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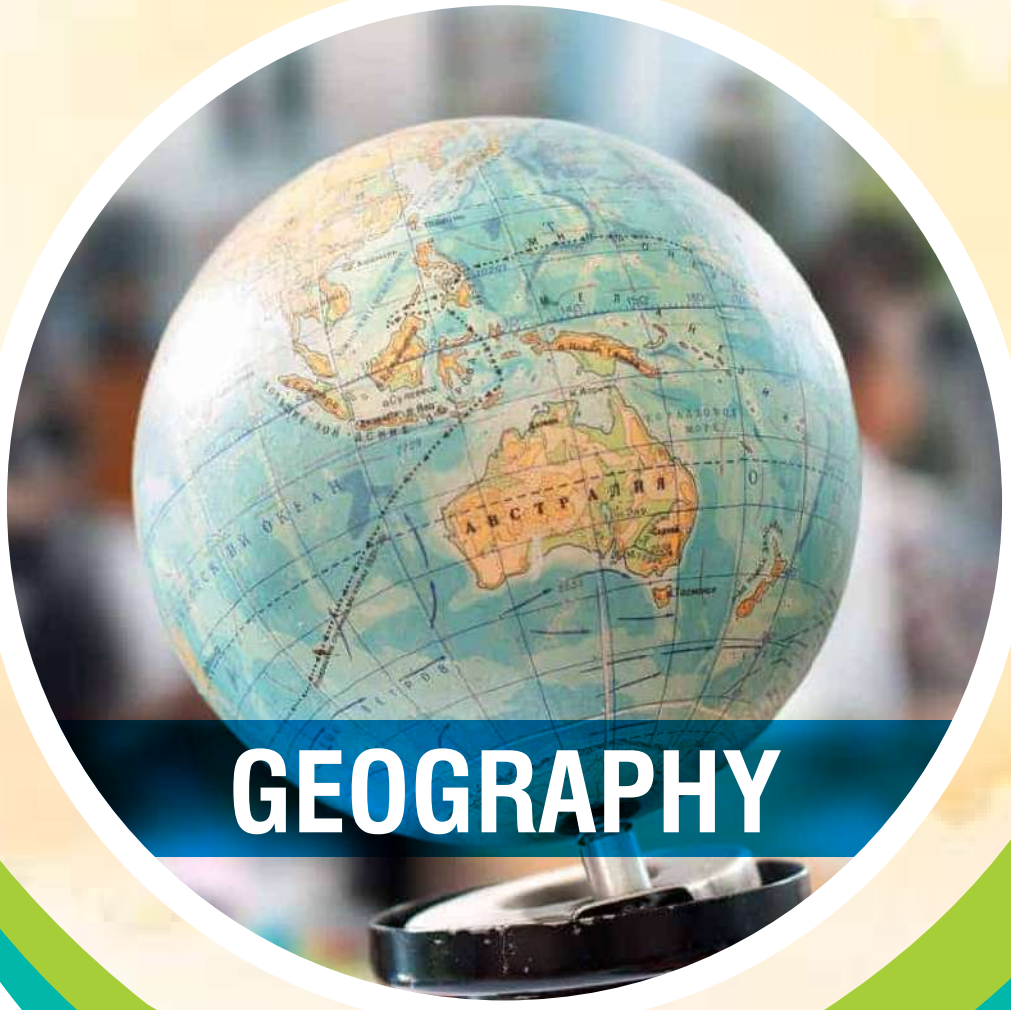


GEOGRAPHY

Complete **Current Affairs** Compilation
from **July 2020 to March 2021**

Vol-I

GEOGRAPHY

Content

PHYSICAL GEOGRAPHY

Northern Lights

Context

- Parts of the US was recently expected to see the Northern Lights.

What are the northern lights?

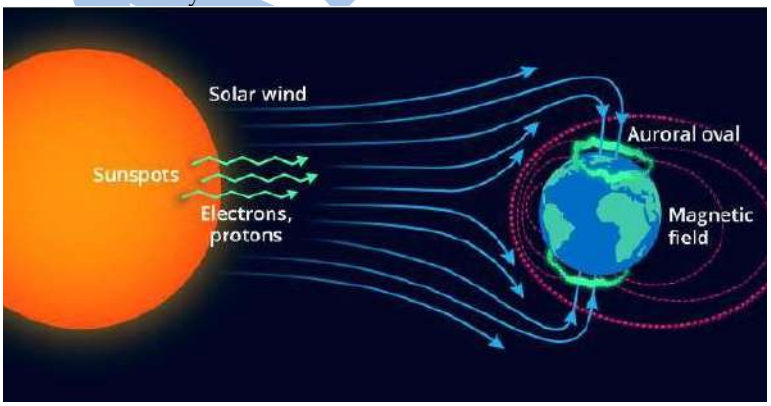
- The northern lights, one of several astronomical phenomena **called polar lights (aurora polaris), are shafts or curtains of colored** light visible on occasion in the night sky.
- **Polar lights (aurora polaris) are a natural phenomenon** found in both the northern and southern hemispheres.
- Northern lights are also called by their scientific name, aurora borealis, and southern lights are called aurora australis.

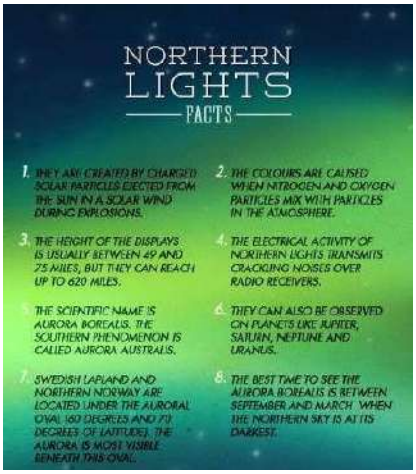
What causes an aurora?

- Auroras occur when charged particles ejected from the Sun's surface — called the solar wind —enter the Earth's atmosphere.
- While flowing toward Earth, the fast-moving solar wind carries with it the Sun's magnetic field, which disrupts the magnetosphere— the region of space around Earth in which the magnetic field of our planet is dominant.
- When the Sun's magnetic field approaches Earth, the protective magnetic field radiating from our planet's poles deflects the former, thus shielding life on Earth.
- However, as this happens, the protective fields couple together to form funnels, through which charged solar wind particles are able to stream down to the poles.
- At the north and south poles, the charged particles interact with different gases in the atmosphere, causing a display of light in the sky.
- This display, known as an aurora, is seen from the Earth's high latitude regions (called the auroral oval), and is active all year round.

Sunspots and Solar Flares

- Sunspots are areas that appear dark on the surface of the sun.
- They appear dark because they are cooler than other parts of the Sun's surface.
- Solar flares are a sudden explosion of energy caused by tangling, crossing or reorganizing of magnetic field lines near sunspots.
- Solar flares release a lot of radiation into space. If a solar flare is very intense, the radiation it releases can interfere with our radio communications here on Earth.
- Solar flares are sometimes accompanied by a coronal mass ejection (CME for short).
- CMEs are huge bubbles of radiation and particles from the Sun.
- They explode into space at very high speed when the Sun's magnetic field lines suddenly reorganize.





Solar Eclipse

Context

- The total solar eclipse on December 14, was the last eclipse of the year.

What is a solar eclipse?

- A solar eclipse takes place when the Moon moves between the Sun and the Earth, blocking out the Sun's rays and casting a shadow on parts of the Earth.

How does solar eclipse occur?

- For a solar eclipse to take place, the Sun, the Moon, and the Earth must be aligned in a perfect or near-perfect straight line – an alignment astronomers call syzygy.
- This happens around new Moon every lunar month.

Types of solar eclipse

- There are four types of solar eclipses. How much of the Sun's disk is eclipsed – the eclipse magnitude – depends on which part of the Moon's shadow falls on the Earth.

Partial solar eclipse

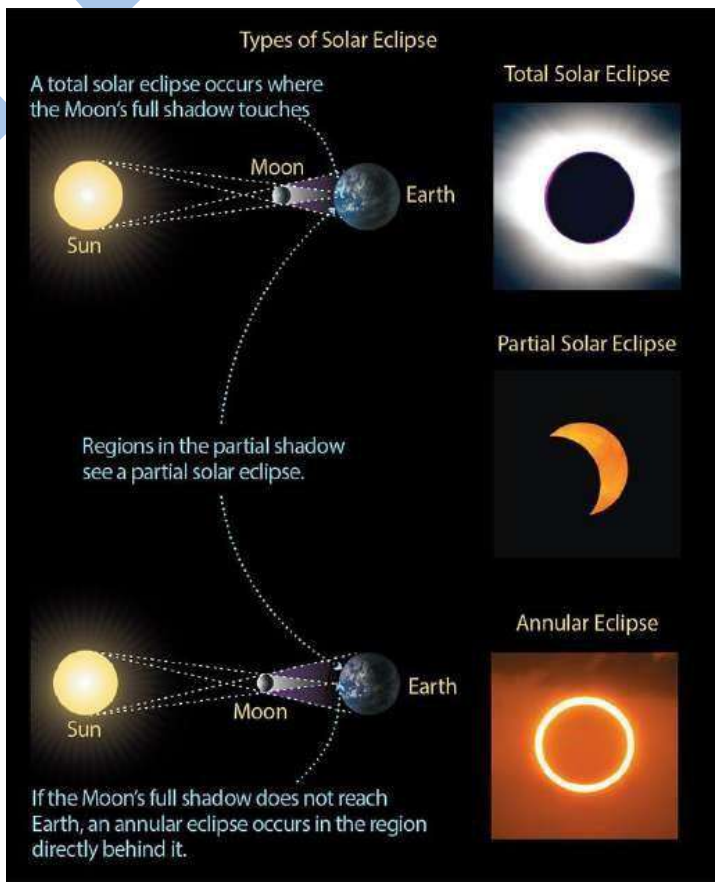
- A **partial solar eclipse** occurs when the Moon only partially obscures the Sun's disk and casts only its penumbra on the Earth.

Annular solar eclipse

- An **annular solar eclipse** takes place when the Moon's disk is not big enough to cover the entire disk of the Sun, and the Sun's outer edges remain visible to form a ring of fire in the sky. An annular eclipse of the Sun takes place when the Moon is near apogee, and the Moon's antumbra falls on the Earth.

Total solar eclipse

- A **total solar eclipse** happens when the Moon completely covers the Sun. It can take place only when the Moon is near perigee, the point of the Moon's orbit closest to the Earth. You can see a total solar eclipse only if you are in the path where the Moon casts its darkest shadow, the umbra.



Hybrid solar eclipse

- A **hybrid solar eclipse**, also known as an annular-total eclipse, is the rarest type. It occurs when the same eclipse changes from an annular to a total solar eclipse, and/or vice versa, along the eclipse's path.

Difference between solar eclipse and lunar eclipse

- A lunar eclipse occurs when the Earth passes between the Moon and the Sun, and the Earth's shadow obscures the Moon or a portion of it.
- A solar eclipse occurs when the Moon passes between the Earth and the Sun, blocking all or a portion of the Sun.

Indus Suture Zone (ISZ)

Context

- The suture zone of the Himalayas or the Indus Suture Zone (ISZ) has been found to be tectonically active.

What is Suture?

- In structural geology, a suture is a —Joining of separate tectonic units along a major fault zone. These units have different plate tectonic, metamorphic and paleogeographic histories.
- The suture is often represented on the surface by a mountain range**.**

Where is Indus Suture Zone?

- This zone is a tectonic suture in Ladakhacross the north margin of the Himalayas which resulted from the collision betweenthe Indian plate and the Eurasian plate around 52 Ma ago.

Optically Stimulated Luminescence (OSL)

- Optically stimulated luminescence is a method of determining the age of burial of quartz or feldspar bearing sediments.
- **Principle used:** Crystal lattices of sediments have the ability to store ionizing energy(X,Y). This energyis released as radiation when excited with light. Amount of radiation released helps in determining the age of sediment.

Zombies fire

Context

- According to a new study zombie fires are becoming more frequent in the Arctic region.

About

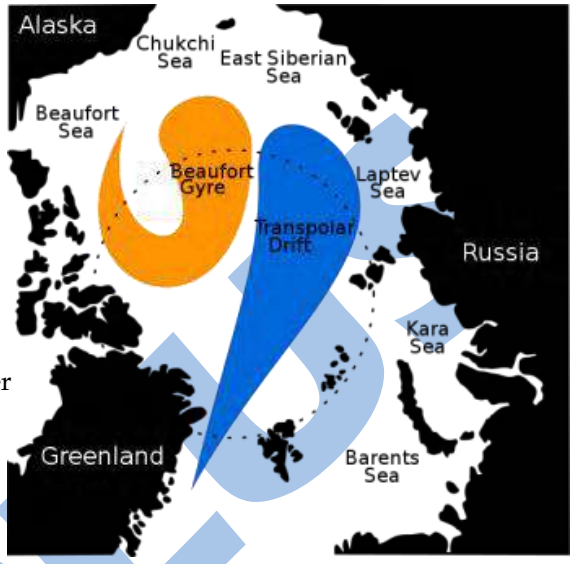
- A zombie fire is a **fire left from a previous growing season.**
- Because Arctic soils are often densely packed with flammable organic matter, such as peat, above ground fires that burn themselves out can leave the ground smouldering.
- When winter comes, snow can actually insulate the smoking mat from the cold air above as it consumes peat and pockets of flammable methane gas.
- These conditions can sometimes allow a zombie fire to keep burning until temperatures warm and the snow melts away.
- When the weather warms further, the fire can reignite.

Why is the Arctic warming up so fast?

