# Prelim Bits 03-05-2024 | UPSC Daily Current Affairs

## Liquid Nitrogen in Food Products

*The Tamil Nadu government issued an advisory banning the use of liquid nitrogen in food and warned of stringent action against violators.*

- **Liquid Nitrogen** – An *inert, colourless, odourless cryogenic fluid* that has a very low ***boiling point of -196°C***, and is present as a *gas at room temperatures*.
- **Produced by** – Fractional distillation of liquid air.
- **Usage in food products** – To preserve food or to give a Smokey effect to foods.
- **Preservation principle** – Since nitrogen's *volume expands 700-times* when it evaporates, it *displaces the oxygen* in the food pack, *preventing microbial action* and preserving the freshness.
- The technique was useful in packing coffee, potato crisps, peanuts and peanut butter, milk products, cheese, and dried potatoes.

***Dragon's breath*** *is a cereal puff infused with liquid nitrogen that produces smoke-like vapour from the nose and mouth after it is eaten.*

- **Concerns** – Using liquid nitrogen at the point of sale poses a risk of accidental exposure to consumers.
- **Health Impacts** - Accidental contact exposure can cause *cryogenic burns or frostbite*.
- It can damage the lips, tongue, throat, lungs, and stomach.
- It may cause lesions or burn tissues.
- If it reaches the stomach, the organ could get perforated.
- In the lungs, it could *produce CO2* and the person could become unconscious.
- It could even prove fatal.
- **Government measures** – In 2017, Union Environment Ministry said that, it would investigate the addition of liquid nitrogen in food and drinks served in some restaurants.
- In 2024 The Tamil Nadu Food Safety Department issued a circular the substance can only be used to preserve packaged food.
    - It should be fully evaporated from the food or drinks before serving.
    - It also warned of stringent action, including fine and legal proceedings, if it is used for other purposes.

## Cryotherapy – Liquid nitrogen in cancer care

• **Treatment** – It has been used in the management of many *benign pre-cancers and cancers* wherein conventional surgery is not possible or can be used as an adjunct to conventional surgery.
• **Applicability** – In many cancers, including those of skin, bone, breast, cervical, eye, kidney, liver, lung, and prostate.
• **Working principle** – It is used to *freeze and destroy cancer cells* due to formation of intracellular ice crystals, which will eventually swell, blister, and crust out.
• It is also used to *obtain biopsies from cancer tissues* for molecular analysis and as *cryo-adhesion to remove foreign bodies*.

**References**


1. The Hindu| Usage of Liquid Nitrogen in Food products
2. The Hindu| Health Impacts of using Liquid Nitrogen in foods


## La Cumbre volcano & Land iguanas

*Lava spewing from volcano on Galápagos Islands destroying habitat of rare land iguanas.*

- **La Cumbre volcano** – It is located *on Fernandina Island*, the 3rd largest island *in the Galápagos Islands* and is located around 1,125 kms off mainland Ecuador.
- It measures 4,872 feet and occupies almost the entire island.

*The 19 Galapagos Islands, a UNESCO heritage site lie 1,000 km from the coast of Ecuador in the Pacific Ocean. According to UNESCO, it is known as the unique 'living museum and showcase of evolution' which helped Charles Darwin develop his theory of evolution by natural selection.*

- Currently, the lava flow had *made its way to the ocean* after covering a distance of nearly 10 kilometres from the fissure.
- **Impacts** – As Fernandina Island is *uninhabited*, there is no risk to people or infrastructure.
- But it is home to a large population of rare land iguanas which nest and lay eggs on the rim of the volcano's large crater or caldera and deep within it.
- Thus lava flow has *damaged the island's endemic vegetation*, including the habitat of the land iguanas and its flow into the ocean could potentially *damage marine life*.

## Land iguanas

- It is one of three species of the genus Conolophus.
- **Scientific name** – Conolophus subcristatus
- **Habitat** – It is ***endemic to the Galápagos Islands***, in the dry lowlands of the islands of Fernandina, Isabela, Santa Cruz, North Seymour, Baltra, and South Plaza.
- **Morphology** – They are *yellow* coloured reptiles, which mostly eat the fruit and leaves of the prickly pear cactus.

