

Liquid Mirror Telescope, Devasthal

❖ Context

- A new unique telescope facility, known as ILMT, has been commissioned at **Devasthal** (Uttarakhand) **observatory** located at an **altitude of 2450 m**, of **Aryabhata Research Institute of Observational Sciences (ARIES)**, an autonomous institute under DST.

❖ Key Highlights



- It is the **first liquid mirror telescope in the country and the largest in Asia**.
- It is built by astronomers from **India, Belgium and Canada**.
- The telescope employs a **4-metre-diameter rotating mirror** made up of a **thin film of liquid mercury**.
- The scientists spun a pool of mercury which is a reflective liquid, so that the surface curved into a **parabolic shape** which is **ideal for focusing light**.
- A thin transparent film of mylar protects the mercury from wind.
- The reflected light passes through a **sophisticated multi-lens optical corrector** that produces sharp images over a wide field of view.

- Devasthal Observatory now hosts two four-metre class telescopes – the ILMT and the Devasthal Optical Telescope (DOT). **Both are the largest aperture telescopes available in the country.**



- The telescope will keep a watch on the overhead sky to **identify transient or variable objects** such as supernovae, gravitational lenses, space debris, and asteroids.
- **Big Data and Artificial Intelligence/Machine Learning (AI/ML) algorithms** will also be implemented for classifying the objects observed with the ILMT.

World's First Nano Urea Liquid Plant

❖ Context

- Recently, Prime Minister inaugurated the **Nano Urea (Liquid)** Plant constructed at IFFCO, Kalol.

❖ What Is Liquid Nano Urea?

- It is essentially urea in the form of a **nanoparticle**.
- Urea is a chemical nitrogen fertiliser, white in colour, which artificially provides nitrogen, a major nutrient required by plants.

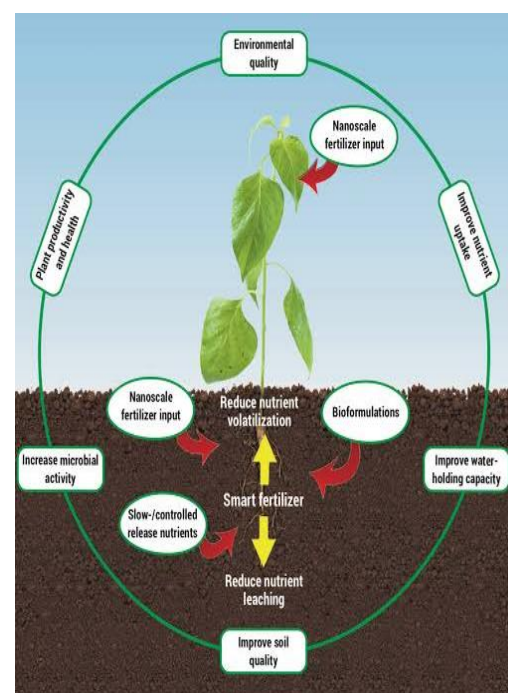
❖ Benefits of Liquid Nano Urea:



- **Produce better results in farms:** This patented product is expected to not only substitute imported urea, but to also **produce better results in farms**.
- **Reduce use of conventional urea:** Apart from reducing the country's subsidy bill, it is aimed at reducing the unbalanced and indiscriminate **use of conventional urea**, increase crop productivity, and reduce soil, water, and air pollution.
- **Higher Efficiency:** While conventional urea has an efficiency of **about 25 per cent**, the **efficiency of liquid nano urea** can be as high as 85-90 per cent.

❖ How Does it Work?

- **Conventional urea fails** to have the desired impact on crops as it is often applied incorrectly, and the nitrogen in it is vaporised or lost as gas. A lot of nitrogen is also washed away during irrigation.



- **Liquid nano urea** is sprayed directly on the leaves and gets absorbed by the plant.
- **Fertilisers in nano form provide a targeted supply** of nutrients to crops, as they are absorbed by the stomata, pores found on the epidermis of leaves.
- IFFCO advises that **2-4 ml of nano urea** should be mixed a litre of water and sprayed on crop leaves at active growth stages.
- Liquid nano urea has a **shelf life of a year**, and farmers need not be worried about **“caking”** when it comes in contact with moisture.

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News in Between the Lines

Extended Fund Facility



❖ Context

- Sri Lanka is in talks with the **International Monetary Fund (IMF)** to borrow at least **\$3 billion** via the lender's **extended fund facility (EFF)** to overcome its worst economic crisis since independence in 1948.