- The Arctic's extreme warming, known as **Arctic amplification or polar amplification**, is due to three factors:

Albedo

- One, the region's reflectivity, or **albedo**—how much light it bounces back into space—is changing as the world warms?
- Since ice is white, it reflects the sun's energy.
- Sea ice is melting rapidly in the Arctic, the darker ocean surface is absorbing more of the sun's heat due to the removal of white surface.
- That's warming the region's waters, and potentially raising temperatures on land as well.



Changing Currents

- The second factor: changing currents. Ocean currents normally bring in warmer water from the Pacific, and colder water exits out of the Arctic into the Atlantic.
- But those currents are changing because more melting ice is injecting the Arctic Ocean with freshwater, which is less dense than saltwater, and therefore floats above it.
- The missing ice also exposes the surface waters to more wind, speeding up the **Beaufort Gyre in the Arctic**, which traps the water it would normally expel into the Atlantic.
- This acceleration mixes up colder freshwater at the surface and warmer saltwater below, raising surface temperatures and further melting ice.
- The Beaufort Gyre is one of the two major ocean currents in the Arctic Ocean, it is roughly located north of the Alaskan and Canadian coast.
- An ocean gyre is a large system of circular ocean currents formed by global wind patterns and forces created by Earth's rotation.
- The movement of the world's major ocean gyres helps drive the —ocean conveyor belt. The ocean conveyor belt circulates ocean water around the entire planet.

Hurricane Nana

Context

- Atlantic hurricane Nana made a landfall on the coast of Belize.

Belize

- Belize, formerly known as British Honduras, is a **Caribbean country** located on the northeastern coast of Central America.
- Belize is bordered on the northwest by Mexico, on the east by the Caribbean Sea, and on the south and west by Guatemala.
- The Maya Civilization flourished in Belize until about 1200 AD.

Storms

- Hurricanes are tropical storms that form over the **North Atlantic Ocean andNortheast Pacific**.
- Cyclones are formed over the **South Pacific and Indian Ocean**.
- Typhoons are formed over the **Northwest Pacific Ocean.**
- Willy willies are**whirlwind or Dust storms that occur in Australia.**

La Nina

Context

- The La Niña weather phenomenon is back in the central and eastern equatorial Pacific Ocean after nearly a decade's absence - World Meteorological Organization (WMO).

ENSO Cycle

- El Niño–Southern Oscillation (ENSO) is an irregularly periodic **variation in winds and sea surface temperatures** over the tropical **eastern Pacific Ocean.**
- Every three to seven years, the surface waters across tropical Pacific Ocean warm or cool by 1°C to 3°C, compared to normal.
- The warming phase of the sea temperature is known as El Niño and the cooling phase as La Niña.
- Thus, El Niño and La Niña are opposite phases of what is known as the **El Niño-Southern Oscillation (ENSO) cycle.**
- These deviations from normal surface temperatures can have large-scale impacts not only on ocean processes, but also on global weather and climate.

Sun Spots

Context

- A massive Sunspot group, AR2770, was observed recently.

What are Sunspots?

- Sunspots are areas that appear dark on the surface of the Sun.
- Sunspots are temporary phenomena on the Sun's **photosphere.**
- They appear dark because they are cooler than other parts of the Sun's surface.
- The temperature of a sunspot is still very hot though—around 6,500 degrees Fahrenheit!

Why sunspots are relatively cool?

- It's because they form at areas where magnetic fields are particularly strong.
- These magnetic fields are so strong that **they keep some of the heat within the Sun from reaching the surface.**

When are sunspots visible?

- Sunspots are a common sight on our Sun during the years around solar maximum.
- Solar maximum or solar max is the period of greatest solar activity in the solar cycle of the Sun, where one solar cycle lasts about 11 years.
- Around solar minimum, only very few or even no sunspots can be found.
- Sunspots form where magnetic field lines come up from the Sun's interior trough the solar surface meaning that every sunspot has its own polarity.
- A sunspot consists of two parts:
  - The dark part (umbra)
  - Lighter part around the dark part (penumbra)

Solar Flares

- The magnetic field lines near sunspots often tangle, cross, and reorganize. This can cause a sudden explosion of energy called a solar flare.
- Solar flares release a lot of radiation into

space. If a solar flare is very intense, the radiation it releases can interfere with our radio communications here on Earth.
- Solar flares are sometimes accompanied by a coronal mass ejection (CME for short). CMEs are huge bubbles of radiation and particles from the Sun.
- They explode into space at very high speed when the Sun's magnetic field lines suddenly reorganize.

Effects of Solar Activity on Earth
- When charged particles from a CME reach areas near Earth, they can trigger intense lights in the sky, called auroras.
- When particularly strong, a CME can also interfere in power utility grids, which at their worst can cause electricity shortages and power outages.
- Solar flares and CMEs are the most powerful explosions in our solar system.

Mount Sinabung

Context
- Recently, Indonesia's Mount Sinabung volcano erupted.

Mount Sinabaug
- Mount Sinabung is a Pleistocene-to-Holocene **stratovolcano in the Karo plateau**, North Sumatra, Indonesia.
- It is 40 kilometres from the **Lake Toba supervolcano**.

Why do volcanoes erupt?
- A volcano can be active, dormant or extinct. An eruption takes place when magma (a thick flowing substance), formed when the earth's mantle melts, rises to the surface.
- Because magma is lighter than solid rock, it is able to rise through vents and fissures on the surface of the earth. After it has erupted, it is called lava.

Are all volcanoes explosive?
- Not all volcanic eruptions are explosive, since explosivity depends on the composition of the magma.
- When the magma is runny and thin, gases can easily escape it, in which case, the magma will flow out towards the surface.
- If the magma is thick and dense, gases cannot escape it, which builds up pressure inside until the gases escape in a violent explosion.

• **Eruption Style:** gentle, lots of magma, lava fountains and bombs. • **Magma:** hot, low viscosity (runny), fast moving, • **Gas:** low levels, can escape from magma. • **Shape:** wide and low with gently sloping sides (from layers of lava flows cooling) • **Example:** Mauna Loa, Hawaii.	• **Eruption Style:** mildly explosive, erupt lava from a breach in side or base of volcano, gas-filled lava cools to become cinders. • **Magma:** low viscosity, hot, soft. • **Gas:** expands and forms bubbles in lava, high levels. • **Shape:** steep sides, small crater, surrounded by debris of small red or black basalt rocks with little holes (rock solidifies around bubbles) • **Example:** Paricutin, Mexico.	• **Eruption Style:** explosive, violent, lava flows, lahar, pyroclastic flows, cinders and ash clouds. • **Magma:** slightly cooler, thick and sticky, very viscous, foams and explodes violently. • **Gas:** high levels, pressure from gas bubbles trying to escape. • **Shape:** regular shape, steep sided cones, rough landscape, layers of lava, rock and ash make it tall. • **Example:** Mt Fuji, Japan.	• **Eruption Style:** slow, can be violent, lava does not flow far. • **Magma:** highly viscous. • **Gas:** low levels. • **Shape:** hardened, thick layers of rock. • **Example:** Mt St Helens, USA

Medicane

Context

- Recently, a **medicane named Ianos** made landfall along the coast of Greece and caused heavy rainfall.

About

- Extra tropical **storms in the Mediterranean Sea**, are known as Medicanes or Mediterranean Hurricanes'.

Extra tropical cyclones

- An extratropical cyclone (also called a **mid-latitude cyclone**) is a type of cyclone.
- It is a large low-pressure weather area with clouds, rain and heavy wind.
- They occur in areas that are between latitudes **30° – 60° from the equator**.
- They are not the same as tropical cyclones or low-pressure weather areas from polar zones.
- They are actually many **masses of cold and warm fronts** producing rain, heavy wind, and sometimes tornadoes and even hail.
- An extratropical **cyclone turns anticlockwise in the Northern Hemisphere**.
- The usual size in **diameter is about 1000 km.**

Heat Waves

- Several parts of north India have been reeling under an intense heat wave.
- The World Meteorological Organization (WMO) defines a heat wave as a period during which the daily maximum temperature for **more than five consecutive days** exceeds the maximum normal temperature **by 5°C.**

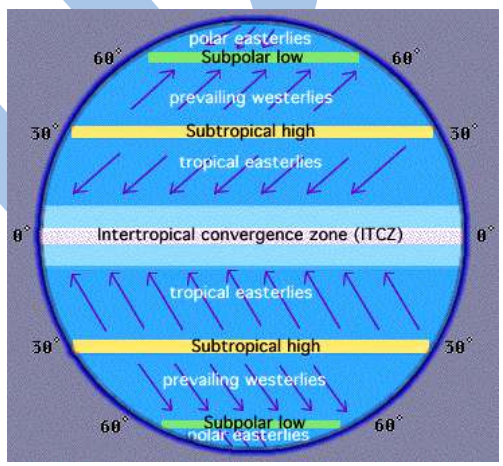
- The heat wave has been caused by the dry **north-westerly winds** that started blowing on May 21 causing a gradual rise in temperature.
- The World Meteorological Organization is an intergovernmental organization & a special agency of UN with a membership of 193 States and Territories.
- It followed on from the International Meteorological Organization, founded in 1873.

Amery Ice Shelf (AIS)

- According to NCPOR, there would be an expansion by 24 % of AIS boundaries by 2021.
- The Amery Ice Shelf is a broad ice shelf **in Antarctica** at the head of **Prydz Bay**. It is part of **Mac. Robertson Land.**
- The **National Centre for Polar and Ocean Research, (NCPOR)** is an autonomous Institution **under Ministry of Earth Sciences**, which is responsible for administering the Indian Antarctic Programme and maintains the Indian government's Antarctic research stations, Bharati and Maitri.

Super Earth

- A **super-Earth** is an **extrasolar planet** with a mass higher than **Earth**, but substantially below those of the Solar System's ice giants, Uranus and Neptune, which are 14.5 and 17 times **Earth's**, respectively.
- An extrasolar planet, also called an exoplanet, is a planet that orbits a star (i.e. is part of a solar system) other than our own.
- The term "super-Earth" refers only to the mass of the planet, and so does not imply anything about the surface conditions or habitability.



Karewas

- Karewas are **lacustrine deposits** (deposits in lake) in the Valley of Kashmir and Jammu.
- They lie **between Great Himalayas &PirPanjal Range.**
- They are characterized with **fossils of mammals and at places by peat**.
- Karewas were formed during the **Pleistocene Period (1 million years ago),** when the entire Valley of Kashmir was under water.
- Due to the rise of Pirpanjal, the drainage was impounded and a lake of about 5000 sq. km area was developed and thus a basin was formed.
- The deposits left in the process are known as **karewas.** The thickness of karewas is about 1400 m.
- The Karewa deposits are composed of sand, silt, clay, shale, mud, lignite, gravel and loessic sediments.
- Therefore, it is extremely important for agricultural and horticultural practices in the valley.
- Apart from saffron, it also helps in the cultivation of almond, walnut, apple and orchards.

Mizoram Quake Zone

- Mizoram experienced at least eight moderate earthquakes between June 21 and July 9.
- The Epicenter of most of these quakes was beneath **Champhai**district bordering Myanmar.
- Earthquakes have happened time and again in that part of Mizoram because it is caught between two geological faults. These are the **Churachandpur Mao Fault and the Mat Fault.**
- Faults are discontinuities or cracks that are the result of differential motion within the earth's crust. Vertical or lateral slippage of the crust along the faults causes an earthquake.

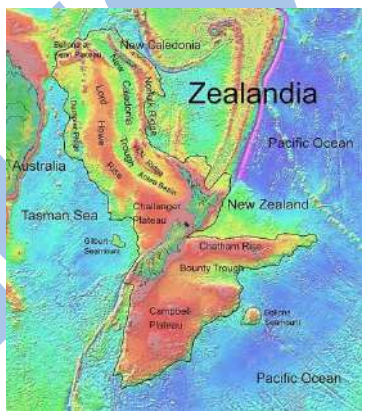
Zeelandia

- Zealandia also known as the New Zealand continent is a long, narrow microcontinent that is mostly submerged in **the South Pacific Ocean.**
- A microcontinent is a landmass that has broken off from a main continent.
- **Zealandia broke off from Antarctica about 100 million years ago**, and then from Australia about 80 million years ago.
- Zealandia is about half the size of Australia, **but only 7 percent of it is above sea level.**

Cyclone Nisarga

Context

- Recently, Cyclone Nisarga struck the state of Maharashtra.



Other Details

- It was **Severe Cyclonic Storm** and the **strongest tropical cyclone** to strike the Maharashtra since 1891.
- It was also the first cyclone impact to Mumbai since **Cyclone Phyan of 2009**.
- Nisarga originated as a **depression in the Arabian Sea** and moved generally northward.

Why is the Arabian Sea turning into a cyclone hotspot?

- Scientists are in agreement that **rising sea surface temperatures (SST)** in the Arabian Sea are contributing to the formation of an increased number of cyclones.
- SST in the Arabian Sea rose by a staggering 0.36 degrees Celsius, compared with the baselines temperatures between 1981 and 2010.
- According to the India Meteorological Department, the frequency and intensity of cyclonic activity in the Arabian Sea was the highest it had been in over a century, in 2019.
- Five cyclones originated in the area in 2019 — Vayu, Hikka, Kyarr, Maha and Pavan.

How are the cyclones named?

