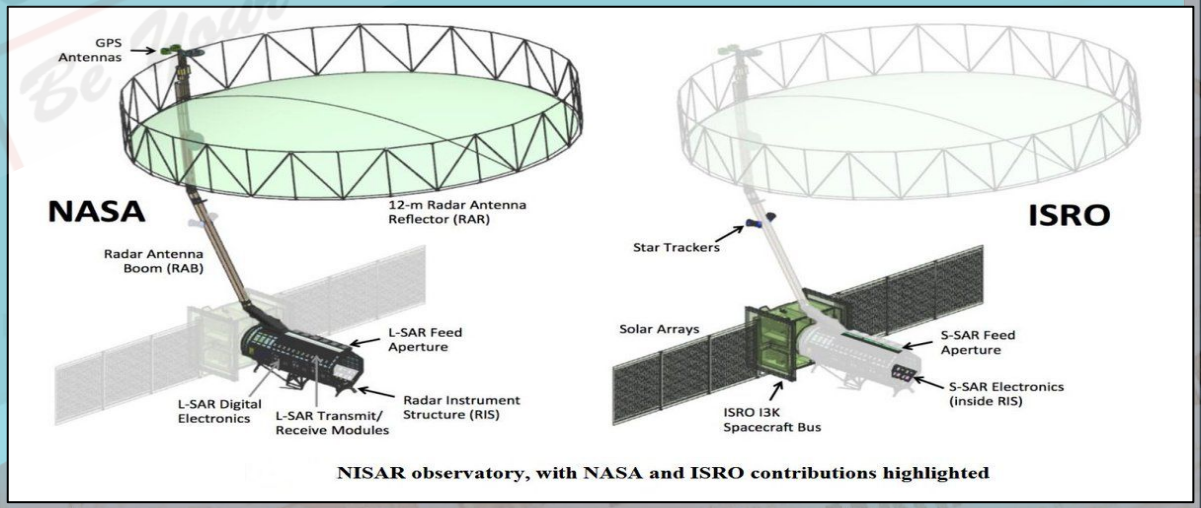
Context: Union Minister of State (Independent Charge) Science & Technology informed the Rajya Sabha that National Aeronautics and Space Administration (NASA) and the Indian Space Research Organization (ISRO) have jointly manufactured an earth science satellite named, **NISAR (NASA-ISRO Synthetic Aperture Radar).**

Key Points

- The mission objectives of the satellite are- **Design, Develop and launch Dual Frequency** (L and S band) Radar Imaging Satellite and to Explore newer applications areas using L & S Band microwave data especially in surface deformation studies, terrestrial biomass structure, natural resource mapping and monitoring and studies related to dynamics of ice-sheets, glaciers, forests, oil slick etc.
- The satellite is c**onfigured with I-3K bus** and the instrument identified for SAR is based on the innovative Sweep SAR technique configured in both L and S band in polarimetric configuration for wide swath and high resolution.
- The spacecraft will orbit the Earth in a sun synchronous orbit of 747 Km with an inclination of 98.4 degree for a 12-day repeat cycle.
- While **NASA is delivering the L-Band SAR** payload, high precision GPS and 12m unfurlable antenna, **ISRO is delivering S-band SAR payload,** spacecraft bus and facilitating launch.
- The mission is expected to **study the Earth from space** in terms of the future global environmental aspect.

Synthetic Aperture Radar

- **About**: Synthetic-aperture radar (SAR) is a **form of radar** that is used to create two-dimensional images or three-dimensional reconstructions of objects, such as landscapes.
    - SAR is **typically mounted on a moving platform, s**uch as an aircraft or spacecraft, and has its origins in an advanced form of side looking airborne radar (SLAR).
- **Functions**: SAR uses the **motion of the radar antenna** over a target region to provide finer spatial resolution than conventional stationary beam-scanning radars.



