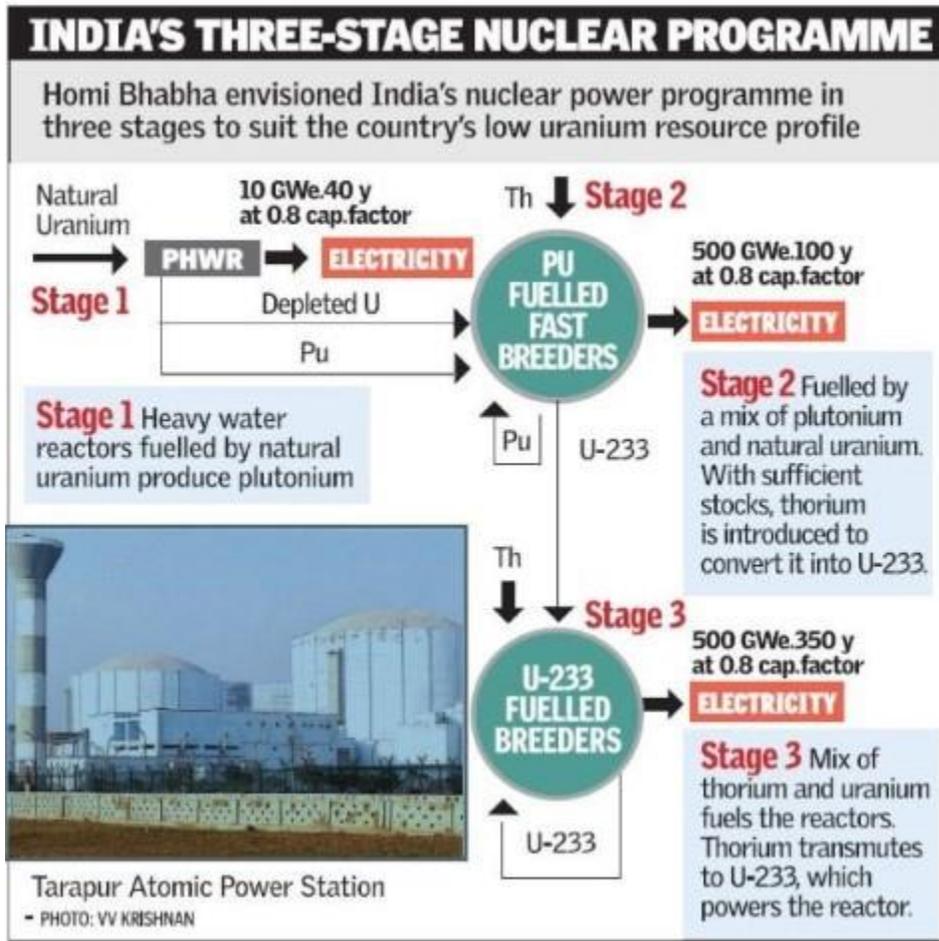


1. Kudankulam Nuclear Power Plant

Topic: Science and Technology



In News: The Rosatom State Corporation of Russia has supplied the first batches of more reliable and cost-efficient nuclear fuel TVS-2M nuclear fuel, over the existing one to India for the Kudankulam Nuclear Power Plant (KNPP).

More on the Topic:

- The TVS-2M fuel assemblies have a number of advantages making them more reliable and cost-efficient.
- Due the rigidity of fuel bundle makes it more efficient and more vibration-resistant.
- It contains 7.6% more fuel material as compared to the earlier fuel bundles.
- The new generation anti-debris filter protecting bundles from debris damage.

Russia's Assistance in building KNPP:

- Russia is building the KNPP under an **Inter-Governmental Agreement (IGA) of 1988** and follow on agreements in 1998 and 2008.
- The first stage, consisting of two different power unit power units was commissioned in 2013 and 2017, respectively.



- The second and third stages of KNPP which are currently under construction.

India's Three Stage Nuclear Programme:

- The three-stage nuclear power production program in India had been conceived with the ultimate objective of **utilizing the country's vast reserves of thorium-232**.
- It is important to note that **India has the world's third largest reserves of thorium**.
- Thorium, however, **cannot be used as a fuel in its natural state**.
- It needs to be converted into its usable "fissile" form after a series of reactions.
- To aid this and to eventually produce nuclear power from its thorium reserves, Indian scientist Dr. Homi J. Bhabha drew the road map of the three-stage nuclear program.