- If the speed of a cyclone is more than **34 nautical miles per hour**then it becomes necessary to give it a special name.
- In 2000, a group of nations called **WMO/ESCAP(World Meteorological Organisation/United Nations Economic and Social Commission for Asia and the Pacific),** which comprised **Bangladesh, India, the Maldives, Myanmar, Oman, Pakistan, Sri Lanka and Thailand**, decided to start naming cyclones in the region.
- All countries contribute a set of names, which are assigned sequentially on the basis of the first Alphabet of the member country. Till date, there are **64 cyclones have been named.**
- The WMO/ESCAP expanded to include five more countries in 2018 — **Iran, Qatar, Saudi Arabia, United Arab Emirates and Yemen.**
- The name Nisarga was suggested by **Bangladesh.**

Permafrost

- Recently, 20,000 tonnes of diesel fuel spilt into the **Ambarnaya river** from Norilsk power plant in **Russia**. A state of emergency was declared.

Reason

- The principal reason that led to oil leak at an **Arctic region** power is the sinking of ground surface due to **permafrost thaw.**

Permafrost

- Permafrost is any ground that remains completely frozen—32°F (0°C) or colder—for at least two years straight. The Earth's polar and high altitude regions are its principal permafrost reservoirs.
- They are spread across 55 per cent of the landmass in Russia and Canada, 85 per cent in the US state of Alaska, and the entire Antarctica.

Permafrost Thawing

- As Earth's climate warms, the permafrost is thawing. That means the ice inside the permafrost melts, leaving behind water and soil.

Trend

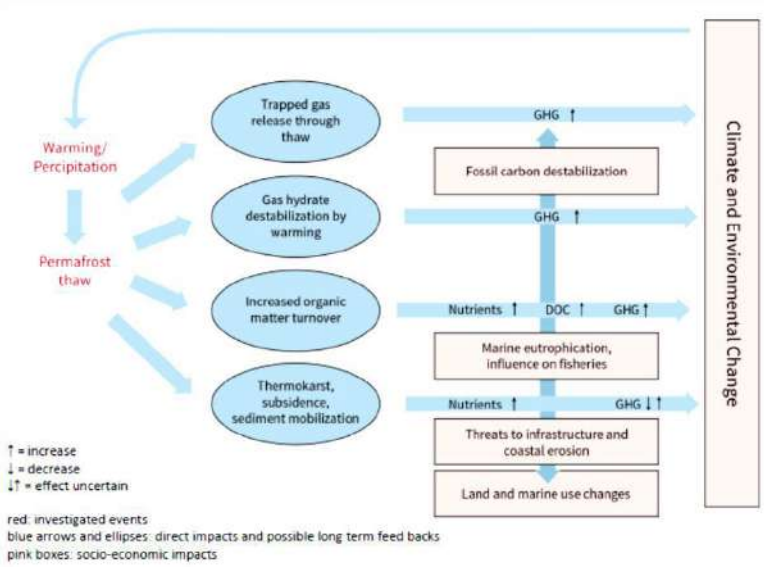
- According to the USA's National Oceanic and Atmospheric Administration, **Arctic regions are warming twice as fast compared to the rest of the planet.**
- Its current rate of temperature change being the highest in 2,000 years.
- In 2016, Arctic permafrost temperatures were 3.5 degrees Celsius higher than at the beginning of the 20th century!

Coral Triangle Day

- The Coral Triangle Day (held every June 9) is a massive celebration of the Coral Triangle, the **world's epicentre of marine biodiversity**.
- The Coral Triangle is one of the 3-mega ecological complexes on our planet, together with the Congo Basin and the Amazon Rainforest.
- Coral Triangle encompasses the seas of 6 countries in the Asia-Pacific region: Indonesia, Malaysia, Papua New Guinea, the Philippines, Solomon Islands and Timor Leste.
- The Coral Triangle occupies just 1.5% of the world's total area, but represents 30% of the world's coral reefs.

Interdecadal Pacific Oscillation

- The Interdecadal Pacific Oscillation (IPO) is a long-term **oscillation of sea-surface temperatures in the Pacific Ocean** that can last from 20 to 30 years.
- The IPO is an oceanographic/meteorological phenomenon similar to the Pacific decadal oscillation (PDO), but occurring in a wider area of the Pacific.
- While the PDO occurs in mid-latitudes of the Pacific Ocean in the northern hemisphere, the IPO stretches from the southern hemisphere into the northern hemisphere.
- **Positive phases of the IPO** are characterized by a **warmer than average tropical Pacific and cooler than average northern Pacific.**
- **Negative phases** are characterized by an inversion of this pattern, with **cool tropics and warm northern regions.**



- It's **positive and negative phases affect the strength and frequency of El Niño and La Niña.**
- The Interdecadal Pacific Oscillation (IPO) was in a positive phase during 2014–16 and a negative phase during 1999–2013.
- Three phases of IPO occurred during the 20th century:
- a positive phase, 1913–44
- a negative phase, 1945–76
- a positive phase, 1977–98

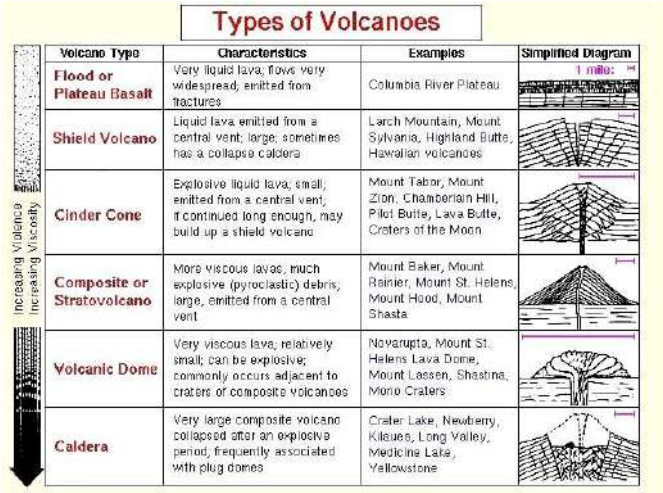
Mount Ili Lewotolok

Context

- Indonesia's Mount Ili Lewotolok recently erupted releasing a column of smoke and ash 2.5 miles (4km) into the sky.

About

- Mount Ile Lewotolok or Lewotolo is a **strato volcano** in the north-central part ofthe island of Lembata in Indonesia.



Types of Volcanoes

Volcano Type	Characteristics	Examples	Simplified Diagram
Flood or Plateau Basalt	Very liquid lava; flows very widespread; emitted from fractures	Columbia River Plateau	
Shield Volcano	Liquid lava emitted from a central vent; large; sometimes has a collapse caldera	Larch Mountain, Mount Sylvania, Highland Butte, Hawaiian volcanoes	
Cinder Cone	Explosive liquid lava; small; emitted from a central vent; if continued long enough, may build up a shield volcano	Mount Tabor, Mount Zion, Chamberlain Hill, Pilot Butte, Lava Butte, Craters of the Moon	
Composite or Stratovolcano	More viscous lavas; much explosive (pyroclastic) debris; large; emitted from a central vent	Mount Baker, Mount Rainier, Mount St. Helens, Mount Hood, Mount Shasta	
Volcanic Dome	Very viscous lava; relatively small; can be explosive; commonly occurs adjacent to craters of composite volcanoes	Novarupta, Mount St. Helens Lava Dome, Mount Lassen, Shastina, Mono Craters	
Caldera	Very large composite volcano collapsed after an explosive period; frequently associated with plug domes	Crater Lake, Newberry, Kilauea, Long Valley, Medicine Lake, Yellowstone	

Increasing Violence / Increasing Viscosity

Arctic Circle

Context

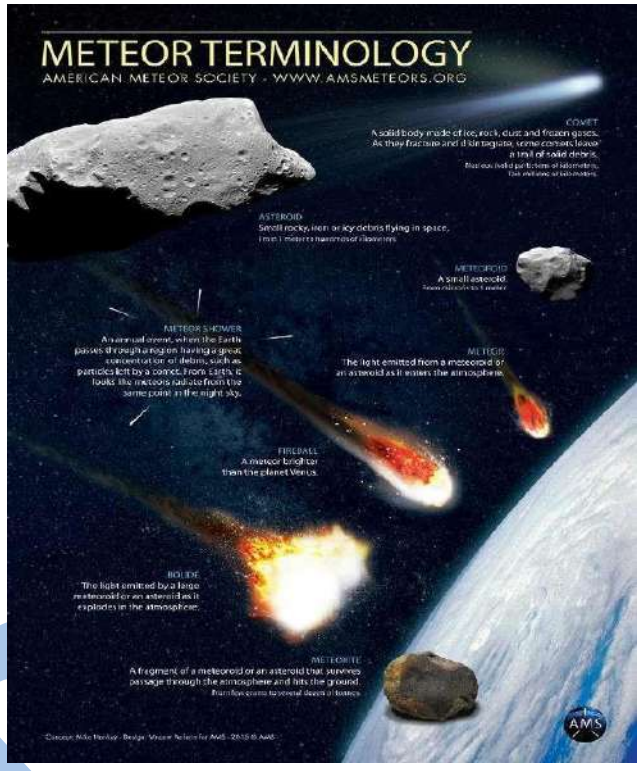
- Recently, India drafted a new Arctic policy that aims at expanding scientific research, sustainable tourism and exploration of mineral oil and gas in the Arctic region.

Arctic Circle

- The region north of this circle is known as the Arctic, and the zone just to the south is called the Northern Temperate Zone.
- Arctic Circle marks the northernmost point of the Earth.
- The position of the Arctic Circle is not fixed and currently runs66°33′48.4″ north of the Equator.
- Its latitude depends on the Earth's axial tilt, which fluctuates within a margin of more than 2° over a 41,000-year period, due to tidal forces resulting from the orbit of the Moon.
- Consequently, the Arctic Circle is currently drifting northwards (shrinking) at a speed of about 15 m (49 ft) per year.
- The Arctic Circle is roughly 16,000 km (9,900 mi) long.
- The Arctic Circle passes through the Arctic Ocean, the Scandinavian Peninsula, North Asia, Northern America, and Greenland.
- The land within the Arctic Circle is divided among eight countries: Norway, Sweden, Finland, Russia, the United States (Alaska), Canada (Yukon, Northwest Territories, and Nunavut), Denmark (Greenland), and Iceland (where it passes through the small offshore island of Grímsey).

WORLD GEOGRAPHY

Meteors



- In the recent past NASA cautioned about six asteroids to pass near the earth.
- These are
  - 2021 AC
  - 2016 CO247
  - 2021 AJ 11:38
  - 2018 KP1
  - 2008 AF4
  - 2021 AU

Bhashan Char

Context

- Bangladesh transported more than 1,600 Rohingya refugees to a lowlying island called Bhashan Char.

About

- Bhasan Char also known as Char Piya, is an island in Hatiya Upazila, Bangladesh.
- It is located in the Bay of Bengal, about 6 kilometres from Sandwip island and 60 km from the mainland.
- The island was formed by Himalayan silt in 2006. It was formed by the accumulation of silt where the river Meghna meets the Bay of Bengal.

Char-lands

- Char-lands are a common feature in Meghna and Padma rivers and literally mean —shifting landmass.
- While these lands are known to be unstable and flood-prone, tropical cyclones also visit the area every year.
- **Bhashan Char is surrounded by a mangrove forest that has given it geographical stability.**

Thousand Islands

Context

- Recently, Sriwijaya Air Flight 182 went missing after taking off from Jakarta Soekarno–Hatta Airport on route to Pontianak Supadio Airport. The aircraft crashed near the Thousand Islands.

Thousand Islands

- The Thousand Islands constitute a North American archipelago of 1,864 islands.
- The archipelago is at the outlet of Lake Ontario at the head of the Saint Lawrence River.

- The region is bisected by the Canada–United States border.
- This region was designated a World Biosphere Reserve by UNESCO in 2002.

Chad

Context

- India has expressed serious concern over the security situation in the Sahel and Lake Chad region in West Africa, saying that terrorism, drug trafficking and organized crime have continued unabated in the area.

About

- Chad is a landlocked country in north-central Africa.
- It is bordered by Libya to the north, Sudan to the east, the CentralAfrican Republic to the south, Cameroon to the south-west, Nigeriato the southwest (at Lake Chad), and Niger to the west.
- Chad has several regions: a desert zone in the north, an arid Sahelianbelt in the centre and a more fertile SudanianSavanna zone in thesouth.
- Lake Chad, after which the country is named, is the largest wetlandin Chad and the second-largest in Africa.
- The capital N'Djamena is the largest city. Chad's official languages are Arabic and French.

Jiadhal River

Context

- Thousands descended on the National Highway 15 to protest against the state government's alleged tardiness to construct embankments along the Jiadhal River.

The River

- The Jiadhal River is a northern sub-tributary of the Brahmaputra River in Assam. The river originates from the hills of Arunachal Pradesh.
- The Jiadhali River flows through the Dhemaji district and takes the name of Kumotiya River from Gogamukh.
- The river finally joins Subansiri River, a major tributary of Brahmaputra River.
- Jiadhal River is known as _Sorrow of Dhemaji' for the heavy damage caused by annual flood and erosion.

Western Sahara dispute

Context

- Morocco has agreed to become the fourth Arab nation to normalize relations with Israel in as many months.

About Western Sahara dispute

- Western Sahara is a vast, arid region in northwest Africa.
- It is mineral rich: home to abundant reserves of phosphate, a key ingredient in the manufacturing of synthetic fertilisers.
- It has also lucrative fish resources and is believed to have off-shore oil.
- The region first came under Spanish control in 1884, and was made a province called _Spanish Sahara' by the European country in 1934.
- Then in 1957, its northern neighbour Morocco staked its claim over the entire territory, reasserting a centuries-old position.
- Meanwhile, Western Sahara's Sahrawi ethnic group began efforts to gain independence from Spain.
- In 1973, a guerilla movement sprang up called the Popular Front for the Liberation of Saguia el-Hamra and Río de
- Oro (Polisario Front), named after the two regions constituting the Spanish province.
- Then in 1975, ten years after the UN called for its decolonisation, Spain withdrew from Western Sahara,partitioning the region between Morocco, which received the region's northern two-thirds, and Mauritania the remaining third in the south.

