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Liquid Apogee Motor (LAM)

The smooth operation of Liquid Apogee Motor (LAM) engine critical to Aditya-L1 success.

- A liquid apogee engine (LAE), or apogee engine, refers to a type of chemical rocket engine typically used as the main engine in a spacecraft.
- In simple terms, LAM engines are used for orbital adjustment manoeuvres of satellites/spacecraft in orbit.
- The name apogee engine derives from the type of manoeuvre for which the engine is typically used, i.e. an in-space delta-v change made at the apogee of an elliptical orbit in order to circularize it.
- For geostationary satellites, this type of orbital manoeuvre is performed to transition from a geostationary transfer orbit and place the satellite on station in a circular geostationary orbit.
- Despite the name, an apogee engine can be used for a range of other manoeuvres, such as end-of-life deorbit, Earth orbit escape, planetary orbit insertion and planetary descent/ascent.
- The successful operation of LAM, short for Liquid Apogee Motor, is vital to ISRO's plans to place the Aditya spacecraft in a halo orbit at Lagrangian point L1.
- It is developed by the Liquid Propulsion Systems Centre (LPSC), the ISRO centre for liquid and cryogenic propulsion in Thiruvananthapuram.

LAM has played an important role in missions, including the 2014 Mars Orbiter Mission (MOM) Mangalyaan and the Chandrayaan-3.

Aditya L1

- [Aditya-L1](#) is the first 'space-based observatory class Indian solar mission to study the Sun,' according to the ISRO.
- The ISRO is planning to launch the mission using a Polar Satellite Launch Vehicle (PSLV-XL) on September 2.
- Once the Aditya spacecraft exits the earth's sphere of influence and heads toward its destination, the Lagrangian point L1.
- The LAM engine will shut down for the best part of the four-month journey.

Lagrangian points

- Lagrange Points are positions in space where the gravitational forces of a two-body system like the Sun and Earth produce enhanced regions of attraction and repulsion.
- These can be used by spacecraft as parking spots in space to remain in a fixed position

with minimal fuel consumption.

- There are five special points where a small mass can orbit in a constant pattern with two larger masses.
- The Lagrange Points are positions where the gravitational pull of two large masses precisely equals the centripetal force required for a small object to move with them.
- The L1 point of the Earth-Sun system affords an uninterrupted view of the sun and is currently home to the Solar and Heliospheric Observatory Satellite SOHO.



References

1. [The Hindu - Liquid Apogee Motor engine critical to Aditya-L1 success](#)
2. [NASA - What are Lagrange Points?](#)

Air Quality Life Index (AQLI)

Air pollution is cutting short lives by up to five years in South Asia.

- The report, 'Air Quality Life Index (AQLI) Annual Update 2023', was published by the University of Chicago's Energy Policy Institute.
- AQLI measures the impact of particulate pollution on life expectancy and the latest report analysed particulate matter data from 2021 to determine its impact on life expectancy.

South Asia and air pollution

- Air pollution is a major threat to South Asians, especially those living in Bangladesh, India, Nepal, and Pakistan.
- Its impact on life expectancy in each of the previously mentioned countries is far greater than other prominent health threats.
- As of now, the average person living in Bangladesh, India, Nepal, and Pakistan is exposed to particulate pollution levels that are 51.3% higher than at the turn of the century.

India

- In India, on average, poor air quality takes 5.3 years off the life of a person, the report added.
- In contrast, cardiovascular diseases decrease the average Indian's life expectancy by around 4.5 years, while child and maternal malnutrition reduce life expectancy by 1.8 years.
- India is the most polluted nation; all 1.3 billion people live in areas where the annual average particulate pollution level surpasses the WHO guideline.
- Moreover, 67.4% of the population live in areas that exceed the country's own national air quality standard of 40 µg/m³, the report said.

References

1. [The Indian Express - A bigger threat than cigarettes](#)

2. [AQLI - How much longer would you live if you breathed clean air?](#)

General Comment No. 26

First-of-its kind UN guidance calls for climate action by States to protect children's rights.

- The United Nations has affirmed children's rights to a clean, healthy and sustainable environment in a new guidance on children's rights and the environment, with a special focus on climate change.
- The new guidance, formally known as General Comment No. 26, was adopted in August, 2023.
- In 1989, the UN convention on rights of the child outlined children's rights, which includes the right to life, health, clean drinking water and survival and development.
- It has been ratified by 196 countries.
- The recognition is legally significant as it details the obligations under the Child Rights Convention to address environmental harms and guarantee that children are able to exercise their rights.
- The recognition follows an important declaration by the UN made almost a year ago on access to clean, healthy environment as universal human right.

By the Children, for the Children

- The efforts of children to draw attention to these environmental crises motivated the committee to come out with the 20-page document.
- The document was adopted after two rounds of consultation with UN member states, national human rights institutions, international organizations, civil society, thematic experts and the children too.

In 2022, extreme weather events around the world displaced at least 12 million children in 2022, as per the UNICEF estimates.

References

1. [Down To Earth - UN guidance to protect children's rights](#)
2. [UNHR - General comment No. 26 \(2023\)](#)

Funga

United Nations Biodiversity has urged people globally to use the word 'funga' whenever they say 'flora and fauna', in order to highlight the importance of fungi.

- Funga refers to the fungal diversity of a given place.
- It is the Fauna and Flora equivalent to the kingdom of Fungi.
- Fungi, along with Animalia (animals), Plantae (plants), Protista, Archaea/Archaeobacteria, and Bacteria or Eubacteria form the six 'kingdoms' of biology.
- This is not the first time when a request has been made to include fungi along with flora and fauna.

- The Species Survival Commission of the International Union for Conservation of Nature announced that it would use mycologically inclusive language in its internal and public-facing communications.
- This is to incorporate fungi in conservation strategies with rare and endangered plants and animals.

Importance of Fungi

- There would be no life on Earth without fungi: the yeasts, molds and mushrooms.
- They are critical to decomposition and forest regeneration, mammalian digestion, carbon sequestration, the global nutrient cycle, antibiotic medication, and the bread, beer and chocolate we consume.
- Trees would not be able to live on land without fungi.

References

1. [Down To Earth - Funga](#)
2. [The Guardian - Flora, Fauna and Funga](#)

Exercise Bright Star-23

Indian Army contingent departed for Exercise Bright Star-23 scheduled to be conducted at Mohammed Naguib Military Base in Egypt.

- It is a multinational tri-services joint military exercise that will be led by US Centcom and Egyptian Army.
- It was initially conceptualized as a bilateral biennial training exercise between the US and Egypt during the Camp David Accord of 1977.

The Camp David Accords, signed by President Jimmy Carter, Egyptian President Anwar Sadat, and Israeli Prime Minister Menachem Begin in 1978, established a framework for a historic peace treaty concluded between Israel and Egypt in 1979.

- The first edition of the Exercise was conducted in the year 1980 in Egypt.
- From 1995 onwards the Exercise was expanded for participation by other nations.
- The previous Exercise Bright Star was conducted in the year 2021 wherein forces of 21 countries had participated.

Bright Star-23

- This year 34 countries will participate in Exercise Bright Star- 23.
- It will be the largest ever joint military exercise in Middle East & North Africa region.
- This is for the first time that Indian Armed Forces are participating in Exercise Bright Star with a total strength of 549 personnel.
- The Indian Army is being represented by a contingent from 23 JAT Battalion.

References

1. [PIB - Indian Army Contingent Leaves for Exercise Bright Star-23](#)
2. [DD News - Indian Air Force makes its debut in Bright Star-23](#)

