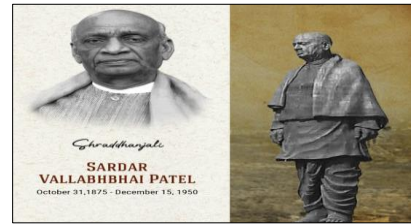


## Sardar Vallabhbhai Patel

### ❖ Context

- The **National Unity Day** or **Rashtriya Ekta Diwas** is celebrated every year on October 31st to commemorate the birth anniversary of India's first Home Minister, **Sardar Vallabhbhai Patel**.



### ❖ Key Highlights

- This year marks the **147th anniversary** of **Sardar Vallabhbhai Patel**.
- National Unity Day was **first celebrated in 2014**.
- **Statue Of Unity** :
  - Statue Of Unity is **dedicated to Patel**.
  - It was **inaugurated in 2018**.
  - It is the **world's tallest Statue of Unity**, with a height of 182 meters.
  - The statue symbolises national, spiritual, historical and academic value.
  - It was listed in the Shanghai Cooperation Organisation's "**Eight Wonders**" in **January 2020**.
- ❖ **Sardar Vallabhbhai Patel**
  - **Date and Place of Birth**- 31 October 1875, Nadiad, Gujarat, India.
  - **Death** - December 15, 1950, Bombay [now Mumbai], Maharashtra, India (Age 75).
  - **Post- 1st Deputy Prime Minister of India** (15 August 1947 – 15 December 1950).
    - **Home Minister** (15 August 1947 - 15 December 1950).
  - He is known as the **Iron Man** of India and **Bismarck of India**.

- Vallabhbhai Patel was given the title of '**Sardar**' by the women during **Bardoli Satyagrah 1928**.
- **Modern All India Services** was founded by him.
- He was awarded the highest civilian award of India, '**Bharat Ratna**' posthumously (1991).
- ❖ **Contribution to India's Independence Movement**
  - He offered to lead the **Kheda campaign (1918)** against peasant taxation.
  - Patel backed Gandhi when he declared the **non-cooperation movement** in 1920, and he worked relentlessly to organise it.
  - Patel led the **Satyagraha Movement** in Nagpur in 1923 against the British law of banning the hoisting of the Indian Flag.
  - Patel also led the **Bardoli Satyagraha** in 1928.
  - During the 1930 **Salt Satyagraha**, Patel was sentenced to three months imprisonment.
  - Sardar Patel actively participated in the **Civil Disobedience Movement** and was arrested during the **Dandi March (1930)**.
  - Sardar Vallabhbhai Patel was chosen President of the INC in Karachi in 1931.
  - During **Quit India Movement (1942)**, Sardar Patel was arrested and imprisoned from 1942 to 1945 at the fort in Ahmednagar.
  - Sardar Patel, was **instrumental in the union of 565 princely kingdoms** into the Indian Union.

## Tiangong Space Station

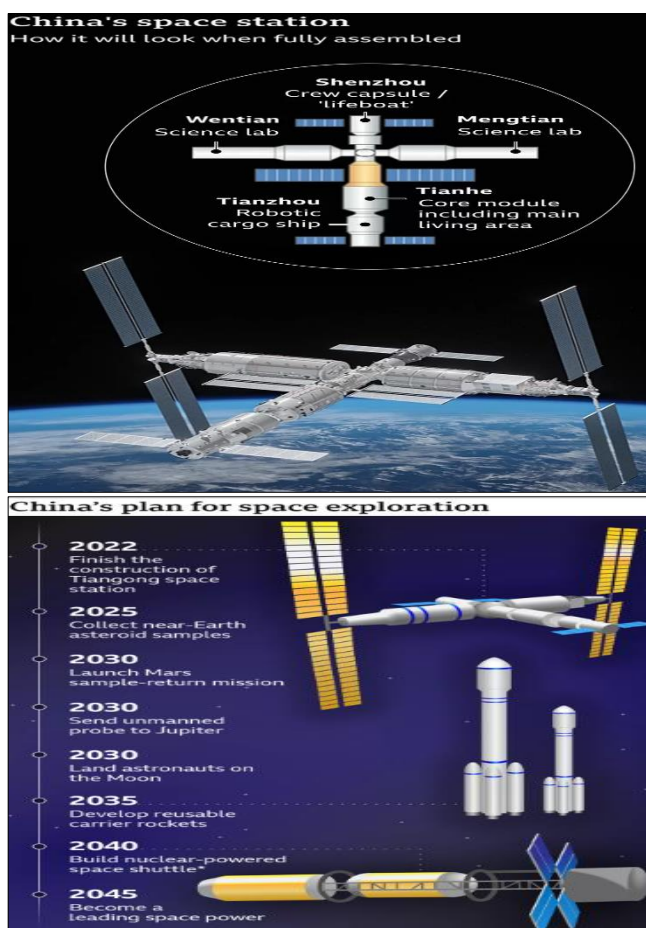
### ❖ Context

- Recently, **China launched the last of the three modules** that will comprise its **space station** (Tiangong).