Pratas Islands

Context

- Experts are increasingly warning of a possible Chinese attackand the potential danger in the Taiwan Strait.

About

- The Pratas Islands are located in the northern part of the South China Sea under the jurisdiction of Taiwan.
- As the importance of the South China Sea has increased, so too has the strategic relevance of the Pratas Islands.
- If China controlled the Pratas Islands, the islands could function as a gatekeeper to monitor U.S. and other countries'ships and aircraft entering the South China Sea from the Pacific Ocean.
- Pratas Island has an airport, but no permanent inhabitants, only a number of civil officials of the Taiwanese Coast Guard and researchers.

Eswatini

Context

- Eswatini Prime Minister Ambrose Dlamini, who was undergoing treatment for corona virus in neighbouring South Africa, has died.

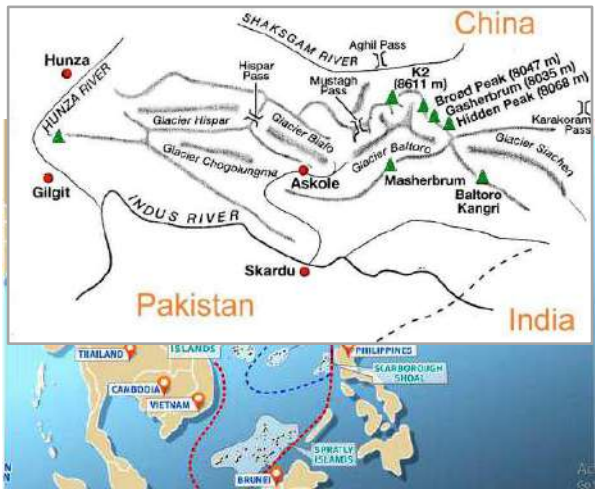
About

- Eswatini formerly and still commonly known as Swaziland is a landlocked country in Southern Africa.
- It is bordered by Mozambique to its northeast and South Africa to its north, west, and south.
- Eswatini is one of the smallest countries in Africa; despite this, its climate and topography are diverse, ranging from a cool and mountainous Highveld to a hot and dry lowveld.

K2 Mountain

Context

- Recently, a group of Nepali mountaineers became the first climbers to scale the K2 peak in winter.



About K2

- At 8,611 meters K2, also called Mount Godwin Austen, Dapsang or Chogori, is the **world's second highest peak** second only to Mount Everest (8,848 m).
- K2 is **located in the Karakoram Range** and lies between Uygur Autonomous Region of Xinjiang, China, and Gilgit-Baltistan portion of Kashmir.
- It rises from its base at about 15,000 feet on the Godwin Austen Glacier, a tributary of the Baltoro Glacier.
- It is so formidable that it **is called the 'Savage Mountain'.**
- For every four climbers who reach its summit, one dies.

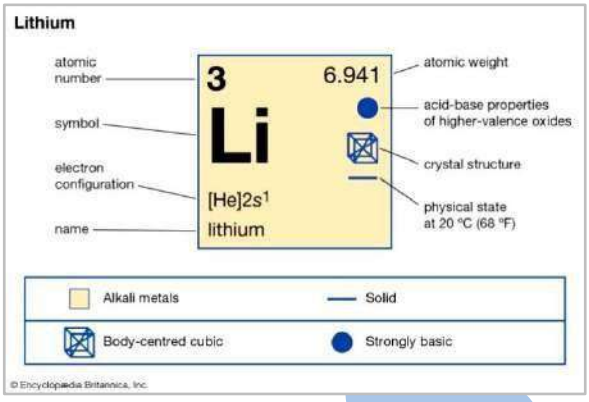
Lithium

Context

- The Department of Atomic Energy, Government of India has discovered 1600kg Lithium in Mandla district of Karnataka.

Lithium

- Referred to as —white gold‖ – Lithium metal is soft, white, and lustrous—and several of its alloys and compounds are produced on an industrial scale.



Uses

- **Electronics**: The most important use of lithium is in rechargeable batteries for mobile phones, laptops, digital cameras and electric vehicles.
- **Glass and Grease:** Lithium-ion batteries are also used in ceramics and glass, lubricating greases, polymer production, and air treatment.
- **Medical:** Lithium is also used in some non-rechargeable batteries for things like heart pacemakers, toys and clocks. It is also used in psychiatric medications and in dental imprints. Lithium carbonate is used in drugs to treat manic depression.
- **Nuclear Weapons:** The lighter of two lithium isotopes is used in the production of Tritium, a key component of nuclear weapons.
- **Infrastructure:** Lithium metal is made into alloys with aluminium and magnesium, improving their strength and making them lighter. Aluminum-lithium alloys are used in aircraft, bicycle frames and high-speed trains.
- **Fuel:** Lithium hydride is used as a means of storing hydrogen for use as a fuel.
- Other: A magnesium-lithium alloy is used for armour plating. Lithium chloride is one of the most hygroscopic materials known, and is used in air conditioning and industrial drying systems (as is lithium bromide). Lithium stearate is used as an all-purpose and high-temperature lubricant.

Biological role

- Lithium has no known biological role. It is toxic, except in very small doses.

Natural abundance

- **Lithium does not occur as the metal in nature, but is found combined in small** amounts in nearly all igneous rocks and in the waters of many mineral springs.
- **Spodumene, petalite, lepidolite, and amblygonite** are the more important minerals containing lithium.
- **Most lithium is currently produced in Chile**, from brines that yield lithium carbonate when treated with sodium carbonate.

Lithium Production in the world

- According to US Geological Survey (USGS), global lithium production in 2019 stood at 77,000 tonnes.
- Australia, Chile, China and Argentina are the world's top four lithium-producing countries.
- Australia is by far the world's top producer of lithium, with an output of 42,000 tonnes in 2019.

Lithium Triangle

- The Lithium Triangle is a region of the Andes rich in lithium reserves around the borders of **Argentina, Bolivia and Chile.**
- The lithium in the triangle is **concentrated in various salt pans that exist along the Atacama Desert** and neighboring arid areas.
- The area is **thought to hold around 54% of the world's lithium** reserves.
- The **Indian Navy has shown interest in the Lithium Triangle as lithium** will be required on Li-ION batteries that are planned to be fitted in future submarines.

Regarding the Recent finds in India

- As of now, India currently imports all its lithium needs.
- The find in **Mandya, Karnataka is extremely small in quantitative terms**, but it marks some initial success in the attempt to domestically mine Lithium.
- The **Marlagalla-Allapatna area, along the Nagamangala Schist Belt, which exposes mineralized complex pegmatites (igneous rocks),** is seen as among the most promising geological domains for potential exploration for lithium and other rare metals.

India's Lithium Story

- India's first **Lithium plant has been set up at Gujarat in 2021, where Manikaran Power Limited will invest Rs 1000** crore to set up this refinery. The refinery will use Lithium ore to produce base battery material.

Kilauea volcano

Context

- The Kilauea volcano on Hawaii's Big Island haserupted.

About

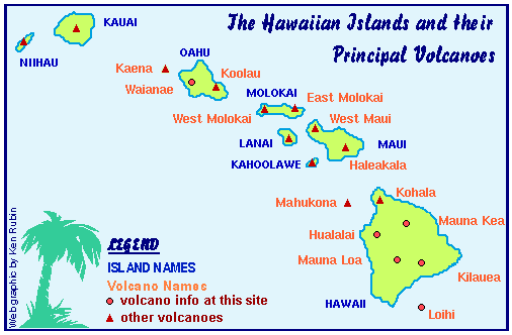
- Kīlauea is an active shield volcano in the HawaiianIslands.
- Historically, Kīlauea is the most active of the fivevolcanoes that together form the Big Island ofHawai'i.
- It is the second-youngest product of the Hawaiianhotspot and the current eruptive center of the
- Hawaiian–Emperor seamount chain.
- Structurally, Kīlauea has a large, fairly recentlyformed caldera at its summit and two active rift zones, one extending 125 km east and the other 35 km west, as anactive fault of unknown depth.

Sea of Galilee

Context

- The Sea of Galilee, has swelled up due to recent rains, according to reports in the Israeli media.

About



- The lake lies in northern Israel, between the occupied Golan Heights and the Galilee region.
- It is fed by underground springs but its major source is the Jordan river.
- The lake is also known as Lake Tiberias or Kinneret.
- The Jordan flows into the lake, Israel's largest freshwater body and then exits it before ending in the Dead Sea, the saltiest and the lowest point on the planet.
- The region the lake is located in, had been suffering from

drought till 2018.
- However, the winters of 2018, 2019 and of this year so far have been wet and have led to the lake swelling up.
- Water is not extracted from the Sea of Galilee. But it is considered to be an important barometer of the water situation in Israel.

Gibraltar

Context

- Gibraltar, with an area of just 6.8 sq km and a population of around 34,000people, has been the subject of intense dispute between Spain and Britain for centuries.

Geography

- Gibraltar is a British Overseas Territory located at the southern tip of the Iberian Peninsula.
- It has an area of 6.7 km2 and is bordered to the north by Spain.
- Gibraltar has a Mediterranean climate (Köppen climate classification Csa), with mild, rainy winters and warm, dry summers.

Strait of Gibraltar

- The Straits of Gibraltar, is a narrow strait that connects the Atlantic Ocean to the Mediterranean Sea and separates the Iberian Peninsula in Europe from Morocco in Africa.

Mount Everest

Context

- Nepal and China recently**, jointly announced that the revised height of the world's highest peak Mount Everest was 8,848.86 metres**, about 86 centimetres more than the previous measurement done by India in 1954.
- Until now, Mt Everest's erstwhile official height of 8,848m has been widely accepted since 1956, when the figure was measured by the Survey of India.

About Everest

- Located in the **MahalangurHimal sub-range of the Himalayas**. The China–Nepal border runs across its summit point.
  - **Mahalangur Himal** is a section of the Himalayas in northeast Nepal and south-central Tibet of China extending east from the pass Nangpa La between Rolwaling Himal and Cho Oyu, to the Arun River.
  - It includes Mount Everest, Lhotse, Makalu, and Cho Oyu — four of Earth's six highest peaks.
- In 1865, Everest was given its official English name by **the Royal Geographical Society**, as recommended by Andrew Waugh, the British Surveyor General of India, who chose the name of his predecessor Sir George Everest.
- Everest, like the rest of the Himalayas, rose from the floor of the ancient Tethys Sea.
- The range was created when the **Eurasian continental plate collided with Indian sub-continental plate** about 60million years ago.
- Mount Everest **grows about ahalf-inch taller each year** as the Himalaya Mountains are pushed up by the creeping collision between the Indian and Asian land masses. The resulting Earth strains make the entire region vulnerable to large earthquakes.

Survey of India

- Survey of India is the **National Survey and Mapping Organization** of the country under the Department of Science & Technology.
- It is the oldest scientific department of the Govt. of India. It was set up in 1767 and is headquartered at Dehradun.

Antarctica

Context

- At least 36 people at a Chilean research station in Antarctica have been found infected with the novel coronavirus.

About Antarctica

- Antarctica is the **Earth's southernmost continent**. It contains the geographic South Pole and is situated in the Antarctic region of the Southern Hemisphere, almost entirely south of the Antarctic Circle, and is surrounded by the Southern Ocean.
- At 14,200,000 square **kilometres it is the fifth-largest continent and nearly** twice the size of Australia.
- It is the least densely populated continent. About 98% of Antarctica is covered by ice.

IndARC is India's first underwater moored observatory in the Arctic region. It was deployed in 2014 at Kongsfjorden fjord, Svalbard, Norway which is midway between Norway and North Pole. Its research goal is to study the Arctic climate and its influence on the monsoon.

Himadri is India's first permanent Arctic research station located at Spitsbergen, Svalbard, Norway. It is located at the International Arctic Research base, Ny-Alesund. It was inaugurated in 2008 by the Minister of Earth Sciences. It was set up during India's second Arctic expedition in June 2008. It is located at a distance of 1,200 kilometres from the North Pole.

Indian Antarctic Program

- The Indian Antarctic Program is a multi-disciplinary, multi-institutional program under the control of the **National Centre for Polar and Ocean Research**, **Ministry of Earth Sciences.**
- It was initiated in 1981 with the first Indian expedition to Antarctica.

Indian Research Stations in Antarctic

- DakshinGangotri was the first scientific base station of India situated in Antarctica. It was established in in 1983–84.
- It is located at a distance of 2,500 kilometres from the South Pole.
- It is currently being used as a supply base and transit camp.

Maitri

- Maitri, also known as Friendship Research Center is India's second permanent research station in Antarctica.
- Maitri is situated in the rocky mountainous region called Schirmacher Oasis. It is only 5 km away from the Russian Novolazarevskaya Station.
- The station has modern facilities to research in various disciplines, such as biology, earth sciences, glaciology, atmospheric sciences, meteorology, cold region engineering, communication, human physiology, and medicine.
- Freshwater is provided through a freshwater lake built by India named **Lake Priyadarshini**, in front of Maitri.

Bharati

- Bharati is a permanent Antarctic research station commissioned by India.
- Bharati's research mandate focuses on oceanographic studies and the phenomenon of continental breakup.
- It also facilitates research to refine the current understanding of the Indian subcontinent's geological history.