❖ Key Highlights

- Sri Lanka has **defaulted on some overseas debt** earlier this year and is **struggling to pay for imports of basics** such as fuel and medicine.
- The Extended Fund Facility is one of the several lending facilities under the IMF's **General Resource Account (GRA)**. It was established in **1974**.
- The EFF is prescribed for a country who is suffering from a **balance of payment problem** caused by structural weaknesses and who need **fundamental economic reforms**.
- The **size of borrowing** under an EFF is guided by a country's financing needs, capacity to repay, and track record with past use of IMF resources.
- Access to GRA resources is subject to the **normal limit of 145 %** annually of a country's IMF quota (temporarily increased to 245 % of quota through end 2021 as part of the Fund's COVID-19 response), and a **cumulative limit** in all outstanding exposure to the GRA over the life of the program of **435 %** of its quota, net of scheduled repayments.
- **Access above normal limits** is decided on a case-by-case basis under the IMF's **Exceptional Access policy**.
- These programmes **normally last three years** with a **grace period of 4-1/2 years** to start paying back the loan.
- This would be the **17th IMF plan for the nation**.

Stockholm Dialogue



❖ Context

- A dialogue was hosted by **LeadIT** and the **World Economic Forum** in Stockholm.

❖ About LeadIT

- The Leadership Group for Industry Transition (LeadIT) gathers countries and companies that are committed to action to achieve the **Paris Agreement**.
- It was launched by the **governments of Sweden and India** at the **UN Climate Action Summit** in **September 2019** and is **supported by the World Economic Forum**.
- LeadIT members subscribe to the notion that **energy-intensive industry can and must progress on low-carbon pathways**, aiming to achieve net-zero carbon emissions by **2050**.

❖ About The Dialogue

- The dialogue was hosted ahead of **Stockholm+50** – an international meeting convened by the United Nations to commemorate 50 years since the UN Conference on the Environment.
- The Dialogue gathered ministers, CEOs, and representatives from leading industry transition initiatives to **follow up on commitments from COP26** and **discuss the the scale of action required** for heavy industry sectors to meet the 1.5°C target.
- The delegates got the opportunity to visit the **steel and cement companies** in **Sweden** that are leading the way towards near **net-zero emissions** production by **2030**.

D2M

❖ Context

- The **Department of Telecommunications (DoT)** has set up a committee to study the feasibility of a spectrum band for offering **broadcast services directly to users' smartphones**.

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❖ Key Highlights

- At the moment, the band **(526-582 MHz)** is being used by the **Ministry of Information & Broadcasting** across the country for **TV transmitters**.
- Band is envisaged to **work in coordination with both mobile and broadcast services**.
- Public service broadcaster **Prasar Bharati** had last year announced a **collaboration with IIT Kanpur** to test the feasibility of the technology, called 'Direct-to-Mobile' (D2M).

❖ Background

- Due to increasing internet penetration in the country, **smartphones have become the primary mode of content consumption**.
- 82% of the internet traffic in India is video-related traffic. Nearly 1.1 million minutes of video is streamed or downloaded every second. **An estimated 240 exabytes of data is consumed per month**.
- The solution for satisfying the **increasing need for connectivity** is to create a **converged network**.

❖ Application

- **D2M networks can converge with traditional mobile networks** and provide **additional data pipes** to the mobile operator.
- This can help operators **decongest their network from heavy bandwidth consumption** during peak traffic periods.
- It can possibly be used to **directly broadcast content related to national interest** and counter fake news, issue emergency alerts and offer assistance in disaster management, among other things.
- Broadcasters can use such data pipes to deliver other generic content and various applications (apart from traditional TV).
- It will allow the end user to access unlimited video – educational or infotainment – and data content at a nominal fixed monthly price.

Land Price Index



❖ Context

- In a **first for the country**, a land price index named as IIMA-SFarmsIndia Agri Land Price Index (**ISALPI**) was launched by IIM-Ahmedabad in collaboration with agri-land marketplace, SFarmsIndia.

❖ Key Highlights

- The index will **record and present 'quality controlled' data of prices of agricultural land across the country**.
- It will help in benchmarking the land prices in rural and semi-urban areas and serve as a reliable source that will **signal potential conversion of agricultural land into real estate**.
- The researchers could use this information to study how economic events and factors are associated with price movements in a specific asset class.
- **Currently, ISALPI is based on land listing data from six States** — Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu, Telangana, and Uttar Pradesh.
- ISALPI has been put together using the **regression-based hedonic pricing methods**.