### ❖ Key Highlights

- The uncrewed **Mengtian** ("Dreaming of the Heavens") module was launched atop China's most powerful rocket.
- The new experiment module joins **two earlier modules: the Tianhe core module & Wentian experiment module**.
- They collectively known as **Tiangong**, or "Celestial Palace."
- It is set to be the **second permanently inhabited outpost** in low-Earth orbit after the NASA-led International Space Station.



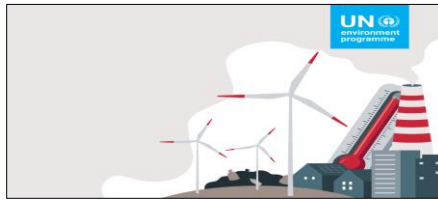
### ❖ Tiangong Space Station

- Tiangong space station, or "Heavenly Palace", is China's new permanent space station.
- It was **launched on September 15, 2016**.
- In late 2016, hosted two Chinese astronauts for 30 days in what was China's longest manned space mission so far.
- The station will have its **own power, propulsion, life support systems and living quarters**.
- It is also designed to provide refuelling power to China's new space telescope, called **Xuntian**, which will fly close to the space station next year.
- The space station **will operate in low-Earth orbit** at an altitude of **340-450 km** above Earth's surface.
- China is **only the third country in history** to have put both astronauts into space and to build a space station, after the Soviet Union (now Russia) and the US.

## Face to Face Centres



**Emissions Gap Report (EGR) 2022**



**Context**

The United Nations Environment Programme (UNEP) released the 13th edition of the report recently.

**About the report**

- Since 2010, it is launched annually ahead of the UN Climate Change Conference of the Parties (COP).
- It provides a scientific assessment of the gap between
  - Estimated future global greenhouse gas (GHG) emissions if countries implement their climate mitigation pledges, and
  - Where they should be to avoid the worst impacts of climate change.
- It is co-produced by UNEP, the UNEP Copenhagen Climate Centre (UNEP-CCC) and partners.

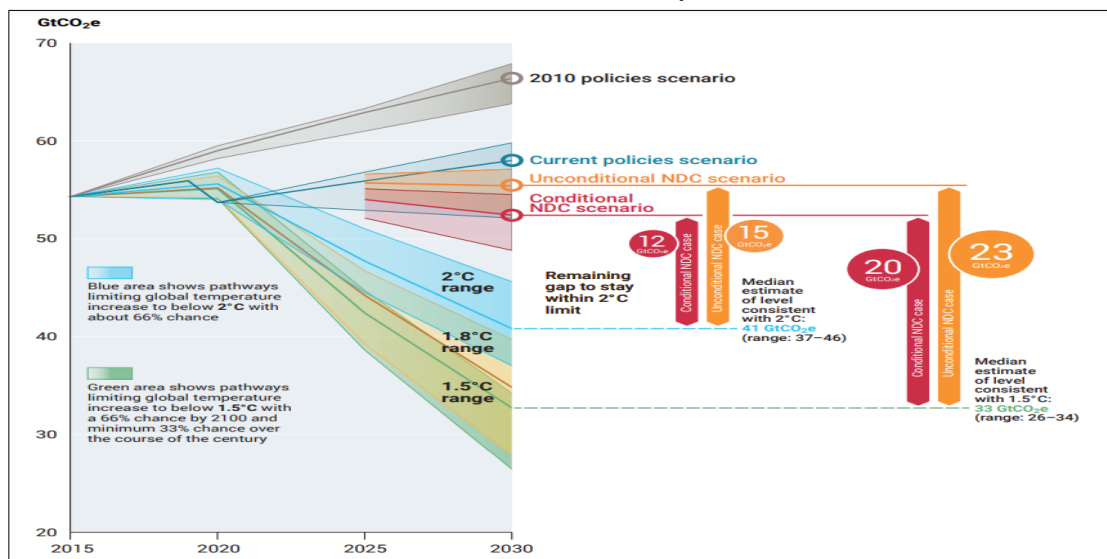
**Key Highlights of the report**

- Updated national pledges since COP26 – held in 2021 in Glasgow, UK – make a negligible difference (1%) to predicted 2030 emissions.
- Policies currently in place point to a 2.8°C temperature rise by the end of the century.
- Implementation of the current pledges will only reduce this to a 2.4-2.6°C temperature rise by the end of the century.
- The report recommends a 45% cut in greenhouse gases emissions by 2030 for limiting temperature rise by 1.5°C & 30% for 2°C.