NCPOR

- The National Centre for Polar and Ocean Research, (NCPOR) is an Indian research and development institution, situated in Goa.
- It is an **autonomous Institution** of the Department of Ocean Development (DOD), Ministry of Earth Sciences.
- It is responsible for administering the Indian Antarctic Programme and maintains the Indian **government's Antarctic research stations, Bharati and Maitri**.
- NCPOR was **established on 25 May 1998**.
- NCPOR is known for its participation in global experiments, hosting of international conferences and in the leadership of international committees concerned with Antarctic science.
- **The NCPOR operates in different fields:**
  - storing ice core samples, from Antarctica and the Himalayas.
  - operating the Himadri and IndARC Arctic research stations in Svalbard, Norway.
  - managing the oceanic research vessel ORV SagarKanya, the flagship of India's fleet of oceanographic study vessels. This ship has contributed significantly to India's study of the Arabian Sea, the Bay of Bengal, and the Indian Ocean.

Crete Island

- Crete is the **largest island in Greece** and the fifth largest island in the **Mediterranean Sea**.
- It is located in the southern part of the Aegean Sea **separating the Aegean from the Libyan Sea.**
- Crete was the centre of Europe's first advanced civilization, the Minoans, from 2700 to 1420 BC.

Kra Canal

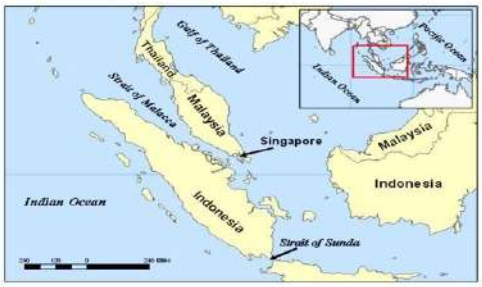
Context

- In a big blow to China, Thailand announced that it will scrap a Chinese led-KRA canal project under which Beijing wanted to build a bypass to the Strait of Malacca.

Canal

- The **Thai Canal, also known as Kra Canal**, refers to proposals for a canal that was supposed to connect the Gulf of Thailand with the Andaman Sea across the Kra Isthmus in southern Thailand.
- It was envisaged that **such a canal would improve transportation in the region, similar to the** Panama Canal and Suez Canal.
- The canal was supposed to provide an alternative to transit through the Straits of Malacca and shorten transit for shipments of oil to Japan and China by 1,200 km.

Map 1: Geographic Location of Malacca Strait



Source: Malacca Strait cooperation. (2012). Retrieved Jan 11, 2015, from http://www.marsecreview.com/2012/07/malacca-strait-cooperation/

Malacca Strait

- Straits of Malacca are a narrow stretch of water, 890 km in length, **between the Malay Peninsula (Peninsular Malaysia) and the Indonesian island of Sumatra**.
- As the main **shipping channel between the Indian Ocean and the Pacific Ocean**, it is one of the most important shipping lanes in the world.

Nioghalvfjerdsfjorden Glacier

- A big chunk of ice has broken away from the **Nioghalvfjerdsfjorden Glacier.**

The Glacier

- Nioghalvfjerdsfjorden is a large glacier located in King Frederick VIII Land, north eastern **Greenland.**
- It is Arctic's largest remaining ice shelf - 79N or **Nioghalvfjerdsfjorden Glacier.**
- In July 2020, the northern offshoot, the **Spalte Glacier** broke away from Nioghalvfjerdsbrae and completely disintegrated.

Shinkun La Tunnel

Context

- Work on Shinkun La Tunnel has been sped up.

Tunnel

- Shinkun La is a 13.5 Km long tunnel under the Shingo La pass will enable all-weather road connectivity **between Manaliand Nimu via Shingo La and Padum**.
- So, the tunnel will provide all-weather road connectivity between Himachal Pradesh and Jammu and Kashmir in Zanskarvalley.

Shingo La

- Shingo-La (also known as Shinku La) is a mountain pass on the border between Ladakh and Himachal Pradesh.
- The pass is on a long-distance footpath linking Zanskar and Lahaul.
- This pass is an entry point to **Lugnak Valley in Zanskar.**

Etosha Pan

Context

- NASA recently captured images depicting the wet and dry cycles of Etosha Pan.

About

- The Etosha pan is a large **endorheic salt pan,** forming part of the **Kalahari Basin** in the north of **Namibia.**
- The pan was **formed due to tectonic plate activity** about ten million years.
- Kunene River fed the lake at that time.
- Now the Ekuma River, the Oshigambo River and the Omurambo Ovambo River are the sole seasonal source of water for the lake. The pan is mostly dry but after a heavy rain it will acquire a thin layer of water, which is heavily salted by the mineral deposits on the surface.
- The Etosha pan is completely within the Etosha pan national park and **is designated as a Ramsar wetland of international importance** and a **World Wildlife Fund eco region** (Etosha Pan halophytics).
- An endorheic lake is a lake that doesn't drain towards the ocean.
- Endorheic lakes are typically found far inland and are most common in desert regions. The main loss of water from these types of lakes occurs through evaporation and seepage.

Galapagos Islands

Context

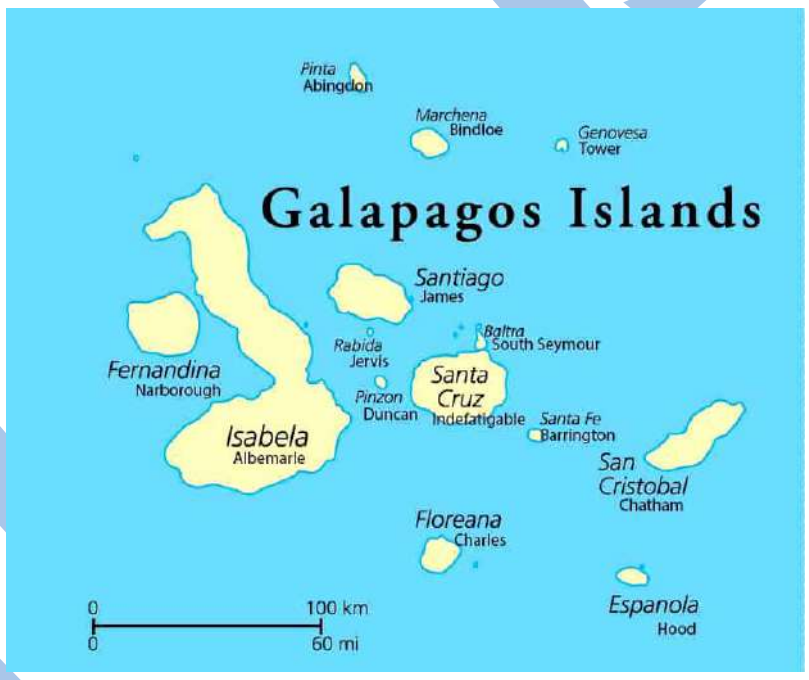
- Ecuador is on alert due to the appearance of a huge fleet of mostly Chinese-flagged fishing vessels off its Galapagos Islands.

Galapagos Islands

- Galapagos Islands are an archipelago of volcanic islands distributed on **either side of the equator in the Pacific Ocean surrounding the centre of the Western Hemisphere.** (off the west coast of South America.)
- The group consists of 18 main islands, 3 smaller islands, and 107 rocks and islets.
- Archipelago is a chain, cluster or collection of islands.

Features

- The islands are known for their large number of endemic species.
- Volcanism has been continuous on the Galápagos Islands.
- Located at the confluence of three ocean currents, the Galápagos are a ‗melting pot' of marine species.
- Ecuador designated part of the Galapagos a wildlife sanctuary in 1935, and in 1959 the sanctuary became the Galapagos National Park.
- In 1978 the islands were designated a **UNESCO World Heritage site**.
- In 1986 the Galapagos Marine Resources Reserve was created to protect the surrounding waters.
- **Mount Azul,** at 5,541 feet (1,689 metres) is the **highest point of the Galapagos Islands.**
- The **archipelago is located on Nazca Plate**& the **islands are located at the Galapagos Triple Junction.**



- **Galápagos marine iguana**, is a species of iguana found only on the Galápagos Islands (Ecuador).
- Unique among modern lizards, it is a marine reptile that has the ability to forage in the sea for algae.
- Algae makes up almost all of its diet. IUCN Status : Vulnerable

Galapagos Triple Junction

- The **Galapagos Triple Junction** is a geological area in the eastern Pacific Ocean several hundred miles west of the Galapagos Islands where three tectonic plates - the **Cocos Plate, the Nazca Plate and the Pacific Plate - meet**.
- The Galapagos Microplate and the Northern Galapagos Microplate, are caught in the junction, turning synchronously with respect to each other and separated by the Hess Deep rift.

Aegean Sea

Context

- Recently, a strong earthquake of a magnitude of up 7.0 struck the Aegean Sea.

About

- The Aegean Sea is an elongated embayment of the Mediterranean Sea.
- It is between Greece and Anatolia.
- The Aegean is connected through the straits of the Dardanelles, the Sea ofMarmara, and the Bosporus to the Black Sea, while the island of Crete can be takenas marking its boundary on the south.

- The Aegean Islands are traditionally subdivided into seven groups, from north to south:
  - Northeastern Aegean Islands (Thracian Sea)
  - West Aegean Islands (Euboea)
  - Sporades (Northern)
  - Cyclades
  - Saronic Islands (Argo-Saronic Islands)
  - Dodecanese (Southern Sporades)
  - Crete

Agatti Island

What is in news?

- Recently, National Green Tribunal has granted an interim stay on felling of coconut trees in Agatti Island in Lakshadweep for the purpose of forming a beach road.
- It has constituted a committee to find out whether there has been any violation of the Integrated Island Management Plan of Lakshadweep.

Agatti Islands

- Agatti Island is an island, situated on a coral atoll called Agatti atoll in the Union Territory of Lakshadweep.
- An atoll is a ring-shaped coral reef, island, or series of islets. An atoll surrounds a body of water called a lagoon.

Pripyat River

Context

- The World Wide Fund (WWF) for Nature has warned that the dredging of the Pripyat River that flows near the site of nuclear accident at Chernobyl, could wreak havoc on an estimated 28 million people in Ukraine.

About

- Pripyat River flows east through Ukraine, Belarus, and Ukraine again, draining into the Dnieper.
- Dnieper River is Ukraine's most important river, on which its capital city of Kiev is located.
- The Pripyat River is being dredged as part of the restoration of a bilateral waterway between Ukraine and Belarus and is being seen as the first step of the much larger E40 project.
- The Pripyat will become a permanent source of radioactive contaminants-the WWF statement warned.

E40 waterway

- The E40 Inland Waterway is a transnational project. It aims at establishing a 2,000 km Black Sea -to-Baltic-Sea inland waterway through Poland, Belarus and Ukraine connecting the seaports of Gdansk and Kherson.

Nagorno-Karabakh

Context

- Recently, clashes erupted between Armenia and Azerbaijan over the Nagorno-Karabakh region.

The region

- Nagorno-Karabakh, also known as Artsakh, is a **landlocked region in the South Caucasus,** within the mountainous range of Karabakh.
- Nagorno-Karabakh is a disputed territory, internationally recognized as part of Azerbaijan, but mostly governed by the Republic of Artsakh a defacto independent state with an Armenian ethnic majority.

South Caucasus

- South Caucasus also known as theTranscaucasia is a geographical region in the vicinity of the southern Caucasus Mountains on the **border of Eastern Europe and Western Asia**.
- Transcaucasia roughly **corresponds to modern Georgia, Armenia, and Azerbaijan.**

Baltic States

- The Baltics, is a geopolitical term, typically used to group the three sovereign states in Northern Europe on the eastern coast of the Baltic Sea: **Estonia, Latvia,and Lithuania.**
- All three countries are members of NATO, the Eurozone, the OECD, and the European Union.
- All three are classified as **high-income economies by the World Bank** and maintain a **very high Human Development Index**.
- The Baltic States are bounded on the west and north by the Baltic Sea, which gives the region its name, on the east by Russia, on the southeast byBelarus, and on the southwest by Polanda nd an exclave of Russia.

English Channel

Context

- Recently, Google celebrated the 80th birth anniversary of AratiSaha, the first Asian woman to swim across the English Channel.

About

- English Channel is an **arm of the Atlantic Ocean** that separates Southern England from northern France.
- It **links to North Sea by the Strait of Dover** at its northeastern end. It is the busiest shipping area in the world.
- The Strait of Dover, at the Channel's eastern end, is its narrowest point.Its widest point lies between Lyme Bay and the Gulf of Saint Malo, near its midpoint.
- The Channel is **of geologically recent origin**, having been dry land for most of the Pleistocene period.

AWA GAUJA

- It is a hunter gatherer tribe of 400 people who reside in Amazon Rainforest, Brazil.
- They are recently suffering genocide because of illegal loggers who are encroaching upon their land.

Grand Ethipian Renaissaince Dam -In News

- The **Grand Ethiopian Renaissance Dam** sometimes referred to as **Hidase Dam** is a gravity dam on the **Blue Nile River in Ethiopia** that has been under construction since 2011.
- It is in the **Benishangul-Gumuz Region of Ethiopia,** about 15 km east of the border with Sudan.
- At **6.45 gigawatts**, the dam will be the **largest hydroelectric power plant in Africa when completed**, as well as the seventh largest in the world.
- Egypt & Ethiopia have disputes over the dam.
- The Blue Nile is a river originating at **Lake Tana in Ethiopia**. With the White Nile, it is one of the two major tributaries of the Nile.

Wadi Rum

- Wadi Rum known also as the **Valley of the Moon**, is a valley cut into the sandstone and granite rock in southern **Jordan**, to the east of Aqaba.
- It is the largest wadi in Jordan. Wadi refer to a dry (ephemeral) riverbed that contains water only when heavy rain occurs.