Stages in the Three Stage Nuclear Programme:

- **In the first stage, Pressurized Heavy Water Reactors (PHWRs)** will be used to produce **energy from natural uranium**. PHWRs do not just produce energy; they also produce **fissile plutonium (Pu)-239**.
- The second stage involves using the indigenous **Fast Breeder Reactor technology fueled by Pu-239 to produce energy and more of Pu-239**.
- By the end of the second stage of the cycle the reactor would have produced more fissile material than it would have consumed, thus earning the name "Breeder."
- The final stage of the cycle would involve the use of **Pu-239 recovered from the second stage, in combination with thorium-232, to produce energy and U-233** — another fissile material — using Thermal Breeders.
- This production of U-233 from thorium-232 would complete the cycle. U-233 would then be used as fuel for the remaining part of the fuel cycle.
- While India has successfully completed the first stage of its nuclear fuel program, the second stage is still in the works and has taken much longer than expected.
- It is expected to be ready by 2022-23.

Source: Indian Express

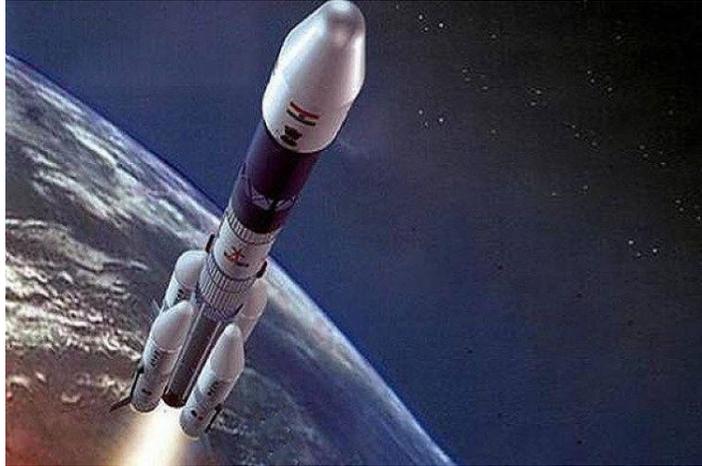
2. Indian National Space Promotion and Authorisation Centre (IN-SPACe)

Topic: Science and Technology

In News: PM Narendra Modi has inaugurated IN-SPACe centre in Ahmedabad.

More on the Topic:

- The establishment of IN-SPACe was announced in June 2020.
- It is an autonomous and single window nodal agency in the Department of Space for the promotion, encouragement and regulation of space activities of both government and private entities.
- IN-SPACe will be parallel to ISRO with its own board with some members from the private sector and chairperson.
- The centre "will have its own directorates for technical, legal, safety and security, monitoring and activities promotion."



Objectives of IN-SPACe:

- IN-SPACe **will act as a link between the Indian Space Research Organisation (ISRO) and private sector companies**, assessing "how best to utilise India's space resources and increase space-based activities."
- The centre **will evaluate demands of private sector companies**—including educational institutes—and will find ways to attune their demands, in consultation with ISRO.
- It also facilitates the usage of ISRO facilities by private entities.

Recent Changes in the Indian Space Sector:

- The Indian Space Research Organisation (ISRO) intends to offload most of its space-related activities to industry and enhance focus on advanced research.
- ISRO's commercial arm **New Space India Limited (NSIL)**, incorporated in 2019, is also proactively working to improve the potential of Indian industries by way of technology transfer from ISRO in several identified areas.
- NSIL is a Central Public Sector Enterprise of the Government of India.
- It was established in 2019 under the administrative control of the Department of Space.
- Headquarter: Bengaluru
- NSIL is the commercial arm of Indian Space Research Organisation (ISRO) with the primary responsibility of enabling Indian industries to take up high technology space

related activities and is also responsible for promotion and commercial exploitation of the products and services emanating from the space industry.

Source: Indian Express

3. UN Security Council

Topic: International Relations

In News: Ecuador, Japan, Malta, Mozambique and Switzerland were elected as UNSC non-permanent members for 2023-2024 term.

