

25 MAY 2019

ARTEMIS MISSION

In news:

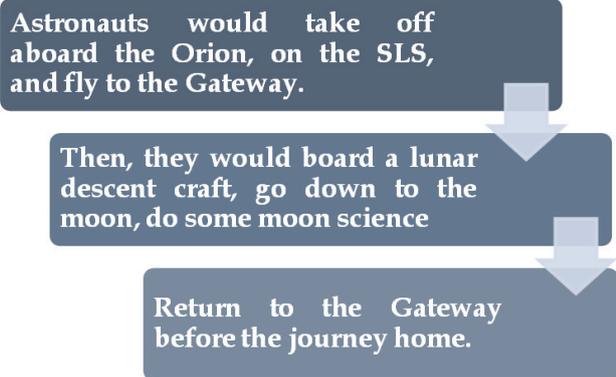
- NASA’s unveils schedule for Artemis mission to return astronauts to the lunar surface by 2024, including the first woman to the Moon’s South Pole, where no human has ever been before.
- It includes eight scheduled launches and a mini-station in lunar orbit by 2024.

Mission Schedule:

- Artemis 1: an uncrewed mission around the Moon planned for 2020.
- Artemis 2: will orbit Earth’s satellite with a crew around 2022
- Artemis 3: will put astronauts on lunar soil in 2024, including the first woman.
- In addition to these missions, there will be five launches carrying the building blocks of the lunar mini-station “Gateway” which will serve as a staging point for the Moon landing.
- These will be carried out between 2022 and 2024 by private space companies

Current issues in the Mission:

- NASA’s rocket to launch people to the moon, the Space Launch System, or SLS isn’t finished and won’t be tested until at least 2020, perhaps later.
- The SLS has been under development since 2011, and the first of them were originally planned to be tested in 2017. When complete, the SLS will be the largest, most powerful rocket ever built.
- NASA’s space capsule for the journey to the Earth to the moon called Orion also isn’t complete.
- The Orion is a multipurpose vehicle to sit atop the SLS that will serve as the crew quarters for missions beyond low Earth orbit (i.e. beyond the International Space station). It’s designed to accommodate four astronauts.
- **The basic outline of the mission:**



NOTE



- NASA doesn't have a lunar lander (or even approved designs for one) to get astronauts down from the Gateway to the moon and back. Currently, NASA doesn't have one.



Why moon exploration is needed?

The surface of the moon is around 3.5 billion years old. The moon rocks brought back from the Apollo missions helped scientists understand that the surface of the moon formed out of an ocean of magma, just like the Earth.

1. To pursue scientific activities that address fundamental questions about the history of Earth, the solar system and the universe - and about our place in them.
2. Samples from the 1970s Apollo 15 and 17 missions were re-examined, the presence of water brought greater hope of establishing lunar habitations. Since then, multiple studies have confirmed that the Moon has water in abundance. Water ice (and other volatile substances) is found in the dark areas near the poles and have many uses, including life support and rocket propellant
3. Currently, China produces more than 90% of the Rare Earth Metals (REM) we need for electronics. But reserves are running out fast with some elements, including dysprosium, neodymium and lanthanum, expected to be depleted within the next 20 years. In order to feed the world's seemingly insatiable appetite for technology, new sources of REMs must be found, as recycling alone will be unable to meet demand.
4. Unlike Earth, which is protected by its magnetic field, the moon has been bombarded with large quantities of Helium-3 by the solar wind. It is thought that this isotope could provide safer nuclear energy in a fusion reactor, since it is not radioactive and would not produce dangerous waste products.

NOTE



CHINA'S CONTINUED USE OF BANNED CFC

In news:

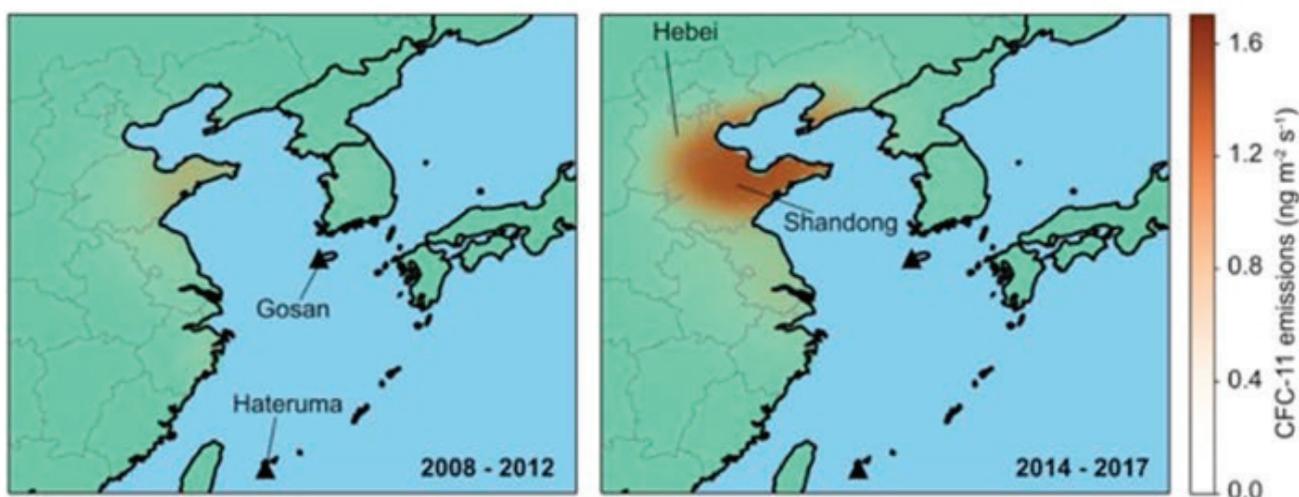
- Industries in north-eastern China have released large quantities of an ozone-depleting gas into the atmosphere in violation of 1987 Montreal Protocol.
- Since 2013, annual emissions of the banned chemical Chlorofluorocarbon-11 (CFC-11) from that region have increased by about 7,000 tonnes.