❖ Background

- With over **200 million hectares**, India houses just 2% of the world's cropped land, but feeds over 15 % of the world's population.
- India is witnessing a **surge in entrepreneurial interest in Agri land and allied professions**, from agricultural engineering to precision farming, from food technology to supply chain management and green energy.

India-Bangladesh Trains

❖ Context

- The new **Jalpaiguri-Dhaka Mitali Express** was flagged off by the Railway Ministers of both the countries.

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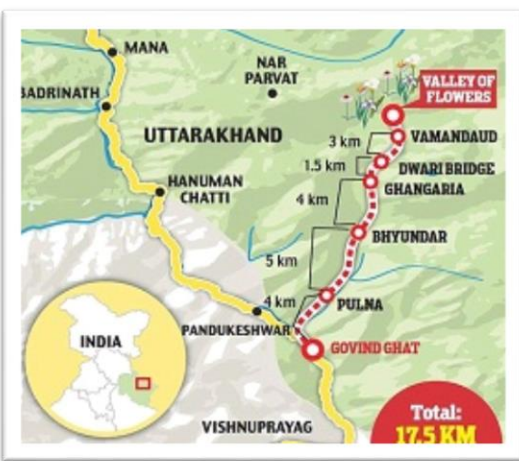
❖ Key Highlights

- The Mitali Express was announced during the India PM's visit to Dhaka in March 2021.
- The biweekly AC train is expected to cover the distance of 500 Kms.
- This is the third passenger train service between the countries.
- The Maitree Express was the first train service started in 2008. The tri-weekly train with capacity to carry 456 passengers runs between **Kolkata and Dhaka**.
- The Bandhan Express was the second train which started in 2017 reconnecting an old rail link - **Kolkata-Khulna** (third largest city of Bangladesh). Until the 1965 war, the route was served by the Barisal Express.
- Passenger train services between the countries have resumed recently after two years, since March 2020, when they were stopped due to COVID-19 pandemic.

❖ Freight Trains

- Both the countries envisage at least 20 freight trains crossing the border every month.
- In August 2021, the two sides started regular movement of freight trains between newly stored rail-link between **Haldibari in Cooch Behar district and Chilahati in Bangladesh**.
- The **Haldibari-Chilahati link** stopped after the **1965 war**.

Valley of Flowers



❖ Context

- Recently the **Valley of Flowers** opened for tourists.

❖ About Valley of Flowers

- Located at a height of 3,000 meters, in the **Chamoli district of Uttarakhand**, the Valley of Flowers is accessible to the public from June to October. And remains covered in a blanket of snow for the remaining six months beginning October.
- The valley today is home to **over 600 flowering species**, including some exotic varieties like **Brahmkamal**, which is also the state flower of Uttarakhand.
- The region also has a **rich faunal diversity** with species like the leopard, musk deer, and blue sheep.
- Declared a **National Park in 1982**, the **Valley of Flowers** stretches over an expanse of 87.50 sq. km. It was declared a **UNESCO World Heritage Site** in 2005. Accessible only on foot, it is a paradise for trekkers.

Hasdeo Forest



❖ Context

- Recently Chhattisgarh government had given a go-ahead for coal mining in the **Hasdeo forest to which various parties have shown disagreement**.

❖ The Hasdeo Arand forest

- A sprawling forest in the northern part of Chhattisgarh, Hasdeo Arand is known for its biodiversity and also its coal deposits.
- The forest falls under **Korba, Sujapur and Sarguja** districts with sizeable tribal population.
- **The Hasdeo river**, a tributary of Mahanadi, flows through it.
- It is the largest un-fragmented forests in Central India consisting of pristine **Sal (Shorea robusta) and teak forests**.
- The **Hasdeo Arand Coal Field (HACF)** is spread over nearly 1,880 sq km and comprises **23 coal blocks**.
- **Issue:** The state government had in March 2022 given a go-head for coal mining in an area of 1,136 hectares under the second phase of **Parsa East-Kete Basan (PEKB) coal block**.

❖ The Environmental Impact

- Recent two studies by the **ICFRE and Wildlife Institute of India (WII)** have come out. Both have underlined the importance of biodiversity in the region that mining will **undoubtedly affect**.
- Further deforestation could lead to elephant movements spilling over to urban areas, these studies have noted.

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