Gilgit-Baltistan

Context

- Recently, India slammed Pakistan for its attempt to accord provincial status to the "so-called Gilgit-Baltistan.

About

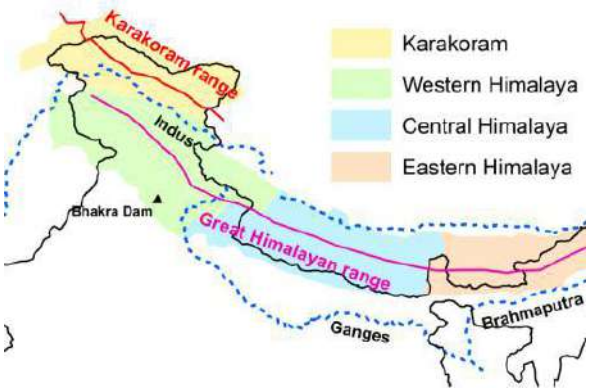
- Gilgit Baltistan is bordered by Kashmir, POK, China and Afghanistan.
- It is a part of Ladakh, however illegally occupied by Pakistan.
- Three of the **world's longest glaciers outside the polarregions** are found in Gilgit-Baltistan: the **Biafo Glacier, the Baltoro Glacier, and the Batura Glacier.**
- The Deosai Plains in this region constitute the second-highest plateau in the world after Tibet, at 4,115 metres.
- The plateau lies east of Astore, south of Skardu and west of Ladakh.
- Gilgit-Baltistan is home to more than 20 peaks of over 6,100metres, including **K-2 the second highest mountain** on Earth.

Montenegro: In News

- Montenegro, which means **"Black Mountain"**, borders Bosnia-Herzegovina to the northwest, Serbia to the northeast, Kosovo to the east, Albania to the southeast, the Adriatic Sea to the southwest, and Croatia to the west.
- Montenegro is a founding member of the **Union for the Mediterranean.** Capital- **Podgorica.**

Karakoram Range

- The Karakoram mountain range spans the borders of India, Pakistan and China with the northwest range extending to Afghanistan and Tajikistan.
- It begins in the Wakhan Corridor (Afghanistan) in the west and encompasses the Gilgit-Baltistan and extends into Ladakhand the Aksai Chin region controlled by China.
- It is the second highest mountain range in the world.
- It is a part of the complex of ranges including the Pamir Mountains, the Hindu Kush and the Himalayan Mountains.
- The Karakoram has eight summits over 7,500 m height, with four of them exceeding 8,000 m K2, the second highest peak in the world at 8,611 m (28,251 ft), Gasherbrum I, Broad Peak and Gasherbrum II.



- Karakoram is the most heavily glaciated part of the worldoutside the polar regions.
- The Siachen Glacier and the Biafo Glacier rank as the world's second and third longest glaciers outside the polar regions.

Rhine River

- Germany's Rhine River is entering dry summer month. with water levels at their lowest in two decades.
- The Rhine is one of the major European rivers, which begins in Graubunden in the southeastern Swiss Alps, Switzerland and flows in a mostly northerly direction through
- Germany and the Netherlands, emptying into the North Sea. The largest city on the Rhine is Cologne, Germany,

Mount Merapi

- **Indonesia's most active volcano** in Mount Merapi recently erupted twice.
- Mount Merapi (literally Fire Mountain in Indonesian and Javanese), is an active stratovolcano located on the border between Central Java and Indonesia.
- It has erupted regularly since 1548.
- A **strato volcano** also known as **composite volcano; it is a tall, conical volcano composed of layers of hardened lava and volcanic ash.**
- These volcanoes are characterized by a steep profile and periodic explosive eruptions.
- The lava that flows from them is highly viscous, cools and hardens before spreading very far.

Botswana

- Hundreds of elephants that died mysteriously in Botswana's famed Okavango Delta.
- Countries bordering Botswana (landlocked) see Map.
- Okavango is a swampy inland delta formed where the Okavango River reaches a tectonic trough in the central part of the endorheic basin of the Kalahari. It is inscribed on the UNESCO World Heritage List.
- Endorheic: Drainage basin that normally retains water and allows no outflow to other external bodies of water. E.g.-river or ocean. Basins, which eventually lead to the ocean, are Cryptorheic.

World Oceans Day

- World Oceans Day is an international day that takes place annually on 8 June.
- The concept was originally proposed in 1992 by Canada's International Centre for Ocean Development and the Ocean Institute of Canada at the **Earth Summit** – UN Conference on Environment and Development in Rio de Janeiro, Brazil.
- The international day supports the implementation of worldwide **Sustainable Development Goals (SDGs)**, and fosters public interest in the management of the ocean and its resources
- The theme for 2020 'World Ocean Day' was **'Innovation for a sustainable ocean'.**
- 2020 World Oceans Day called on world leaders **to protect 30% of our blue planet by 2030**. This critical need is called **30x30.**

Senkaku Islands

- Recently, **Japan** changed the name of the area containing the **Senkaku Islands from —Tonoshir to —TonoshiroSenkaku.**
- The islands are the focus of a territorial dispute between Japan and China and between Japan and Taiwan.
- Senkaku Islands are known as the **Diaoyu Islands by China and Tiaoyutai by Taiwan.**

INDIAN GEOGRAPHY

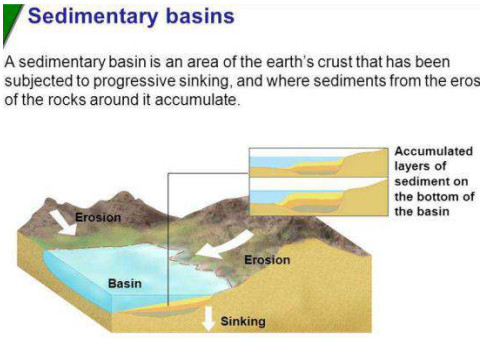
Sedimentary Basins

Context

- Oil and Natural Gas Corporation (ONGC) Limited has begun crude oil production from the Asokenagar-1 well, Bengal Sedimentary Basin in 24 Paragana district.

What are Sedimentary Basins?

- Sedimentary basins are places where **subsidence of Earth's crust has allowed sediment to accumulate** on top of a basement of igneous and metamorphic rocks.
- Over geologic time these sediments and associated fluids **are chemically and mechanically transformed through the compaction and heating** associated with basin subsidence.



- These **transformations yield the energy resources of petroleum, natural gas**, coal, geothermal energy, and uranium.
- They also lead to the precipitation of a wide range of ores for important metals such as copper, lead, zinc, iron, and mercury.

The recent discovery

- Discovery of the Ashoknagar Well made the Bengal basin India's eighth producing sedimentary basin.
- The other basins are --- Krishna-Godavari (KG), Mumbai Offshore, Assam Shelf, Rajasthan, Cauvery, Assam Arakan Fold Belt and Cambay.
- The above seven basins of India produce 83 percent of established oil and gas reserves.

Table : Categories of Indian sedimentary basins

Type of basins	Area (Sq. KM)	Hydrocarbons Prospectivity	Basins/ Region
Category I (7 Basins)	518500	Established commercial production	Cambay, Assam Shelf, Mumbai offshore, Krishna Godavari, Cauvery, Assam Arakan Fold Belt and Rajasthan
Category II (3 Basins)	164000	Known accumulation of hydrocarbons but no commercial production as yet	Kutch, Mahanadi-NEC & Andaman-Nicobar
Category III (6 Basins)	641000	Indicated hydrocarbon shows that are considered geologically prospectivity.	Himalayan Foreland, Ganga, Vindhyan, Saurashtra, Kerala-Konkan-Lakshadweep & Bengal
Category IV (10 basins)	461200	Uncertain potential which may be prospective by analogy with similar basins in the world.	Karewa, Spiti-Zanskar, Satpura-South Rewa-Damodar, Narmada, Decan Syneclise, Bhima-Kaladgi, Cuddapah, Pranhita-Godavari, Bastar, Chhattisgarh
Deepwater	1350000		East & west cost from 400 m water depth to EEZ
Total	3134700	-	

Sedimentary Basins of India

- According to the Directorate General of Hydrocarbons,

there are 26 sedimentary basins in India.
- They cover a total area of 3.4 million square kilometer.
- Of these, 16 are on land basins, 7 located both on land and offshore and 3 completely offshore.

Report on Southwest Monsoon 2020

Context

- National Weather Forecasting Centre of the India Meteorological Department (IMD), has come out with the End of the Season—Southwest Monsoon 2020'.

Key Highlights of the Report

- Seasonal rainfalls over Northwest India, Central India, South Peninsula and Northeast (NE) India were 84%, 115%, 130% and 106% of their respective LPA.
- Southwest monsoon current reached south Andaman Sea and Nicobar Islands on 17th May 2020 (5 days ahead of its normal date).
- During the season, one Severe Cyclonic Storm —NISARGA formed during 1st to 4th June.
- This year also witnessed absence of monsoon depression during the season.

Monsoon Rainfall 2020	
East & Northeast India	+6%
Northwest India	-16%
Central India	+15%
South Peninsula	+29%

Long Period Average

- IMD **brands the monsoon as _normal' or _deficient' based on** how it fares against its benchmark Long Period Average (LPA).
- LPA is the average rainfall received by the country as a whole during the south-west monsoon, for a 50-year period.
- The current LPA is 89 cm, based on the average rainfall over years 1951 and 2000. This acts as a benchmark against which the rainfall in any monsoon season is measured.

IMD maintains five rainfall distribution categories on an all-India scale. These are:

1. **Normal or Near Normal:** When per cent departure of actual rainfall is +/-10% of LPA, that is, between 96-104% of LPA
2. **Below normal:** When departure of actual rainfall is less than 10% of LPA, that is 90-96% of LPA
3. **Above normal:** When actual rainfall is 104-110% of LPA
4. **Deficient:** When departure of actual rainfall is less than 90% of LPA
5. **Excess:** When departure of actual rainfall is more than 110% of LPA

Report on the Climate of India

Context

- Recently, IMD issued a Report on the climate of India during 2020.

Key findings of the Report

- 2020, was the **eighth warmest year on record** since nation-wide records commenced in 1901.
- The **annual mean land surface air temperature** averaged over the country was **+0.29 degree C above normal** (based on data between 1981-2010).
- The **highest warming was observed over India in 2016** when the mean land surface temperature was +0.71 degree C above normal.
- 12 out of 15 warmest years were during the recent fifteen years (2006-2020).
- The past decade **(2011-2020) was also the warmest decade** on record.
- Averaged annual mean temperature during 1901-2020 showed an increasing trend of 0.62 degrees C in 100 years.
- La Niñas typically has a cooling effect on global temperatures, but this is now offset by global warming due to greenhouse gas emissions.

- As a result, La Niña years now are warmer than years with El Niño events of the past.
- The fact that there was a rise of over 1 degrees C in global mean surface temperature over pre-industrial levels in a La Nina year is a sign of global warming.
- India experienced some extreme climate events like extremely heavy rainfall, floods, landslides, thunderstorm, lightning, cold waves which killed hundreds of people.

M Sand

Context

- The High Court of Karnataka has struck down the new rule enacted to collect Rs 70 per tonne from persons who transport processed **building stone materials such as aggregates or jelly, size stones, boulders, M-sand**, and other varieties from other States with a valid permit.

MSand

- M Sand is **artificial sand made from crushing of rock** or granite for construction purposes in cement or concrete.
- It is used **as a substitute for river sand**.
- M sand differs from natural river sand in its physical and mineralogical properties.

Advantages of M Sand

- It is highly cohesive and compressive in strength.
- It **does not have the presence of impurities such as clay, dust and** silt coatings. This helps in producing better quality concrete.
- M-sand **produced under strict industrial control and manufactured to meet BIS standards** has proven to produce stronger concrete compared to river sand.
- A nearly 30 % increase in masonry strength is obtained with the use of manufactured sand.
- It **requires a lower water-cement ratio if the mortar is mixed with** manufactured sand, which also results in better characteristics in the hardened state.
- It **does not contain organic and soluble compound that affects the setting time and** properties of cement, thus the required strength of concrete can be maintained.

M Sand in India

- All the **four southern statesAndhra Pradesh, Tamil Nadu, Telangana, Karnataka have recognized** it as a substitute for river sand, and have been promoting its use over the years. Gujarat also manufactures M-sand.
- Karnataka has been the most pro-active of the lot. In fact, **the 2011 sand policy encourages establishment of Msand units by giving it top priority while allotting** quarries. The State has 164 M-sand manufacturing units that produces 20 million tonnes of M sand per annum.

Difference Between M-sand and River-sand

Sr.No.	M-Sand	River Sand
1	M-Sand manufactured in a factory	This naturally available on river banks
2	The source of Crushed sand is a quarry. It is manufactured by quarry stones, Crushing rocks, or larger aggregate pieces into sand size particles in a factory or quarry.	This is naturally available and extracted from the riverbanks or river beds.
3	The shape of Crushed sand is angular and cubical and has a rough texture and hence, better for concrete.	The shape of natural sand is rounded and has a smooth surface.
4	No moisture content.	Moisture is generally present between the particles. Hence, it affects the assumptions of concrete mix design and quality of concrete.
5	This sand highly recommended for Reinforced concrete purposes and brick/block works.	River sand is recommended for Reinforced concrete, plastering and brick/blockwork.
6	Particle passing 75 microns: Up to 15%	Particle passing 75 microns: Up to 3%
7	M-sand specific gravity is approximate 2.73 (Depends on parent rock.)	River sand specific gravity is approximate 2.65 (Depends on rocks in the catchment area.)
8	M-sand dry density of 1.75 kg/m^3	Naturally Sand dry density of 1.44 kg/m^3
9	M-sand is manufactured to conform to zone II.	This sand mostly conforms to zone II and zone III
10	There is less adulteration.	There is a high probability of adulteration because of acute shortage. Natural sand adulteration with saline sea sand is common in coastal areas.
11	M-sand less damage to the environment as compared to natural sand.	This river sand is harmful to the environment. It reduces the groundwater level and rivers water gets dried up.