- The report calls for rapid transformation of the electricity supply, industry, building, transportation, finance system and food system.
- Cultivation of paddy accounts for roughly 8% of human-linked emissions.

**Role of Livestock Emissions**

- Emissions from livestock mainly include carbon dioxide (from urea), nitrous oxide (from livestock dung and urine), and methane (from belching) among others.
- The process of cow belching releases more methane into the environment due to enteric fermentation.
- It is a digestive process where complex sugars are converted into simpler molecules producing methane as a by-product.
- New Zealand has recently planned to tax agricultural emissions, which includes those from livestock burps and waste.



**Anti-superstitions Laws in India**

**Context**

Two women had been recently killed in Pathanamthitta district of Kerala as part of “ritualistic human sacrifices”.



**Prevalence of Such Killings in India**

- As per the 2021 report of the National Crime Records Bureau (NCRB), 6 deaths were linked to human sacrifices, while witchcraft was the motive for 68 killings in 2021.
- The maximum number of witchcraft cases were reported from Chhattisgarh (20), followed by Madhya Pradesh (18) and Telangana (11). Kerala saw two cases of human sacrifice.

**Status of Central and State Laws to Deal with Superstitious beliefs, Black Magic and Sorcery**

- In India, there is no central law that exclusively deals with crimes related to witchcraft, superstition, or occult-inspired activities.
- In the absence of a nationwide legislation, a few States have enacted laws to counter witchcraft and protect women from deadly ‘witch-hunting’.

- Bihar was the first State to enact a law in 1999 to prevent witchcraft, identification of a woman as a witch and “eliminate torture, humiliation and killing of women.”
- Other states are Jharkhand, Chhattisgarh, Odisha, Maharashtra, Assam & Karnataka.

**THE LAW ADDRESSES ACTS SUCH AS**

|   |   |
|---|---|
| <b>Beating or sexually abusing a person on the pretext of exorcising ghosts or evil spirits</b>   | <b>Displaying/advertising ‘miracles’ and using them to make money by deceiving, defrauding and terrorising people</b>                           |
| <b>Claiming to have to supernatural powers to help people find for precious goods or secret treasures by way of witchcraft</b>                            | <b>Creating an impression that a person with a mental disorder has supernatural powers and using them to make money</b>                         |
| <b>Seeking sexual favours by claiming to be an incarnation of a holy spirit and pretending to have had a relationship with him or her in a past life.</b> | <b>Prohibiting and preventing a person from taking medicines for a dog, snake or scorpion bite and instead treating him or her with mantras</b> |

**Face to Face Centres**



## Electromicrobial Production & SAF



### ❖ Context

- A recently published study has highlighted a new technology, electromicrobial production (EMP), to produce more environment friendly, 'drop-in sustainable aviation fuels' or SAF, as an alternative to Aviation Turbine Fuel (ATF).

### ❖ Background

- ATF is basically a **kerosene** that emits huge amounts of greenhouse gases during flying.
- 'Drop-in sustainable aviation fuels' or SAF, are **plant based fuels**, where 'drop-in' refers to functional similarity to fossil fuels.
- The first-generation SAF is useless because it is made from edible oils needed for food.
- The third-generation SAF, produced from photosynthetic algae, emits more greenhouse gases than it saves.
- Therefore, the **second-generation SAF** - produced from jatropha, castor, pongamia pinnata and so on - is the one under consideration.

### ❖ Conventional Process

- The conventional process for producing second-generation SAF is known as **HEFA** ( hydroprocessed esters and fatty acids).
- It calls for the removal of oxygen present in fatty acids in plant oils, by adding hydrogen.
- Problems with the process -
  - Hydrogen production needs energy.
  - Land-use change needed to grow crops.
  - The water and fertiliser consumption.
  - Overall, SAF is two to five times costlier than ATF.

### ❖ About the New Process

- It is the production of hydrocarbons using electrically powered microbes employing fatty acid synthesis-based production of alkanes.
- These microbes have an **extraordinary ability to manufacture organic compounds using electricity as the primary source of metabolic energy**.
- This process uses light, atmospheric carbon dioxide and electricity.
- Traditionally, engineered cyanobacteria are used for microbial production, but they are difficult to engineer.
- The study points to a better microbe, **Vibrio natriegens**, capable of '**extracellular electron uptake**' (EEU).
- There are two ways of getting microbes to produce biomass.
  - **Hydrogen oxidation**, where the microbes consume hydrogen to produce biomass.
  - **EEU**, which involves delivery of electrons into cells, either through a diffusible intermediary such as water-soluble quinones, or through direct electrical contact with an anode.

