

POWERING AMRIT KAAL: AN INTEGRATED APPROACH IS THE KEY TO ENERGY SECURITY IN THE NEXT 25 YEARS

Context

- India launched petrol blended with 20 per cent ethanol (ethyl alcohol), also called 'E20', at the recently-concluded India Energy Week, 2023, which will be rolled out in 15 cities across the country in the next two years.
- This is touted to be a landmark green initiative to help the country reduce carbon emissions and ensure energy independence.

About Ethanol

- Ethanol is a **biofuel** naturally produced by the fermentation of sugar extracted from sugarcane and agricultural waste such as bagasse and paddy straw.
- Ethanol, when blended with petrol, **will reduce fossil fuel consumption and bring down the country's import bills.**
- The government is supporting advanced biofuel projects through the **PM Jivan Yojana** with financial assistance of approximately Rs 25,000 crore.

History of Ethanol Blending in India

- Since **2001**, India has tested the feasibility of ethanol-blended petrol whereby 5% ethanol blended petrol (95% petrol-5% ethanol) was supplied to retail outlets.
- In **2002**, India launched the **Ethanol Blended Petrol (EBP) Programme** and began selling 5% ethanol blended petrol. However, until 2013-14, the percentage of blending never crossed 1.5%.
- Since **2020**, India has been announcing its intent to achieve 10% blending by the end of 2022 and 20% blending by 2030.
- **The target of achieving average 10 per cent blending** (10 per cent ethanol, 90 per cent petrol) was achieved in June, 2022, ahead of the target date of November, 2022.
- Encouraged by the success, the government advanced the target of 20 per cent ethanol blending in petrol from earlier **2030 to 2025.**
- It is in line with vision of India's Amrit Kaal of becoming energy independent by 2047.

- The current annual ethanol production capacity in the country is about 1,037 crore litres which includes 700 crore litres of molasses-based and 337 crore litres of grain-based production capacity.

India's Holistic Strategy for Amrit Kaal

- India has also remained steadfast in her climate change commitments as demonstrated by its ambitious targets of **achieving net-zero in emissions by 2070** and cutting down emissions by 1 billion tonnes by the end of 2030.
- India is also taking **an integrated path** for transitioning its future mobility pathways. Therefore, India is also supporting electric vehicles through a **production-linked incentive scheme** to make **advanced fuel cells** of 50 gigawatt hours.
 - Customs duty exemptions have also been announced for the sector.
- India is also targeting the installation of **alternative fuel stations** (EV charging/ CNG/ LPG/ LNG/ CBG) at 22,000 retail outlets by May 2024.
- Thus, the recently-concluded India Energy Week 2023 demonstrates India's Amrit Kaal plan to become a \$ 26 trillion economy by 2047, **ensuring energy security and achieving energy independence as its key goal.**

INS SAHYADRI

Indian Navy's INS Sahyadri joined two frontline warships of France in carrying out a two-day maritime partnership exercise in the Arabian Sea.



About INS Sahyadri :

- The INS Sahyadri is a **Shivalik class multi-role stealth frigate**.
 - It is equipped with cutting-edge weapons and sensors, enabling her to identify and eliminate threats from the air, the surface, and the subsurface.
 - The vessel is a member of the Eastern Fleet of the Indian Navy, which is located in Visakhapatnam.
 - The maritime partnership exercise witnessed a wide spectrum of evolutions at sea which included **cross-deck landings, boarding exercises and seamanship evolutions**.
 - The seamless conduct of the exercise reaffirmed the interoperability and high level of cooperation between the two navies.
 - Stealth Frigates under the Shivalik class series namely **INS Shivalik, INS Sahyadri, and INS Satpura** are the first stealth warships built in India (by Mazagon Dock Limited).
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NATIONAL YOUTH CONCLAVE

National Youth Conclave' is being organized by the National Institute of Urban Affairs (NIUA) Affairs on 13-14 March 2023 at Vigyan Bhawan, New Delhi.



About National Youth Conclave:

- The event is organized under the aegis of India's G20 presidency in 2023, aligning with the Urban20 and Youth20 engagement groups.
- The National Youth Conclave, which brings together the country's youth and government leadership, is an opportunity for cross-learning.

What is Urban 20?

- It is a **city diplomacy initiative launched** on December 12, 2017, at the One Planet Summit in Paris.
- Urban-20 (U20) provides a platform for cities from G20 countries to facilitate discussions on various important issues of urban development including climate change, social inclusion, sustainable mobility, and affordable housing, and propose collective solutions.

- **C40 Cities (C40) and United Cities and Local Governments (UCLG)** convene the U20 under the leadership of a Chair city that rotates annually, based in the G20 host country.
- The U20 2023 Cycle was chaired by the **City of Ahmedabad**.
- Ahmedabad will showcase its unique urban development and climate change initiatives and rich culture and heritage to the participants.

What is Youth20 (Y20)?