Koilwar Bridge

Context

- Recently, Koilwar bridge over Sone river in Bihar was inaugurated.

About

- Koilwar Bridge, (officially Abdul Bari Bridge) is 1.44 Km long rail-cum-road bridge connects Arrah with Patna, the capital of Bihar.
- The bridge is is presently the oldest operational railway bridge in India standing since 04 November 1862.
- From 1862 to 1900, Koilwar bridge remained as the longest river bridge in India.

Son River

- Son River is a perennial river that originates near Amarkantak Hill in Madhya Pradesh just east of the head water of the Narmada River.
- It parallels the Kaimur hills, flowing east-northeast through Uttar Pradesh, Jharkhand and Bihar states to join the Ganges just west of Patna.
- Sone river is the southern and second-largest tributary of the Ganges' after Yamuna River.
- The Kabrakhurd is a beautiful place on the banks of the Son river, primarily due to its picnic spots.

Haldibari-Chilahati Rail Link

Context

- PM Modi and Sheikh Hasina launched the 5th rail link connecting India and Bangladesh. It is called Haldibari-Chilahati rail link.

About

- The rail link, 3.5 km of which is on the Indian side and the rest in Bangaldesh, was operational till 1965 and waspart of the broad-gauge rail route from Kolkata to Siliguri during partition.
- But the link got disconnected in 1965 after the war with Pakistan.

Other rail links

- At present there are four other operational rail linksbetween both countries.They are
  - Petrapole (India)-Benapole (Bangladesh),
  - Gede (India)-Darshana (Bangladesh),
  - Singhabad (India)-Rohanpur (Bangladesh) and
  - Radhikapur (India)-Birol (Bangladesh).

Significance

- The 10.5 km long Haldibari-Chilahati Rail Link isexpected to further strengthen people to people contactand boost trade between the two neighbours.

Vanadium

Context

- According to the GSI, Arunachal Pradesh is likely to become India's prime producer of Vanadium.

Key Properties

Pure vanadium is:

- Bright white in appearance
- Soft
- Ductile
- Has good structural strength
- Possesses good corrosion resistance to alkalis, sulphuric acid, hydrochloric acid and salt water
- It oxidizes readily at temperatures greater then 660°C
- Has a low fission neutron cross section

Applications

- The most important use of vanadium is as an additive for steel, with approximately 80% of vanadium going into ferrovanadium, a steel additive.
- It is used for the production of rust resistant, spring and high speed tool steels.
- It is also added to steels to stabilize carbides.
- Vanadium oxide (V2O5) is **used as a catalyst in manufacturing sulfuric acid and maleic** anhydride and in making ceramics.
- It is added to **glass to produce green or blue tint**. Glass coated with vanadium dioxide (VO2) can block infrared radiation at some specific temperature.
- Vanadium compounds are also used in a number of applications such as:
  - Vanadium pentoxide as a catalyst in the ceramics industry
  - As a **mordent in the printing and dyeing of fabrics**
  - In the manufacture of aniline black

Vanadium in the environment

- Vanadium is never found unbound in nature.
- Vanadium occurs in about 65 different minerals among which are patronite, vanadinite, carnotite and bauxite.
- The largest resources of vanadium are to be found in China followed by South Africa and Russia.

- Watering is an important way in which vanadium is redistributed around the environment because venedates are generally very soluble.
- Vanadium is abundant in most soils, in variable amounts, and it is taken up by plants at levels that reflect its availability.

Vanadium and India

- India is a significant consumer of vanadium but is not a primary producer of the strategic metal.
- **India consumed 4% of about 84,000 metric tonnes of va**nadium produced across the globe in 2017.
- According to the Indian Bureau of Mines (2018 database), the total estimated reserves or resources of vanadium ore is 24.63 million tonnes, with an estimated V2O5 content of 64,594 tonnes.

Dam Rehabilitation and Improvement Project (DRIP) Phase-II & Phase-III

Context

- The Cabinet Committee on Economic Affairs (CCEA) chaired by Prime Minister Narendra Modi has approved the Dam Rehabilitation and Improvement Project (DRIP) Phase-II & Phase-III.

Aim of Project

- The scheme envisages comprehensive rehabilitation of 736 existing dams located across the country.
- The objective of the Project is to improve the safety and operational performance of **selected existing dams** in the territory of the participating states.

Financial Aid

- By World Bank and AIIB for phase II & III.

Some developments in DRIP Phase- I

- **Dam Health and Rehabilitation Monitoring (DHARMA):** A system to monitor the health of dams, has been developed and being used by 18 states.
- **A seismic hazard analysis information system (SHAISYS)** has also been developed.

India and Dams

- India **ranks third globally** after China and US, with 5,334 large dams in operation.
- In addition, about 411 dams are under construction. There are also several thousand smaller dams.
- The dams and reservoirs store approximately **300 billion cu mtr of water annually**.

List Of Major Dams in India	State	River
Bhavani Sagar dam	Tamil Nadu	Bhavani
Tungabhadra Dam	Karnataka	Tungabhadra
Rihand Dam	Uttar Pradesh	Rihand
Maithon Dam	Jharkhand	Barakar
Koyna Dam	Maharastra	Koyna
Bisalpur Dam	Rajasthan	Banas
Mettur Dam	Tamil Nadu	Kaveri
Krishnarajasagar Dam	Karnataka	Kaveri
Indira Sagar Dam	Madhya Pradesh	Narmada
Cheruthoni Dam	Kerela	Cheruthoni
Sardar Sarovar Dam	Gujarat	Narmada
NagarjunaSagar Dam	Andhra Pradesh	Krishna
Hirakud dam	Odisha	Mahanadi
Bhakra Nangal Dam	Punjab	Sutlej
Tehri Dam	Uttarakhand	Bhagirathi

Feni Bridge

Context

- Feni bridge connecting **Sabroom in India with Ramgarh in Bangladesh** will be completed by December this year.

Sabroom

- Sabroom is a town in South Tripura located on the banks of the FeniRiver, which separates India and Bangladesh.

The Bridge

- The **double laned bridge** is being built in Tripura to access Chittagong port to carry goods and heavy machineries for thenortheast region and the rest of India via Bangladesh through the **Chittagong international Port.**
- The Bangladesh government earlier agreed to allow India to use the Chittagong port, about 72 km from Tripura's southern border town of Sabroom.
- The National Highway—8, which connects Tripura with rest of India, has been extended up to Sabroom border town.

The only route earlier

River Feni

- Feni is a trans-boundary river with an ongoing dispute about water rights.
- It originates in South Tripura, flows through Sabroom town and then enters Bangladesh.
- Muhuri River, also called Little Feni, from Noakhali District (Bangladesh) joins it near its mouth.
- A special court sentenced former Union Minister Dilip Ray and three others to three years of jail term for irregularities in the allocation of the **Brahmadiha coal block in Jharkhand** in 1999.

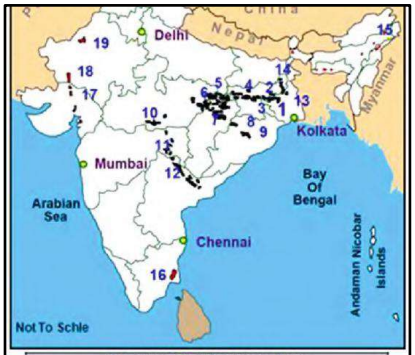
Coal

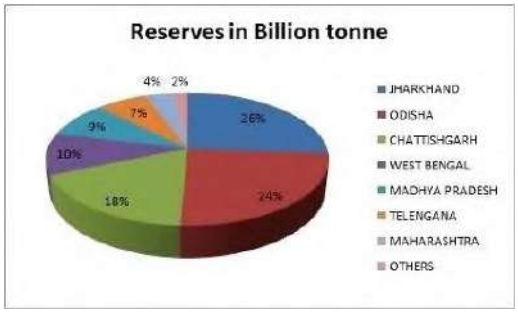
- Coal is a combustible black **sedimentary rock**, formed as rock strata called coal seams.
- Coal is mostly carbon with variable amounts of other elements; chiefly hydrogen, sulfur, oxygen, and nitrogen.
- Coal supplies about a quarter of the world's primary energy and two-fifths of its electricity.

Coal in India

- Coal in India was **first mined in 1774** by East India Company in **Raniganj Coalfield** along the Western bank of Damodar River.
- Today, India has the **fifth largest coal reserves in the world**.
- India is the **second largest producer of coal in the world**, after China.

Distribution & Key Statistics





GONDWANA COALFIELDS			
1.	Raniganj	2.	Jharia
3.	Bokaro	4.	North Karanpura
5.	Singrauli	6.	Sohagpur
7.	Korba	8.	Ib-valley
9.	Talchir	10.	Satpura
11.	Wardha	12.	Godavari
13.	Birbhum	14.	Rajmahal
TERTIARY COAL / LIGNITE FIELDS			
15.	Assam-Mehgalaya	16.	Neyveli
17.	Cambay	18.	Barmer-Sanchor
19.	Bikaner	20.	Jammu and Kashmir

IMPORTANT COAL FIELDS OF GONDWANA

STATE	COAL FIELDS
West Bengal	Raniganj,Bankura
Bihar	Jharia,Giridih,Bokaro,Daltonganj,Karanpur,Ramgarh
Odisha	Talchir,Rampur-Hingir(Sambalpur District)
Andhra Pradesh	Singareni,Kamavaram
M.P	Umaria,Singrauli,Korba,Chirmiri,Sohagpur,Bisrampur,Mohapani
Maharastra	Kota,Chikiyala,Rajur,Bandar
Gujurat	Ghunkeri

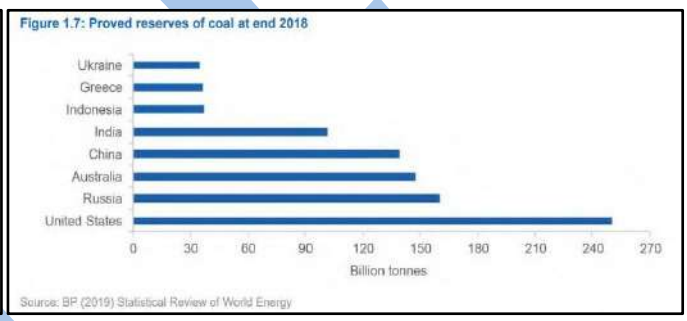
Lower Gondwana
Lower & upper Gondwana
Upper Gondwana

Fuel type	June 2019 (actual)
Unit	GW
Coal	201
Renewable	79
Hydro	45
Gas	25
Nuclear	7
Total	358

IMPORTANT COAL FIELDS OF TERTIARY

STATE	COAL FIELDS
Assam	Umasor,Charogaon,Jarain, karaibari,Tura,Sogring
Jammu & Kashmir	Ladda,Kalkoth,Methkha
Rajasthan	Palana(in Bikanir)
Tamil Nadu	Neyvalley,Cuddalore
Kerala	Varkala,Quilon
Gujurat	Umarsar(in kutch)

Khasi & jaintia hills
Garo hills



Key government agencies include:

The Ministry of Coal:

Responsible for the formulation of policies and strategies for coal exploration, project approvals and other issues relating to the production, supply, distribution and pricing of coal in India.53 The Ministry of Coal also sets production targets and other performance indicators for Coal India through a Memorandum of Understanding (MoU).

The Coal Controller:

A subordinate office of the Ministry of Coal which sets standards and procedures for assessing coal quality, inspects coal quality, performs an arbitrator role in the event of quality disputes, issues project approvals, collects excise duties and manages coal-related statistics.54

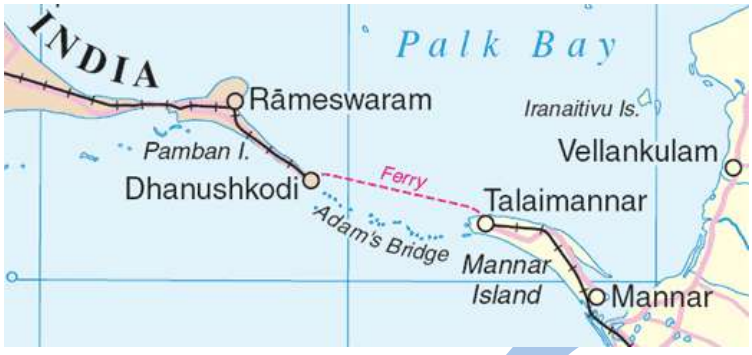
State governments:

Approve mining licences and leases — which are required before the Ministry of Coal grants final project approval — and sets royalty rates.

Chushul

- Chushul is a village in Ladakh. It is located in the Durbuk tehsil, in the area known as "Chushul Valley", **south of the Pangong Lake and west of theSpanggur Lake**.
- The Line of Actual Control with China runs about 5 miles east of Chushul, across the Chushul Valley.

- Chushul is **one of the five officially agreed Border Personnel Meetingpoints** between the Indian Army and the People's Liberation Army of China for regular consultations and interactions between the two armies to improve relations.



Border Meeting Points

- India and China hold Border Personnel Meetings at five points --Daulat Beg Oldie in northern Ladakh, Kibithu in ArunachalPradesh, Chusul in Ladakh, Bum-La near Tawang in Arunachal Pradesh and Nathu-La in Sikkim.