## News in Between the Lines

### Myositis



### ❖ Context

- Recently, a **Southern superstar Samantha Ruth Prabhu** joined a league of popular icons to share their health condition as she made a social media post on how she was recovering from myositis.

### ❖ Myositis

- **About :**
  - Myositis refers to the **inflammation of the muscle**.
  - It is basically an **autoimmune disorder** where the body immunity can injure a muscle from outside or get inflamed, causing injury.
  - In the initial stages, the person has **difficulty in walking** but more than that, there is **difficulty in getting up from the sitting position** or changing sleep positions in bed.
  - The disease can also **affect the respiratory system** if not attended on time and can lead to breathing problems.
  - **Around 4-22 cases per one lakh population**. Myositis can affect both children and adults. Women are more likely to be affected.
- **Causes :** A common viral infection, commonly called cough and cold, can trigger some types of myositis.
  - Certain bacteria and some cardiovascular drugs can trigger muscle myositis.
- **Prevention :** The only preventive practices one could take is to avoid alcohol and cocaine consumption.

### Amur Falcons

### ❖ Context

- Amur falcons began to **arrive in Manipur after travelling over 20,000 km**.

## Face to Face Centres



## Amur Falcons



### ❖ Key Highlights

- Amur Falcons locally known as **Akhuipuina**.
- Amur falcons are the **world's longest traveling raptors**.
- They start traveling with the onset of winters each year.
- **Scientific Name** - Falco Amurensis.
- The bird arrives mainly in Manipur and Nagaland on its southbound migration from **breeding grounds in North China, Eastern Mongolia and far-east Russia** en-route to its wintering grounds in **South Africa**.
- The one-way journey via India is about 20,000 km long and **the birds do this twice a year**.
- They **spend three-four weeks** in many parts of Manipur to build fat reserves by preying on termites that emerge around this time.
- **Conservation Status** :
  - **Wildlife Protection Act 1972**- Schedule IV.
  - **IUCN Red List**- Least Concern.

## Miyawaki Forest



### ❖ Context

- Recently, the PM of India inaugurated a '**Miyawaki**' forest in Gujarat's Ekta Nagar.

### ❖ About Miyawaki Forest

- The forest has been **developed using the technique pioneered by Japanese botanist Akira Miyawaki**, which helps build dense, native forests in a short span of time.
- Through the Miyawaki method, a **forest can be developed in just two to three years** while it takes at least 20 to 30 years through the traditional method.
- The **growth of plants is ten times faster** using this method and as a result, the forest developed is thirty times denser.

## Bio-village



### ❖ Context

- The PM lauded Tripura's initiative, Bio village 2.0, in his 'Mann ki baat'.

### ❖ Key Highlights

- Bio villages is a human-centred sustainable rural development concept.
- It adopts the principle of "**do ecology**," which involves conservation and enhancement of bioresources and creation of on-farm, off-farm, and nonfarm livelihoods and enhances access to food and nutrition security.
- **Tripura** became the first state in India to have the first modified bio-village, **Daspara**, Sepahijala District. The state aims to set up a total of 100 bio villages.
- The Tripura government provided biogas plants, solar-powered pumps, biofertilizers and other devices to the families in the village and trained them in their use and maintenance.
- A bio-village 2.0 emphasises on how to minimise the damage caused by natural disasters.

## Toxic Foam in Yamuna



### ❖ Context

- In the run-up to the Chhath Pooja festival, a controversy erupted regarding the quality of water in the Yamuna river in Delhi and silicone defoamers being used.

### ❖ Key Highlights

- The reason behind the foaming is usually the presence of **phosphates** from detergents, and **anaerobic bacteria** in the water.
- The sources are untreated sewage, industrial effluents, organic matter from decomposing vegetation released from Delhi, Haryana and UP.
- The river is in lean phase during this time of the year and therefore pollutants are not diluted, causing foaming.
- Typically, defoamers are **inert chemicals** used in industries to control the foams.
- They are composed of a **liquid**, such as mineral oil or silicone, and a **hydrophobic solid**, such as hydrophobic silica, ethylene-bis-stearamide, fatty acid, and/or fatty alcohol.
- An effective defoamer **must be insoluble in the medium** it is defoaming.

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## Face to Face Centres

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