- The Y20 is the **official youth engagement group for the G20** (Group of 20), the forum for the world's largest and most advanced economies.
- The Y20 is a process which brings together young leaders from across the globe, to discuss and debate global challenges and agree policy recommendations they would like to see G20 leaders take forward.
- The list of policy recommendations is known as a communiqué, which is announced publicly at the Y20 Summit and presented to world leaders as part of the official G20 summit.
- India hosted the Y20 summit for the first time.
- In Youth 20 Engagement Group, India's key focus is to bring young leaders from all across the globe together and discuss ideas for a better tomorrow and draft an agenda for action.
- The activities to be undertaken by Y20 during India's presidency will focus on global youth leadership and partnership.
- In a run-up to the final Youth-20 Summit, for the next eight months, there will be Pre summits on the five Y20 themes along with various discussions and seminars at different Universities across the country.

HIGH-POWERED COMMITTEE ON WILD ANIMALS?

The Supreme Court has increased the jurisdiction and powers of a high-powered committee to conduct necessary checks and undertake fact-finding exercises concerning the import, transfer, procurement, rescue, and rehabilitation of wild animals, including those in captivity, across India.



Why in News?

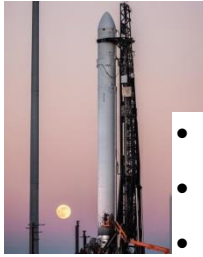
- It was initially constituted to oversee the transfer of captive wild elephants from the northeastern States. The ambit of the committee was earlier restricted to Tripura and Gujarat.
- It will now have a wider responsibility and will cater to all wild animals in need of rehabilitation or rescue anywhere in India

About High-Powered Committee on Wild Animals:

- It is set up under the **chairmanship** of former judge **Justice Deepak Verma**.
- **Mandate:** To consider **approval, dispute, or grievance** concerning the **transfer or import of wild animals** into India or their **procurement or welfare by any rescue or rehabilitation center or zoo**.
- **Other Members of the Committee:**
 - Director General of Forest
 - Head of Project Elephant Division (MoEF)
 - Member Secretary (Central Zoo Authority of India)
 - Chief Wild Life Warden(s) of the State(s) to which the issue relates will be co-opted as Members.
- **Powers and Functions:**
 - All State and Central authorities shall report the seizure of wild animals or abandonment of captive wild animals to the Committee.
 - The Committee shall be at liberty to recommend the transfer of ownership of captive animals or of seized wild animals to any willing rescue center or zoo for their immediate welfare, care, and rehabilitation.
 - The Committee is free to conduct necessary checks and to undertake fact-finding exercises in any pending or future complaint.

WHAT IS TERRAN 1 ROCKET?

The launch of the world's first 3D-printed rocket, Terran 1, was recently canceled at the last second.



About Terran 1 Rocket:

- It is the **world's first 3D-printed rocket**.
- It is **built by California aerospace startup Relativity Space**.
- **Features:**
 - The rocket is **110 feet (33.5 meters) tall** with a **diameter of 7.5 feet (2.2 meters)** .
 - **Eighty-five percent** of its mass is **3D printed** with metal alloys, including the engines.
 - It is **powered by Aeon engines** using **liquid oxygen and liquid natural gas** as **propellants**.
 - It has nine 3D-printed Aeon 1 engines in its first stage and one 3D-printed Aeon Vacuum engine in its second stage.
 - The rocket will eventually be **capable of putting up to 2,755 pounds (1,250 kilograms) into low Earth orbit**.

What is 3D Printing?

- 3D printing or **additive manufacturing** is a process of **making three-dimensional solid objects from a digital file**.
- The creation of a 3D printed object is achieved **using additive processes**.
- In an additive process, an object is **created by laying down successive layers of material** until the object is created. Each of these layers can be seen as a thinly sliced cross-section of the object.
- 3D printing **enables you to produce complex shapes** using less material than traditional manufacturing methods.

[CONTROLLED RE-ENTRY OF SATELLITES: ISRO BRINGS DOWN WEATHER SATELLITE MEGHA TROPIQUES-1](#)

Why in News?

- The Indian Space Research Organisation (ISRO) **for the first time** brought down a satellite - Megha Tropiques-1, **in a controlled manner** after its end of life.

- Although the mission life of the weather satellite - a joint India-France mission launched aboard a PSLV in 2011, was only 3 years, it continued providing data on water cycle, energy exchanges in the tropics for nearly a decade.

What Happens to Satellites after their Life ends?