Reasons assumed:

- China has the world's largest polyurethane foam market, accounting for about 40 per cent of the world's consumption.
- The Chinese foam manufacturers have been using CFC-11 illegally to save on higher cost of alternatives like hydrochloro-fluorocarbons named HCFC-141b, which is supposed to be phased out in China by 2026.

Suspicion, Investigation and Confirmation:

- CFC-11 was widely used in the 1970s and 1980s as a refrigerant and to make foam insulation. The 1987 Montreal Protocol banned CFCs and other industrial aerosols that chemically dissolve protective ozone layer.



- After the ban came into force, global concentrations of CFC-11 declined steadily until about 2012. However, last year scientists discovered the pace of that slowdown slowed by half between 2013 and 2017. Because the chemical is not naturally occurring, the change could only have been produced by new emissions.
- Computer simulations confirmed the origin of the CFC-11 molecules to China.

About CFC:

- Its brand name is Freon
- Many CFCs have been widely used as refrigerants, propellants (in aerosol applications), and solvents, because of their low toxicity, reactivity and flammability.
- But, CFCs contribute to ozone depletion in the upper atmosphere. So, the manufacture of such compounds has been phased out under the Montreal Protocol, and they are being replaced with other products such as hydrofluorocarbons (HFCs)

NOTE



- CFCs is more potent greenhouse gases than carbon dioxide or methane, which persists in the atmosphere for about half a century and accounted for about 10% of human-induced global warming.

The Montreal Protocol on Substances that Deplete the Ozone Layer:

- It is an international treaty designed to protect the ozone layer by phasing out the production of numerous substances that are responsible for ozone depletion.
- It was agreed on 26 August 1987, and entered into force on 16 September 1989
- The Protocol is to date the only UN treaty ever that has been ratified every country on Earth - all 197 UN Member States.
- Equal but differentiated responsibilities: It phases down the consumption and production of the different ODS in a step-wise manner, with different timetables for developed and developing countries

Kigali Amendment to Montreal Protocol:

- While HFCs do not deplete the stratospheric ozone layer, some of them have high GWPs ranging from 12 to 14,000.
- To keep global temperature rise at or below 2°C this century, the Parties to the Montreal Protocol reached agreement at their in 2016 at Kigali, Rwanda to phase-down HFCs.
- The first reductions by developed countries are expected in 2019. Developing countries will follow with a freeze of HFCs consumption levels in 2024 and in 2028 for some nations.

CHAGOS ARCHIPELAGO

In news

- India was among 116 nations to vote in favour of a UN General Assembly resolution that demanded the UK withdraw its “colonial administration” from the Chagos Archipelago unconditionally within six months, supporting Mauritius in its quest for the restoration of sovereignty over the island chain in the Indian Ocean.

In brief

- The resolution welcomed the February 25, 2019 advisory opinion of the International Court of Justice (ICJ) on the legal consequences of the separation of the Chagos Archipelago from Mauritius in 1965.
- The UK retained sovereignty over the islands after Mauritius gained its independence from Britain in 1968.
- The islands have since been used for defence purposes by the UK and the United States, which established a military base on the island of Diego Garcia.
- The entire Chagossian population was forcibly removed from the territory between 1967 and 1973, and prevented from returning.
- As a part of India’s longstanding support to all peoples striving for decolonization, India has consistently supported Mauritius in its quest for the restoration of sovereignty.
- India has age-old people-to-people bonds with Mauritius.



NOTE



WORLD ECONOMIC SITUATION AND PROSPECTS REPORT (WESP), 2019

Why in news?

- The World Economic Situation and Prospects Report, released by the United Nations, projected the growth of India's economy at 7.1 percent in the Financial Year 2020.

More on news:

- The same said that the Indian economy expanded by 7.8% in 2018.
- Strong domestic consumption and investment will continue to support growth, which is projected at 7.0 percent in 2019 and 7.1 percent in 2020.
- The report finds that the Female labour force participation remains low and is declining.
- Earlier, International Monetary Fund (IMF) too had projected India's GDP to expand 7.5% in FY20 and 7.7% in FY21.

About World Economic Situation and Prospects (WESP), report:

- WESP is a joint product of the United Nations Department of Economic and Social Affairs (UN/DESA), the United Nations Conference on Trade and Development (UNCTAD) and the five United Nations regional commissions (Africa, Europe, Latin America and the Caribbean, Asia and the Pacific, and Western Asia).

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