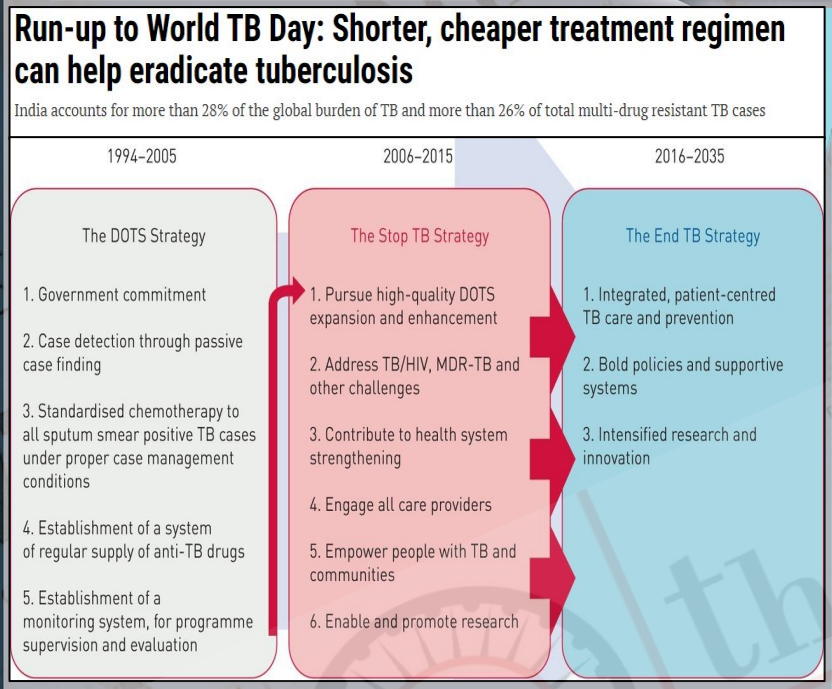
NISAR observatory, with NASA and ISRO contributions highlighted

DTE

MARCH 24

WORLD TUBERCULOSIS DAY

(Syllabus: GS Paper 3 - Sci & Tech)



- **Treatment**: Bedaquiline for **multidrug-resistant (MDR) TB.**
  - Both TB infection and disease are curable using antibiotics.
  - It is treated by the standard 6-month course of 4 antibiotics. Common drugs include **rifampicin and isoniazid.**
  - In drug-resistant TB, the **TB bacteria do not respond to the standard drugs**. Its treatment is longer and more complex.
  - In case of infection (where the patient is infected with TB bacteria but not ill), **TB preventive treatment** can be given to stop the onset of disease. This treatment uses the same drugs for a shorter time.

Context: As countries get ready to commemorate **World Tuberculosis Day** on March 24, the World Health Organization (WHO) and civil society groups urge them to update treatment guidelines at the earliest.

- The theme of World Tuberculosis Day 2023 is **"Yes! We can end TB!".**

Key Points

- In December 2022, the WHO issued **guidelines for rolling out a safer and shorter treatment regimen** for people suffering from drug-resistant tuberculosis (DR-TB).
- WHO's guidelines recommended that countries roll out the safer and shorter **BPaLM regimen (comprising bedaquiline, pretomanid, linezolid and moxifloxacin)** to treat people with DR-TB.
- India is yet to update the **Guidelines for Programmatic Management of Drug-Resistant Tuberculosis,** which were last revised in 2021.
- The **Global Tuberculosis Report 2022** pointed out that of the 0.45 million MDR-TB cases globally, India reported 119,000 cases.
- The country accounts for more than 28 per cent of the **global burden of TB** - some three million of the total 10.6 million cases.