More on the Topic:

- The Security Council consists of 15 countries. Five of them – China, France, Russia, the United Kingdom and the United States – are permanent members with the right to veto.
- The General Assembly, which comprises all 193 UN Member States, elects the 10 non-permanent members who serve for two-year terms.
- To secure a place on the Council, countries must receive a two-thirds majority, or 128 votes, even if they run uncontested.



About UNSC:

- The United Nations Security Council is one of the six principal organs of the United Nations and is charged with ensuring international peace and security, recommending the admission of new UN members to the General Assembly, and approving any changes to the UN Charter.

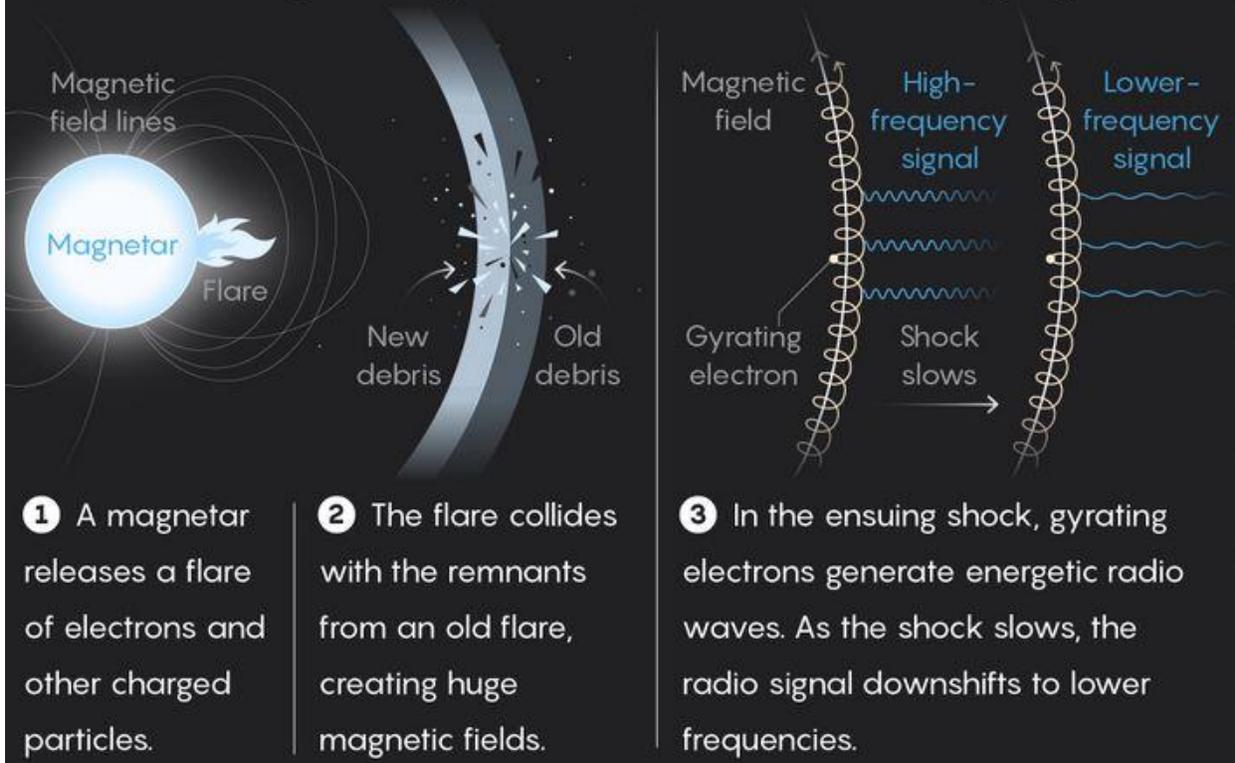
Source: Hindu

4. Fast Radio Burst

Topic: Science and Technology

How Fast Radio Bursts Work

Fast radio bursts are brief, energetic blips of radio waves that originate far across the universe. At least one repeats, which has added to the challenge of explaining what might be creating them. A new model accounts for past observations and predicts specific features that should be seen going forward.



In News: Astronomers detected a signal from a galaxy believed to be nearly 3 billion light-years away called Fast Radio Burst (FRB).

More on the Topic:

- FRBs are **intense and brief flashes of radio frequency emissions** that typically last milliseconds.
- These usually repeat multiple times. Scientists are still yet to fully understand the phenomenon which was first detected in 2007.
- This is the second time it was ever detected. A leading candidate for what generates these FRBs is a **magnetar, which is a neutron star** with a really strong magnetic field emitting radio waves.

