

Prelim Bits 28-12-2023 | UPSC Daily Current Affairs

Deep Space Network (DSN)

NASA's telecommunications network and navigation system, Deep Space Network, celebrated its 60th anniversary on December 24.

- **Initiative by** - Deep Space Network (DSN) is an initiative of NASA started in the year 1963.
- **Operated by** - The DSN is operated by NASA's Jet Propulsion Laboratory (JPL), which also operates many of the agency's interplanetary robotic space missions.
- **Applications** - DSN is an array of giant radio antennas that supports interplanetary spacecraft missions, plus a few that orbit Earth.
- The DSN also provides radar and radio astronomy observations that improve our understanding of the solar system and the larger universe.
- DSN is what makes it possible for NASA to communicate with spacecrafts further away from the moon.

The DSN also supported ISRO during India's Chandrayaan-3 mission.

- **Sites** - The DSN consists of three facilities spaced equidistant from each other, approximately 120 degrees apart in longitude, around the world.
- These sites are at Goldstone, near Barstow, California; near Madrid, Spain; and near Canberra, Australia.
- **Working** - The strategic placement of these sites permits constant communication with spacecraft as our planet rotates.
- Before a distant spacecraft sinks below the horizon at one DSN site, another site can pick up the signal and carry on communicating.
- **Methods** - NASA has been enhancing the DSN's capacity by adding more dish antennas and upgrading the technology to support more spacecrafts and transfer more data from outer space.
- One of these new methods is laser or optical communications, which could send more data from longer distances.



References

1. [The Hindu - NASA's Deep Space Network turns 60](#)
2. [NASA - Deep Space Network](#)
3. [NASA - What is the Deep Space Network?](#)




Nicobar Pigeon

The Nicobar pigeon is hailed as one of the most beautiful pigeons in the world.

- **Habitat** - It is native to the Andaman and Nicobar Islands, the Malay Archipelago and some islands of Micronesia.
- **Features** - It is draped in a colorful plumage, with hues of green, blue, yellow and copper that explode into a bomb of colors in the sunlight.
- The bird's feathers are iridescent due to the many layers of keratin air sacs in the feathers.
- Females Nicobar Pigeons are smaller in size than their male counterpart.
- **Extinct birds** - DNA studies have shown that it is also the only living cousin of extinct birds like the dodo, the Rodrigues solitaire of Madagascar and the spotted green pigeon of the Pacific Islands.
- **Subspecies** - There are two subspecies of Nicobar Pigeon, one is endemic to Palau Island in the Pacific Ocean, and the other subspecies is found in all other parts of its range.
- **IUCN status** - This species is classified as Near Threatened in the IUCN Red List and listed in Appendix 1 of CITES as their numbers in the wild are on the decline.



Species closely related to Nicobar Pigeon

Dodo 	<ul style="list-style-type: none">• It is an extinct flightless bird that was endemic to the Island of Mauritius.• Dodos were large birds, approximately 3-feet tall.• Extinction reasons - Climate change and human behavior.
Rodrigues solitaire 	<ul style="list-style-type: none">• The Rodrigues solitaire is an extinct flightless bird genetically within the family of pigeons and doves.• It was endemic to the island of Rodrigues, in the Indian Ocean and most closely related to the extinct dodo of the subfamily Raphinae.
Spotted Green Pigeon 	<ul style="list-style-type: none">• The spotted green pigeon or Liverpool pigeon (<i>Caloenas maculata</i>) is a species of pigeon, which is extinct.• It is closely associated with Dodo, Rodrigues and Nicobar Pigeon.• It was first mentioned and described in 1783 by John Latham.

References

1. [Deccan Herald - Nicobar pigeon: The closest relative of the dodo](#)
2. [Business Standard - Nicobar pigeon as dodo's surrogate mother](#)
3. [WWF - Nicobar Pigeon](#)

International Year of Camelids

The United Nations has declared 2024 as the International Year of Camelids.

- **Objective** - It aims to build awareness of the untapped potential of camelids and to call for increased investment in the camelid sector, and the use of innovative practices and technologies.
- The decision to declare 2024 as the International Year of Camelids was made back in 2020.

According to the official website of the Food and Agricultural Organization (FAO), camelids influence the lives of millions of households in more than 90 countries.

- The report stated that this decision has been made as these animals contribute to food security, nutrition and economic growth for many communities around the globe.

Camelids

- **Group** - As a group Camelids include alpacas, Bactrian camels, dromedaries, guanacos, llamas, and vicuñas.
- The Camelidae family consists of the Old and New World camelids.
- The 3 Old World camelids (OW) are the dromedary, the domestic Bactrian camel, and the wild Bactrian camel.
- The lineage of New World camelids (NW) consists of the genus *Lama* and a separate genus *Vicugna*.
- **SDGs** - Camelids play an important role in meeting the Sustainable Development Goals (SDGs) envisaged by the United Nations.
- **Food security** - Camelids are a source of milk and meat, which helps people fight hunger.
- **Uses** - They also provide fibre, which can be used for clothing and shelter, used by people as a means of transportation, and provide organic fertilizer, which can be used in agriculture.
- **Climate change** - Moreover, Camelids are known to survive in harsh conditions and thus be ambassadors to raise awareness about climate change.

In the highlands of Andes mountain ranges and in the arid and semi-arid lands in Africa and Asia, camelids play a major role in the livelihood of the inhabitants.



References

1. [Hindustan Times - 2024 the International Year of Camelids](#)
2. [NDTV - 2024 As Year Of Camelids](#)
3. [Science Direct - Camelidae](#)

Kudankulam Plant

India, Russia sign pacts on future units of Kudankulam plant.