Tuberculosis

- **About**: It is caused by **Mycobacterium tuberculosis (bacteria)** and it most often affects the lungs.
- **Transmission**: TB is **spread through the air** when people with lung TB cough, sneeze or spit. A person needs to inhale only a few germs to become infected.
  - With TB infection, a person gets infected with TB bacteria that lie inactive in the body. This infection **can develop into TB disease if their immune system weakens.**
- **Symptoms**: Prolonged cough, chest pain, weakness/fatigue, weight loss, fever, etc.
  - Often, these symptoms will be mild for many months, thus leading to delays in seeking care and increasing the risk of **spreading the infection to others.**
- **Diagnosis**: In the case of **suspected lung TB disease,** a sputum sample is collected for testing for TB bacteria.
  - For **non-lung TB disease,** samples of affected body fluids and tissue can be tested.
  - WHO recommends **rapid molecular diagnostic tests** as initial tests for people showing signs and symptoms of TB.
  - Other diagnostic tools can include **sputum smear microscopy** and chest X-rays.

TIMES OF INDIA

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TERRAN-1 ROCKET

(Syllabus: GS Paper 3 - Sci & Tech)

First 3D-printed rocket lifts off from Florida but fails to reach orbit

Terran 1, a rocket designed and built by the company Relativity Space, suffered a failure shortly after lifting off from a launchpad in Cape Canaveral, Florida, late Wednesday night. A demonstration mission, the rocket was not carrying people or a customer payload, and no one was hurt.

The vehicle was powered by nine 3D printed engines, and would have been the first rocket launched into orbit using liquid methane as its fuel. During a webcast of Wednesday's flight, the rocket rose on a column of white flame that flared blue as it shot into space.

But about four minutes into the flight, shortly after the rocket's first stage had dropped away, Clay Walker, the launch director for Relativity Space, said on the company's webcast that a "T-plus anomaly with stage two" had occurred, meaning there was a problem with the second stage of the rocket, which was to carry its payload to orbit.

The hosts of the company's webcast said additional details about the problem would be announced at a later time.



Reuters

Relativity Space's 3D-printed rocket Terran 1 is rolled out to the launch pad at the Cape Canaveral Air Force Station in this December 2022 photo

Following the success of Elon Musk's SpaceX, investors have poured money into new spaceflight companies.

Many nascent spaceflight companies experience difficulties in their early attempts to get to orbit. In January, a Virgin Orbit spacecraft failed an hour into its flight; the company has since furloughed employees. Another company, ABL Space Systems, lost its first rocket just after liftoff from a base in Alaska. This month, a new rocket built for Japan's space agency by Mitsubishi Heavy Industries, which has produced rockets for decades, failed minutes into its first flight and lost the satellite it was to deploy.

Wednesday's Relativity flight did not lose a customer's satellite. Its only cargo was a wheel-shaped object, the first thing ever made by Relativity's 3D printers, which was to demonstrate the rocket's ability to carry a payload to orbit.

The flight, which the company nicknamed "Good Luck, Have Fun" or GLHF, was the company's third launch attempt in the past two weeks. During launch, the company noted some of the milestones achieved by the rocket. It was the first time a 3D printed rocket had reached "max-q," the point when the vehicle experiences the strongest stresses, when the booster used for liftoff drops from the vehicle's second stage. A launch attempt, whether it is successful or not, is something Christensen celebrates. NYT

Context: Terran-1, a rocket designed and built by the company Relativity Space, suffered a failure shortly after lifting off from a launchpad in Cape Canaveral, Florida.

Terran 1

- **About**: It is a **two-stage satellite,** which means the fuel burns in two different stages to give the required escape velocity to the satellite.
  - Terran 1 is an **expendable launch system**, which means can be launched only once.
  - Satellites like Falcon 9 are **reusable and can be launched multiple times.**
- **Capacity**: Terran 1 is a **small lift launch vehicle**, that is, it can carry loads of up to **2000 kg to the low earth orbit.**
- **Engine**: Terran 1 has **two stage engine.**
  - The first stage uses nine **Aeon 1 engines.**
    - This engine is powered by a mixture of methane and oxygen.
  - The second stage is powered by the **Aeon Vac engine.**

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