- **Growing conditions** – Being *cold-blooded*, they absorb heat from the sun by basking on volcanic rock, and at night sleep in burrows to conserve their body heat.
- **Life style** – Terrestrial, burrowing, oviparous and precocial
- **Symbiotic relationship with birds** – The birds remove parasites and ticks, providing relief to the iguanas and food for the birds.
- **Protection status**
    - **IUCN** – *Vulnerable*

**References**


1. WION| La Cumbre Volcano Eruption
2. Animalia| Land Iguanas


# Cannibalism

*Papua New Guinea Prime Minister James Marape, last week, criticised United States President Joe Biden for implying that his uncle was eaten by cannibals in New Guinea during World War II.*

- An act of *consuming another individual of the same species* as food.
- **Existence** – In Darwinian terms, all species have a fundamental imperative towards survival and propagation.
- There are evidences of cannibalism across the natural world, from *single-celled organisms, to dinosaurs, to polar bears, to humans*.
- **In humans** – It is followed among some tribes based on their local environmental conditions.
- **Types** – Paleoanthropologist Carole A Travis-Henikoff explained in her book Dinner with a Cannibal (2008) regarding various types.
- **Survival cannibalism** – It is due to starvation.
- **Endocannibalism** – It is ingestion of *dead relatives*, also known as funerary cannibalism.
- **Exocannibalism** – It refers to the *eating of one's enemies* like the Korowai tribes, also known to address skewed sex ratios.
- **Religious' cannibalism** – It relates to the *actual or simulated* partaking of human flesh as part of a religious rite.

## Cannibalism in Papua New Guinea

*The cannibal stereotype has been used historically to justify the excesses of European colonialism.*

- **The Korowai tribe** - They live in the Indonesian province of Papua, numbered between 2,000 and 4,000.
- They inhabit treehouses, possess limited factory-made commodities such as cotton clothing and also practice cannibalism.

- **Belief** – Unaware of deadly germs, they believe that some deaths must be caused by khakhua, or witches who take on the form of men.
- So, when a member of the tribe dies, his or her male relatives kill the khakhua responsible (the dying person names him) and then they eat him.
- **The Fore people** – They live in the highlands of Papua New Guinea, approximately 20,000 individuals (today).
- **Belief –** They consumed human flesh ***as part of mortuary rituals*** till 1960s by believing that it was an act of love and grief.

***Fore*** *is an act of mourning.*

- **End** - They stopped consuming human flesh in the 1960s after they discovered that it was the cause for the spread of a deadly disease called kuru (literally "shivering" or "trembling").
- The incidence of kuru has now declined, and no Fore has succumbed to the illness since 2010.

*The disease 'kuru' later identified as a form of transmissible spongiform encephalopathy was annually killing as many as 200 Fore in the mid-20$^{th}$ century.*

**Reference**

The Indian Express| Cannibalism in Papua New Guinea Tribes

## Shaksgam Valley

*India protests Chinese road construction at Shaksgam Valley.*

- **Issue** – Recent satellite images show that China is building a road into the lower part of the valley, which faces the Siachen glacier.

***The Siachen glacier****, the world's highest battlefield, is a piece of Indian Territory wedged between China and Pakistan. In Balti language 'Siachen' means "land of roses'.*

- **Status** – It is a *part of Pakistan Occupied Kashmir* (PoK), and was *ceded by Pakistan to China* in 1963, a year after the India-China war in 1962.

- **India's claim** – It is a part of the territory of India as it have never accepted the *China Pakistan Boundary Agreement of 1963* through which it unlawfully attempted to cede the area to China.

- **China's threat** – A massive build-up and deployment along the Line of Actual Control, especially in eastern Ladakh by China threatens India in Depsang and Daulat Beg Oldie (DBO).

**Reference**

The Hindu| China's Road construction in Shaksgam Valley

## G7 & its coal targets

*The recent Group of Seven (G7) energy ministers meeting in Turin, Italy in 2024 agreed on ending coal-powered fire plants.*

| **Group of Seven (G7)** |
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| • It is an *informal group* of leading industrialized nations.<br>• **Established in** – *1975*, in response to the oil crisis.<br>• **7 Members** – Canada, France, Germany, Italy, Japan, the United Kingdom and the United States.<br>• The European Union, which has observer status, is excluded from the rotating chairmanship.<br>• **Summit** – The presidency of G-7 summits revolves among the 7 members, *Italy holds the presidency in 2024* (Japan in 2023).<br>• **Participants** – As is customary in recent years, leaders from some *non-G-7 countries* and international organizations will also participate in some sessions as *India did in 2023 summit*.<br>• **Discussion** – On a wide range of issues, including economic policy, security, climate change, energy and gender. |

*Russia joined G7 to form the G8 in 1998 but was expelled after Moscow's 2014 annexation of Crimea.*

- **G7's Coal target** – To *end the use of coal* in power generation "during the ***first half of (the) 2030s***.
- **Need** – There is a need to bring the carbon emissions down 50% by 2030 and to zero by 2050 to avert 1.5C warming of the planet.
- **Challenges** – However, it *included an alternative goal* of phasing out coal-fired power plants "in a *timeline consistent with keeping a limit of a 1.5°C temperature* rise within reach, in line with countries' net-zero pathways".

*Intergovernmental Panel on Climate Change (IPCC) recommends that global coal use "has to fall by 67-82% by 2030 for a 50 per cent chance of meeting the 1.5°C target".*

- It may allow the countries to extend the phase-out timeline past the 2030s as well.

**References**

1. The Indian Express| G7 on Phasing down Coal Plants
2. G7| Group of 7 Countries