

National Green Hydrogen Mission

❖ Context

- Union Minister of Ports, Shipping and Waterways recently said that as per the **National Hydrogen Mission** of the country, Green Hydrogen/Ammonia bunkers and refuelling facilities will be established in all major ports by 2035.

❖ Key Highlights

- The National Green Hydrogen Mission was approved by the Union Cabinet on **4 January 2022**, with the intended objectives of:
 - Making India a **leading producer and supplier of Green Hydrogen** in the world
 - Creation of export opportunities for Green Hydrogen and its derivatives.
 - **Reduction in dependence** on imported fossil fuels and feedstock.
 - Development of **indigenous manufacturing capabilities**.
 - **Attracting investment** and business opportunities for the industry.
 - Creating opportunities for employment and economic development Supporting R&D projects.
- The mission **outcomes projected by 2030** are:
 - The development of green hydrogen production capacity of at least **5 MMT (Million Metric Tonnes) per annum**.
 - An associated renewable energy capacity addition of **about 125 GW in the country**.

EXPECTED OUTCOMES BY 2030

➤ Development of green hydrogen production capacity of at least 5 MMT (million metric tonne) per annum	➤ Creation of over 6 lakh jobs
➤ An associated renewable energy capacity addition of about 125 GW	➤ Cumulative reduction in fossil fuel imports by over ₹1 lakh crore
➤ Over ₹8 lakh crore in total investments	➤ Abatement of nearly 50 MMT of annual greenhouse gas emissions

- Over Rs. **8 lakh crore in total investments**.
- Creation of over **Six lakh jobs** Cumulative reduction in fossil fuel imports over Rs. One lakh crore.
- Abatement of nearly **50 MMT of annual greenhouse gas emissions**.

❖ Significance of Green Hydrogen

- Green hydrogen can achieve cost parity with natural gas-based hydrogen (grey hydrogen) by 2030, if not before.
- Green hydrogen will be necessary to achieve a truly low-carbon economy.
- It will enable the emergence of a domestically produced energy carrier that can reduce the dependence on imports for key commodities like natural gas and petroleum.

❖ Types of Hydrogen Based on Extraction Methods

- Depending on production methods, hydrogen can be grey, blue or green and sometimes even pink, yellow or turquoise Image.
- **Green Hydrogen:**
 - Hydrogen is one of the most **abundant elements** on earth for a cleaner alternative fuel option.
 - Green hydrogen is **produced by splitting water into hydrogen and oxygen using an electrolyzer** powered by electricity from green energy sources such as wind and solar.
 - When burnt, it gives out water vapour, with **no residue or climate-harming impact**.
 - Hydrogen and fuel cells can provide energy for use in diverse applications, including distributed or combined-heat-and-power; backup power; systems for storing and enabling renewable energy; portable power etc.
- **Grey Hydrogen:**
 - It is produced via coal or lignite gasification (black or brown), or via a process called steam methane reformation (SMR) of natural gas or methane (grey).
 - These tend to be mostly carbon-intensive processes.
- **Blue Hydrogen :**
 - It is produced via natural gas or coal gasification **combined with carbon capture storage (CCS) or carbon capture use (CCU) technologies** to reduce carbon emissions.

Color	GREY HYDROGEN	BLUE HYDROGEN	TURQUOISE HYDROGEN*	GREEN HYDROGEN
Process	SMR or gasification	SMR or gasification with carbon capture (85-95%)	Pyrolysis	Electrolysis
Source	Methane or coal	Methane or coal	Methane	Renewable electricity

Note: SMR = steam methane reforming.
* Turquoise hydrogen is an emerging decarbonisation option.

Face to Face Centres



Pygmy Hog

❖ Context

- African Swine Fever (ASF) is a disease that has killed many pigs in Asia since 2018 and it could also harm pygmy hogs.



❖ Key Highlights:

- The pygmy hog is an extremely **rare wild pig species** and is also the smallest in the world.
- It is the only known member of its genus, called **Porcula**, and there are likely only 200-300 of them remaining in the wild.
- Despite their small size, standing only **20-30cm tall**, they are still considered to be a type of pig and belong to the **Suidae family**.
- The IUCN has listed Pygmy Hogs as **Critically Endangered**.
- It is also listed in **Schedule I** of the Indian Wildlife (Protection) Act, 1972.