Source: Indian Express

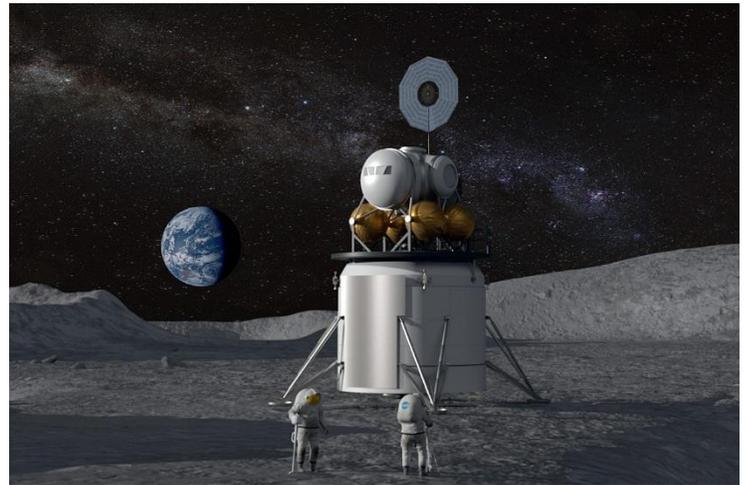
5. Artemis I Moon Mission

Topic: Science and Technology

In News: After multiple failed attempts, NASA is scheduling the wet dress rehearsal for the Artemis I mission on June 20 at the Kennedy Space Center in Florida.

More on the Topic:

- Artemis is the program through which NASA seeks to land a woman and man on the Moon by no earlier than 2025.
- Both commercial and international partners will be involved, the latter of which will include the Canadian Space Agency, the European Space Agency, and Japan Aerospace Exploration Agency (JAXA).



Artemis objectives include the following:

- NASA plans to **build a sustainable presence on and around the Moon**, and to **use the program as a stepping stone to the next giant leap: a crewed mission to Mars**.
- Long-term goals include **the construction of the Lunar Gateway** (the first space station in orbit around the Moon) and the installation of Artemis Base Camp (a surface station).
- Artemis astronauts are **set to explore the Moon's south polar regions** in search of water ice—a key enabler of a sustainable human presence there.
- Artemis could also **carve a path to the commercialization of the Moon**, whether it be space tourism or the mining of resources such as rare-earth elements and helium-3.

Source: Business Standard

6. Brown Cotton

Topic: Environment and Ecology

In News: Karnataka's Kandu or Brown Cotton is in news.

More on the Topic:

- Brown Cotton, is a local (to Karnataka) indigenous variety of desi cotton that is recognised for its natural brown colour.
- Brown cotton is a rain-fed variety of cotton that is well-suited for south India's environment.
- Naturally grown brown cottons are pest and drought-resistant.
- With brown cotton, entire dyeing process is eliminated, dye treatments are limited, there is less usage of water, less wastewater, less consumption of chemicals.



Source: Hindu

7. US currency Monitoring List

Topic: Economy

WHAT IT MEANS...

<p>For India There will be pressure on RBI to cut down intervention, allow the rupee to appreciate</p>	<p>For economy A stronger rupee would partially offset the impact of rising oil prices on imports</p>
<p>In terms of restrictions The tag does not involve any kind of trade restrictions</p>	<p>For RBI The central bank can increase diversification of its reserves to include non-dollar assets</p>



In News: USA has placed India along with 11 other major economies that merit close attention to their currency practices and macroeconomic policies.

More on the Topic:



- US government placed these countries in to watch list as it feels these countries are engaging in “unfair currency practices” by deliberately devaluing their currency against the dollar.
- Criteria used by US for including Countries on the Monitoring List:
- **A “significant” bilateral trade surplus with the US** — one that is at least USD 20 billion over a 12-month period.
- **A material current account surplus equivalent to at least 2% of Gross Domestic Product (GDP)** over a 12-month period.
- **“Persistent”, one-sided intervention** — when net purchases of foreign currency totalling at least 2% of the country’s GDP over a 12 month period are conducted repeatedly, in at least six out of 12 months.
- Countries that meet two of the criteria are included in the watch list.

Source: Hindu