- The Kudankulam nuclear power plant (NPP) is located in Tamil Nadu.
- The nuclear power plant is built with the technical assistance of Russia.
- The construction began in March 2002.
- Since February 2016, the first power unit of the Kudankulam NPP has been steadily operating at its design capacity of 1,000 MW.
- The plant is expected to start operating at full capacity in 2027.
- The Kudankulam nuclear power plant is India's largest nuclear power plant.



References

1. [The Indian Express - India, Russia sign pacts on Kudankulam plant](#)
2. [Times of India - Russia ink pact on Kudankulam nuclear power plant](#)
3. [The Hindu - India, Russia ink pacts on Kudankulam nuclear plant](#)

E-Soil

Researchers have developed a new electronics soil that was found to increase the growth of barley seedlings by 50%.

- It is a novel method of soilless gardening or hydroponics using an electrically conductive growing medium.
- In hydroponic environments, eSoil is a low-power bioelectronics growth substrate that can electrically stimulate the root system and growth environment of plants.
- This novel substrate is not only environmentally friendly, but also offers a low energy, safe alternative to previous methods that required high voltage and non-biodegradable materials.

eSoil is being derived from cellulose and a conductive polymer called PEDOT.

- **Working** - When the roots of barley seedlings were electrically stimulated for 15 days, they showed a 50% increase in growth using eSoil.
- In hydroponics, plants are grown without soil, requiring only water, nutrients and a substrate, something for their roots to attach to.

Hydroponics is the technique of growing plants using a water-based nutrient solution rather than soil, and can include an aggregate substrate, or growing media, such as vermiculite, coconut coir, or perlite.

- This closed system allows water to be recirculated, ensuring that each seedling receives exactly the nutrients it needs.

- As a result, very little water is used and all the nutrients remain in the system, something that is not possible with conventional farming.

References

1. [The Indian Express - Electronic Soil](#)
2. [Business Today - Electronic Soil](#)
3. [Hindustan Times - What is e-Soil and how does it work?](#)

Other Important News

Eurasian otter (*Lutra lutra*)

- Eurasian otter discovered for the 1st time in the ***Chinnar Wildlife Sanctuary, Kerala*** recently.
- It is a ***semiaquatic carnivorous mammal*** that is native to Eurasia.
- They are shy and nocturnal and found near small streams in the interior forests and distributed through Europe, Asia, and Africa.



• Conservation Status

- IUCN - Near Threatened.
- CITES - Appendix I.
- Wildlife Protection Act, 1972 - Schedule II

Huntington's disease

- Huntington's disease (HD) is a rare, inherited disease that causes the progressive ***breakdown of nerve cells*** in the brain.
- It's also known as ***Huntington's chorea***. HD attacks areas of the brain that help to control voluntary movement, as well as other areas.
- Symptoms usually start between the ages of 30 and 50.
- No cure exists, but drugs, physiotherapy and speech therapy can help manage some symptoms.

Nandankanan Zoological Park (NZN)

- Nandankanan Zoological Park (NZN) is a zoo and botanical garden established in 1960 in ***Bhubaneswar, Odisha***.
- Nandankanan is India's first zoo to join the ***World Association of Zoos and Aquariums (WAZA)*** in 2009.
- Nandankanan is the first zoo in the World to breed ***White tiger and Melanistic tiger***.
- Nandankanan is the only conservation breeding centre of ***Indian Pangolins*** in the world.

Louis Pasteur

- Louis Pasteur (1822 - 1895) was a **French chemist and microbiologist** who is known for his discoveries in vaccination, microbial fermentation, and pasteurization.
- He is considered one of the first scientists to discover the role of microorganisms in disease and how vaccines can prevent sickness.
- He developed the vaccine against **Rabies**.

Aardvark (*Orycteropus afer*)

- The aardvark is a burrowing, nocturnal mammal native to Africa.
- The name aardvark comes from Afrikaans and means "**earth pig**" that hunts termites and ants at night.
- Aardvarks are found in **sub-Saharan Africa**, except for Namibia, Ivory Coast, Ghana, and Madagascar.
- **Conservation Status**
 - IUCN - Least Concern.



Talabira power project

- The NLC Talabira Thermal Power Project is a **2,400 MW** coal-based thermal power plant in **Odisha**.
- The project is a Non-National Infrastructure Pipeline (**NIP**) Central PSU Electricity Generation project.
- It will be an ultra-super critical thermal plant.
- The 2,400 MW is to be shared by Tamil Nadu 1,500 MW, Puducherry 100 MW, Karnataka 400 MW and Odisha 400 MW.

Indian SARS-CoV-2 Genomics Consortium (INSACOG)

- **Established by** - Ministry of Health and Department of Biotechnology, Council for Scientific & Industrial Research (CSIR) and Indian Council of Medical Research (ICMR).
- **Aim** - To assess SARS-CoV-2 Variants in India.
- To generate **Whole Genome Sequencing (WGS)** data of the virus which can be correlated with clinical epidemiological data for advanced preparedness for public health interventions.

Syn gas

- Synthesis gas (syngas) is a combustible mixture of **hydrogen and carbon monoxide**, often containing carbon dioxide and methane.
- It's primarily used to produce methanol or ammonia, and can also be used as a fuel.
- Syngas is derived from carbon-containing feedstocks like biomass, natural gas, heavy oil, and coal.

Agadagidi

- Agadagidi is a traditional alcoholic beverage in ***Nigeria*** made from fermented overripe bananas or plantains.
- The traditional process for preparing agadagidi involves microorganisms like yeasts and bacteria at various stages of fermentation.

Welfare board for Gig Workers

- The labour welfare and skill development department has constituted the Tamil Nadu Platform Based Gig Workers Welfare Board recently.
- It will cater to workers in e-commerce services including online food delivery and cab aggregators.