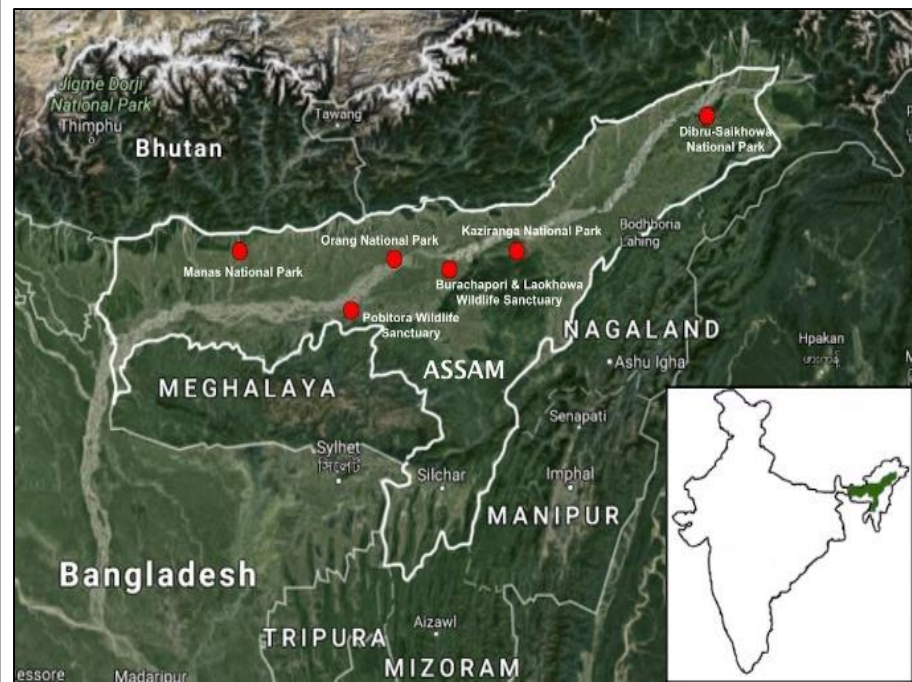
❖ Habitat:

- It is found mainly in India, Nepal and Bhutan.
- The pygmy hog is typically found in dense, tall grasslands where they feed on a variety of food sources, including **roots, tubers, insects, rodents, and small reptiles**.
- They have a **seasonal breeding pattern** before the arrival of monsoons and typically give birth to **litters of three to six offspring**.
- Unlike boars, who only build nests for breeding purposes, pygmy hogs live in the grass-built nests **throughout the year**.
- They are important to their ecosystem as **they help to disperse seeds** and maintain the soil quality, and they are also culturally significant to local communities.

❖ About African Swine Fever:

- African Swine Fever (ASF) is a highly contagious viral disease that affects pigs.

- It is caused by the African Swine Fever virus and is spread through **direct contact with infected pigs, ingestion of contaminated food or water**, or through ticks.
- The disease is characterized by symptoms such as **high fever, loss of appetite**, weakness, and haemorrhages on the skin and internal organs.
- ASF does not pose a risk to human health, but it can have devastating consequences for pig populations and the pig farming industry.
- There is currently no cure or vaccine for ASF.



Lithium

❖ Context

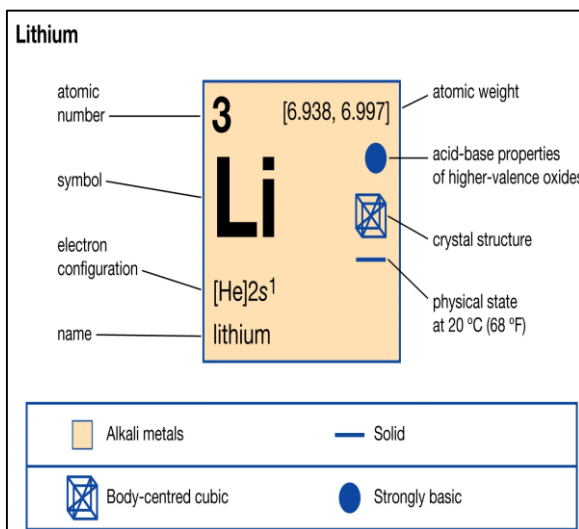
- Recently, Chile's President Gabriel Boric announced plans for the state to take a **majority stake in the country's lithium industry**, sending shock waves through the new energy metals sector.

❖ Key Highlights

- A state-run lithium company will be set up to take control from private players.
- Any new **lithium contracts will only be issued as public-private partnerships with state control**.
- Notably, current contracts will not be terminated.
- The reason behind this decision is two-fold: to boost its economy and protect its environment.
- In recent years, Chile has struggled to keep up with the rising demand for lithium as countries transition to green energy.
- It dropped to the second spot on the list of the largest lithium producers in the world in 2017 — Australia jumped to the number one spot — and is poised to slip to the third position by 2028.

❖ About Lithium

- It is a **chemical element** which is a soft, **silvery-white metal**.
- Under standard conditions, it is the **lightest metal** and the lightest solid element.