- Usually, satellites are left in their orbit and because of the **gravitational pull of the earth**, they come down to the atmosphere over years.
- It takes debris from the low earth orbit 20 to 30 years to fall to the atmosphere and generations for those in geosynchronous or geo-stationary orbits to fall.
 - When the satellites re-enter the atmosphere, **the friction causes** it to heat up to extreme high temperatures of thousands of degrees Celsius.
 - Without a heat shield, **99% of a satellite gets burnt up** whether in a controlled re-entry or an uncontrolled one.
- A controlled re-entry is possible **only for satellites in low-earth orbit** - at about 1,000 kms over the surface of the earth.
 - These manoeuvres, however, **are not usually attempted** because fuel reserves have to be maintained in the satellite after mission life is over.
- This is **impossible for satellites placed in geo-stationary or geosynchronous orbit** - where time taken by the satellite to orbit the earth matches Earth's rotation - because they are at altitudes of nearly **36,000 kms**.
 - For attempting to bring down a satellite from such an orbit, **a huge fuel reserve would be needed**, which will only make the satellite heavier and costlier at launch.
 - Therefore, instead of bringing them down, **they are shot upwards at the end of life**. These orbits are like parking lots in space where all old satellites are put in.
 - Sometimes a satellite might escape to **deep space** (when its velocity increases enough to get away from the gravitational pull of the earth) as well.

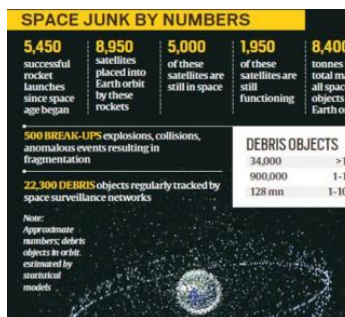
How ISRO Brought Down the Satellite?

- This was the **first time** that the space agency attempted such a manoeuvre to clear out space debris **despite the satellite not being built to do so**.

- **With over 120kgs of fuel remaining** in the satellite even after being decommissioned, the space agency attempted a controlled re-entry.
- A series of **20 manoeuvres over eight months** lowered the orbit of the satellite such that it re-entered the dense atmosphere and burnt up over the Pacific Ocean.

Why did ISRO Attempt a Controlled Re-entry?

- Other than extra fuel remaining in the satellite after the mission life ended, ISRO attempted the control re-entry **to demonstrate and understand the process of doing so.**
- With several satellites/other objects/debris moving at extremely high speeds in low earth orbits, **it has become imperative to keep the space clean** as even the smallest debris can destroy active satellites.



create more with one collision triggering others - is even scarier.

- This is the reason space debris is monitored and sometimes satellites have to be moved from their way.
- **For example**, ISRO carried out 21 such collision course manoeuvres in 2022 and set up a department last year to monitor the space debris and mitigate the risks posed.
- The space agency was also following the guidelines of **UN and the Inter-Agency Space Debris Coordination Committee (IADC)** that say satellites should be deorbited after mission life.

54TH RAISING DAY OF THE CENTRAL INDUSTRIAL SECURITY FORCE

Why in news?

- Recently, the 54th Raising Day parade of the Central Industrial Security Force (CISF) was organised at the National Industrial Security Academy (NISA) in Hyderabad.
- NISA is a premier training institute of CISF in Industrial Security and Disaster Management. It is located at Hyderabad, Telangana.

- It is engaged in conducting basic induction training and other in-service courses for officers of CISF and specialized courses for Group- A officers, executives of PSUs' and foreign police officers.

- It was addressed by the Union Home Minister Amit Shah.

Central Industrial Security Force (CISF)

- CISF is one of the Central Armed Police Forces (CAPFs) established under an Act of Parliament, “Central Industrial Security Force Act, 1968.
- CISF was established in 1969 to provide integrated security cover to certain sensitive public sector undertakings with a strength of only three battalions.
- The force has since grown into a premier multi-skilled organization with a present strength of over 1.7 lakhs personnel.
- It works under the administrative control of Ministry of Home Affairs and its' headquarter is located at New Delhi.

Roles/functions of CISF

- **Critical Infrastructure:**

- CISF is currently providing security cover to 353 establishments through the length and breadth of the country.
- Some of which includes Atomic Power Plants, Space Installations, Defence Production Units, Mines, Oil Fields and Refineries etc.

- **VIP security:**

- CISF has also been mandated to provide protection to the VIP protectees of Z+, Z, Y and X category across the country.

- **Fire Protection:**

- The CISF also has its own Fire Wing which provides services to 104 establishments.

- **Airports:**

- The specialized task of airport security was assigned to CISF in the year 2000 in the wake of hijacking of Indian Airlines Flight IC-814 to Kandahar.

- **Private sector:**



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- The CISF Act was amended to enable the Force to provide security, on payment basis, to private / joint venture industrial undertakings, which are vital for the security and economy of the country.
 - E.g. - The Infosys campuses in Mysuru, Bengaluru and Pune, the Patanjali Food and Herbal Park in Haridwar and the Reliance refinery in Gujarat's Jamnagar
 - **Overseas Deployment:**
 - CISF has contingents deployed at United Nations Stabilizations Mission in Haiti (MINUSTAH).
 - **Force with daily public interface**
 - The CISF is the only Central Armed Police Force with a daily public interface; in the airports, in the Delhi Metro and in the iconic monuments.
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