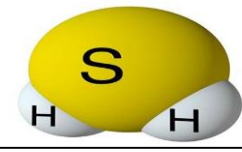


- It has the lowest density of all metals.
- It is **highly reactive and flammable**, and must be stored in mineral oil.
- The most important use of lithium is in **rechargeable batteries for mobile phones, laptops, digital cameras and electric vehicles**.
- **Australia, Chile, China and Argentina** are the world's top four lithium-producing countries.

- As of now, **India currently imports all its lithium needs**.
- The Department of Atomic Energy, Government of India has discovered 1600kg Lithium in Mandla district of Karnataka.

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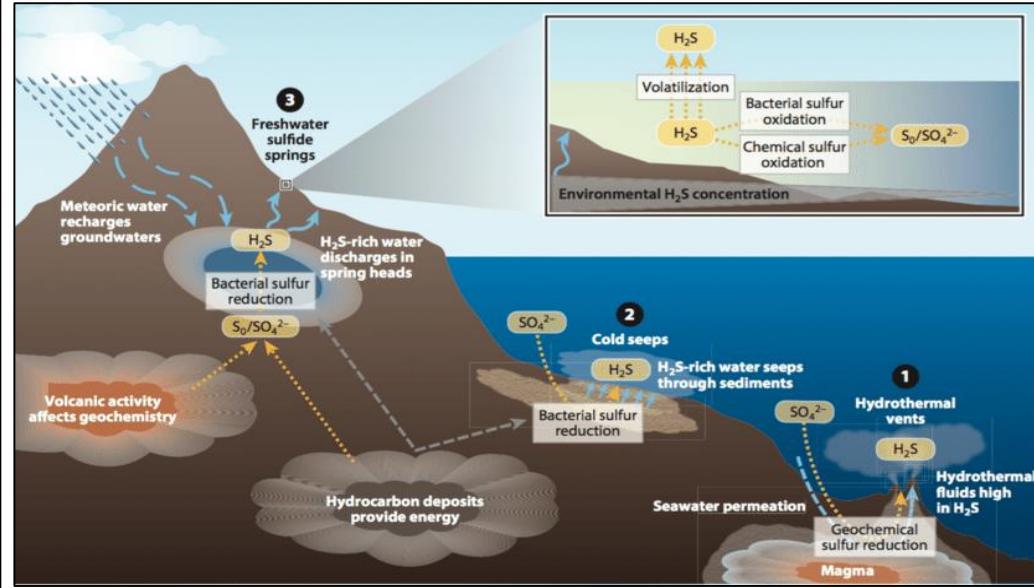
Hydrogen Sulphide

❖ Context

- Recently eleven people, including three children, died after allegedly inhaling toxic gas in Ludhiana.

❖ Key Highlights:

- Hydrogen sulphide, a colorless gas also called sewer gas, is a poisonous gas that smells of rotten eggs and can lead to fast unconsciousness and death.
- It is a toxic and **flammable gas** that is commonly found in natural gas, crude oil, and volcanic gases.
- It can be produced naturally by the breakdown of organic matter, and is also a **byproduct of industrial processes** such as refining of crude oil and the production of paper and textiles.
- At low levels, it is not harmful to humans and has various industrial applications, such as in the production of sulfur and in the **manufacture of pharmaceuticals**.



Cham Dance

❖ Context

- During their visit to Leh in Ladakh, the Y20 delegates had the opportunity to witness the famous Cham dance at the **Hemis Monastery**.



❖ About Cham Dance:

- Cham dance, also known as Cham dham or simply Cham, is a traditional form of dance performed in the Himalayan region, particularly in **Tibet, Bhutan, Nepal, and parts of India**.
- The dance is usually performed by **Buddhist monks** and is accompanied by music played on **traditional instruments** such as long horns, cymbals, and drums.

- Cham dance is often performed during **religious festivals** and has both spiritual and **cultural significance**.
- The performers wear intricate **costumes and masks**, which represent different deities, demons, and animals.
- The dance is considered a **form of meditation** and is believed to have the power to ward off evil spirits and bring blessings and good luck.

News in Between the Lines

Project 15B



❖ Context

- The Imphal, the third indigenous stealth destroyer of the Indian Navy's Project 15B class, has successfully completed its maiden sea trial.

❖ About Project 15B:

- The Project 15B class is a follow-on of the Project 15A, and was initiated in 2011 to build four **guided indigenous stealth missile destroyers**.
- These ships are **163 meters long, 17 meters wide**, and have a displacement of 7400 tonnes when fully loaded, with a maximum speed of 30 knots.
- Equipped with **BrahMos supersonic cruise** missiles and long-range surface-to-air missiles, they also have several indigenous weapons systems such as medium-range SAMs, indigenous torpedo tube launchers, anti-submarine indigenous rocket launchers, and a **76-mm super rapid gun mount**.

Painted Storks



❖ Context

- One of the largest flocks of Painted Storks, consisting of approximately 4,000 birds, has made tall trees in Veepapuram and Venkatapuram villages in Chilamathur mandal of Sri Sathya Sai district their breeding ground.

❖ Key Highlights:

- The painted stork (**Mycteria leucocephala**) belongs to the family, Ciconiidae. The painted stork is a large wading bird of stork family.
- These birds are widely distributed over the plains of Asia.
- The International Union for Conservation of Nature (IUCN) status: **'Near Threatened'**.
- The painted stork is a large bird, measuring 90 to 100 cm in length and weighing **2,000 to 3,500 grams**. They have a wingspan of about **150 to 160 cm**. They have a long heavy yellow beak with a down curved tip.

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Company Limited by Guarantee

Limited by Guarantee vs Limited by Shares



- The Painted Stork is a colorful bird species that primarily inhabits wetlands in the plains of South and Southeast Asia.

❖ Context

- The Union Ministry of Fisheries, Animal Husbandry & Dairying approved a Rs 2 crore subsidy to Youth Rural Entrepreneur Foundation, a company limited by guarantee, allegedly run by 'conman' Sanjay Prakash Rai Sherpuria.
- Sherpuria was arrested this week for cheating people and collecting money by flaunting dubious "connections" in the government.

❖ About Company Limited by Guarantee

- A company limited by guarantee is one in which, **if the company goes bankrupt, those running it only have to pay a sum they had guaranteed to pay when it was set up.** Put very simply, **such a company has no shareholders, but is owned by a group of people called members or guarantors.**
- When coming together to form the company, these members pledge to pay a certain amount — usually not a large amount — in case it is wound up.
- Their liability, if the company fails, is limited to this amount.
- Usually, this structure is put in place for charitable organisations and non-profits, where any profit earned by the company is re-invested into the business.
- The members or guarantors can seek donations and funds in the name of the company, but if it fails, they are shielded from the debts it may have accrued.

Psychedelics



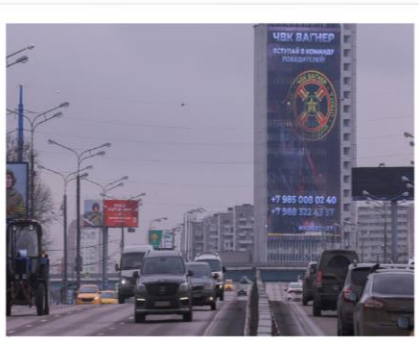
❖ Context

- Psychedelic substances have reinvigorated clinical and research interests, and have added to psychiatry's ever-expanding therapeutic armamentarium.

❖ Psychedelics

- Psychedelics are a **group of drugs that alter perception, mood, and thought processing while a person is still clearly conscious.**
- Usually, the person's insight also remains unimpaired.
- Psychedelics are non-addictive and non-toxic.
- Compared to illicit drugs, psychedelics cause much less harm to the end user.
- The two **most commonly used psychedelics are d-lysergic acid diethylamide (LSD) and psilocybin.**
- Less common ones include :**
 - Mescaline, found in the North American peyote cactus (Lophophora williamsii)
 - N,N-dimethyltryptamine, the principal component of the South American ceremonial sacrament ayahuasca.
- Researchers have also developed synthetic psychedelics.
- In India, the **Narcotic Drugs and Psychotropic Substances Act 1985** prohibits the use of psychedelic substances.
- Ketamine**, a dissociative anaesthetic with psychedelic properties, is used under strict medical supervision, for anaesthesia and to treat treatment-resistant depression.

Wagner Group



❖ Context

- After fighting erupted in Sudan's capital Khartoum on April 15, 2023 questions have been raised over the **involvement of the Wagner group**, which has been active in African countries for years.

❖ About Wagner Group

- The Wagner group is a Russian paramilitary organisation headed by Yevgeny Prigozhin.
- Though it has been **reportedly engaged in counter-militancy operations** in Africa, its involvement is believed to have a more extensive scope covering political, economic and military fields. There have also been reports of the group **supplying arms and weapons, and training regional forces in fighting jihadist threats.**
- Despite its involvement in the Russia-Ukraine war, the Wagner group's presence in Africa has continued. By siding with the domestic actors in a civil war situation, the group's actions have impacted the democratic process in Africa.
- Additionally, the West has been raising concerns over human rights violations and abuse of civilians related to the Wagner group's presence in Africa.

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