Mundra Port

- Mundra Port is the **largest private port of India** located on the north shores of the Gulf of Kutch near Mundra, Kutch district, Gujarat.
- Mundra Port is India's **first multi-product port-based special economic zone** (SEZ).
- The Republic of Kazakhstan is considering building a terminal at the Mundra Port to provide Indian goods direct access to Central Asia via the Iran-Turkmenistan-Kazakhstan railway line.

Nathu La

Context

- India-China standoff has casted a shadow on Nathu La border trade.

India and China have signed a memorandum on opening border trade through the Sikkim-Tibet frontier crossing of Nathu La.

About

- Nathu La is a mountain pass in the Himalayas in East Sikkim.
- It connects **Sikkim with China's Tibet Autonomous Region**.
- The pass, at 4,310 m above mean sea level, forms a part of an **offshoot of the ancient Tea Horse Road.**
- **Only citizens of India can visit the pass,** and only after obtaining a permit in Gangtok.
- Nathu La is **one of the three open trading border posts between China andIndia**; the others are Shipkila in Himachal Pradesh and Lipulekh at the trisection point of Uttarakhand–India, Nepal and China.
- Sealed by India after the 1962 Sino-Indian War, Nathu La was re-opened in 2006 following numerous bilateral trade agreements.
- It is also one of the five officially agreed Border Personnel Meeting points between the Indian Army and the People's Liberation Army of China for regular consultations .

Ram Setu

Context

- The government has approved an underwater research project to ascertain the origins of the Ram Setu.

About

- Adam's Bridge, also known as Rama Setu, is a chain of limestone shoals, between Pamban Island, also known as Rameswaram Island, off the south-eastern coast of Tamil Nadu, and Mannar Island, off the north-western coast of Sri Lanka.
- Geological evidence suggests that this bridge is a former land connection between India and Sri Lanka.
- The bridge is 48 km long and separates the Gulf of Mannar (south-west) from the Palk Strait (northeast).

- . Some of the regions are dry, and the sea in the area rarely exceeds 1 meter (3 ft.) in depth, thus hindering navigation.
- It was reportedly passable on foot until the 15th century when storms deepened the channel. Rameshwaram temple records say that Adam's Bridge was entirely above sea level until it broke in a cyclone in 1480.

Brahamputra River

Context

- India's longest river ropeway was unveiled in Guwahati, Assam. It is built across river Brahmaputra.

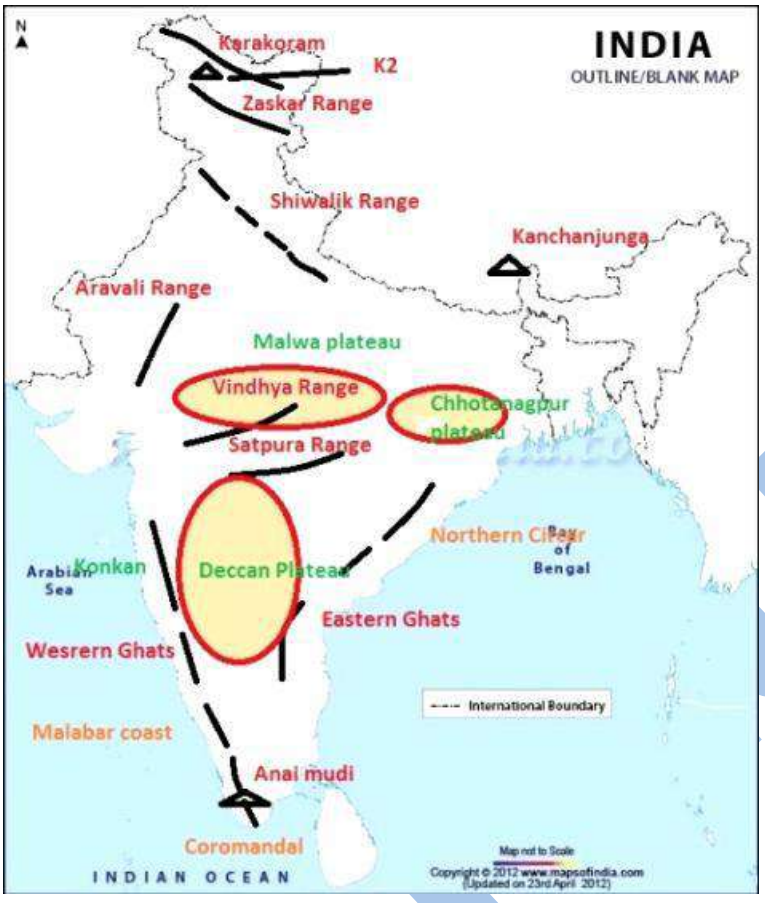
BRAHMAPUTRA	FEATURES
Source	Chemayungdung Glacier- Kailas Range (SE of Mansarovar Lake)
Type	Transboundary River
Names	YarlungTsangpo in Tibet, Siang/Dihang River in Arunachal Pradesh and Luit, Dilao in Assam
Flows through	Tibet, India and Bangladesh.
Left Bank Tributaries	Dibang River, called by Dimasa tribe , Lohit River, Dhansiri River, Kolong River
Right Bank Tributaries	Kameng River, Manas River, Beki River, Raidak River, Jaldhaka River, Teesta River, Subansiri River
Enters India	At NamchaBarwa (Arunachal Pradesh)
Size	Volume wise largest river of India
Forms	Largest no. of fresh water riverine islands in the world. Majuli (largest in the world)
Enters Bangladesh	Near Dhubri (Assam)

Aravalli Hills

Context

- Using leaf vines, women and children tied symbolic rakhi to the trees and took an oath to protect the Aravalli forests.

ARAVALLI RANGE	FEATURES
Location	Starts near Delhi, passes through Haryana and Rajasthan. Ends in Gujarat.
Direction	South-West
Highest peak	Guru Shikhar (1,722 metres (5,650 ft)
Type	Oldest range of Fold Mountains in the World &India
Composed of	metasedimentary rock (sedimentary rocks metamorphised under pressure and heat without melting) and metavolcanic rock
Passes	PipliGhat, Dewair and Desuri
Rivers flowing through it	Banas and Sahibi (tributaries of Yamuna), &Luni River
Major Nature Reserves	Sultanpur National Park, Sariska Tiger Reserve, Ranthambore National Park, Mount Abu Wildlife Sanctuary, Kumbhalgarh Wildlife Sanctuary



Durgam Cheruvu

Context

- Recently, the cable stayed bridge on **Durgam Cheruvu** was inaugurated.

About

- DurgamCheruvu also known as RaidurgamCheruvu is a **freshwater lake in Telangana**.
- The lake is located near the city of Hyderabad. The lake is also **known as Secret Lake** because it is hidden between the localities of **Jubilee Hills and Madhapur.**
- Under the rule of the **QutubShahi dynasty (ca. 1518–1687),** this lake served as the drinking water source for the residents of Golkonda Fort.

Kudankulam Nuclear Power Plant

- Kudankulam Nuclear Power Plant is the **largest nuclear power station in India**, situated in Tamil Nadu.
- Current capacity- **2 GW**
- It is a **Indo-Russian Joint Venture.**
- It is the **only Indian Nuclear Power Plant to use Pressurized Water Reactor Technology**.

Diamar Basha Dam

- China & Pakistan have signed an agreement to build this dam on the **River Indus** in Gilgit Baltistan region of **Pakistan Occupied Kashmir.**
- India has time & again objected to its construction as it is **in POK**& the dam will cause water shortage in Ladakh.

Dibru Saikhowa National Park Assam

- Oil India Limited's decision to reach the target depth of around 3.5 Kilometres beneath the surface of the National Park has raised concerns.
- Dibru-Saikhowa National Park is located in **Assam.**
- The park is **bounded by the Brahmaputra and Lohit Rivers in the north and Dibru river in the south.**
- It is the largest saline swamp forest in north-eastern India, with a tropical monsoon climate.

Ithai Barrage, Manipur

- Manipur urged Central Govt. to decommission this barrage.
- The **Ithai Barrage impounds the Manipur River** just below the confluence of the **Imphal River** and **the Tuitha River**.
- It is part of the Loktak Hydroelectric project.
- Loktak Lake is the largest freshwater lake in Northeast India and is famous for the **phumdis**(heterogeneous mass of vegetation, soil and organic matter at various stages of decomposition) floating over it.
- Located on this phumdi, **KeibulLamjao National Parkis the only floating national park in the world.**
- The park is the last natural refuge of the **endangered Sangai (state animal**), &Manipur brown-antlered deer, one of three subspecies of Eld's deer.

Zojila Pass & Tunnel

- Zoji La is a high mountain pass in the Himalayas in the Indian union territory of Ladakh.
- Located in the Drass, the pass connects the Kashmir Valley to its west with the Drass,Suru valleys to its northeast and the Indus valley further east.
- The **National Highway 1** between Srinagar and Leh in traverses the pass.
- Since vehicle flow stops during winter every year due to heavy snowfall, the all weatherZoji-la Tunnel is being constructed to mitigate this.
- Zoji La tunnel will ensure year-long road connectivity **between Srinagar and Kargil**.

Dehing Patkai Wildlife Sanctuary

- Recently, the government has recommended coal mining in a part of DehingPatkai Wildlife Sanctuary.
- The DehingPatkai Wildlife Sanctuary, also known as the **Jeypore Rainforest** is a part of **DehingPatkai Elephant Reserve.**
- It is located in the districts of **Dibrugarh and Tinsukia**in **Assam**.
- DehingPatkai is a **deciduous rainforest** interspersed with semi-evergreen and lush green flora, the **only patch of virgin rainforest in Assam.**
- Dehing is the name of the river that flows through this forest and Patkai is the hill at the foot of which the sanctuary lies.
- The Wildlife Sanctuary is endowed with rich bio-diversity.

Damodar River

- West Bengal government, the Department of Economic Affairs (DEA), the World Bank and the Asian Infrastructure Investment Bank(AIIB) have recently signed loan agreements to improve irrigation and flood management in the Damodar Valley Command Area.
- Damodar River flows across **Jharkhand and West Bengal.** Rich in mineral resources, the valley is home to large-scale mining and industrial activity.
- **Earlier,** it was known as the **Sorrow of Bengal** because of its ravaging floods in the plains of West Bengal. The floods were tamed after constructing several dams.
- **Origin:** Palamau Region, Jharkhand
- **Tributaries:** Barakar, Konar, Bokaro, Haharo, Jamunia, Ghari, Guaia, Khadia and Bhera

Link Road To Kailash Mansarovar

- India inaugurated a Link Road from **Dharchula (Uttarakhand) to Lipulekh**(China Border) which is known as Kailash MansarovarYatra Route.
- With this the journey can be completed in 1 week instead of 2-3 weeks.
- **Mount Kailash** forms **part of the Transhimalaya**in the Ngari Prefecture, Tibet Autonomous Region, China.
- The mountain is located near Lake Manasarovar and Lake Rakshastal.
- Mount Kailash is considered to be sacred in four religions: **Hinduism, Bon, Buddhism, and Jainism.**

Pangong Tso Lake

- It is an **endorheic lake** in the Himalayas that extends from India to the Tibetan Autonomous Region, China.
- An endorheic lake is a lake that doesn't drain towards the ocean.
- Approximately 60% of the length of the lake lies within the Tibetan Autonomous Region.
- It is **not a part of the Indus river basin area** and geographically a separate landlocked river basin.
- Line of Actual Control **(LAC)** between India & China **passes through it.**

Chardham Tunnel

- The Border Roads Organisation (BRO) has achieved a major milestone in the construction of a 440-m tunnel below the densely populated **Chambatown**in Uttarakhand under the Chardham tunnel project.
- The construction of the tunnel was a challenging task in terms of land acquisition, weak geology, continuous water seepage and densely built area above the tunnel increasing the chances of sinking.
- Char Dham Expressway National Highway, is a proposed two-lane express National Highway with a minimum width of 10 metres in the state of Uttarakhand.
- The proposed highway will connect the four holy places in Uttarakhand :**Gangotri, Kedarnath, Yamunotri and Badrinath.**

Ladakh

Context

- Scientists studied rivers in Ladakh Himalayas, brought out 35 thousand-year history of river erosion and **identified hotspots of erosion.**

Aim of the study

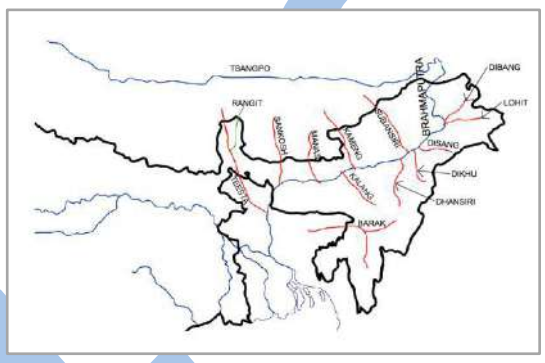
- To understand the landform evolution using stratigraphy and study of landforms like valley fill terraces, alluvial fans etc.

Findings

- The wide valley of **Padam, in the upper Zanskar**, has stored a vast amount of sediments in its landforms. Padam valley is a **hotspot of sediment buffering** in the Zanskar.
- Study of these sediments suggests that most sediments were derived from Higher Himalayan crystalline rocks that lie in the headwater region of Zanskar river.
- The dominant factors responsible for sediment erosion were **deglaciation and Indian Summer Monsoon derived precipitation.**

Dibang River

- Dibang River is a **tributary river of the Brahmaputra** that flows through the Mishmi Hills & Arunachal Pradesh.
- It originates near **Keya pass** on the Indo-Chinese border in the Dibang Valley district of Arunachal Pradesh.
- The **Sisar, Mathun, Tangon, Dri, Ithun and Emra**are the major tributaries of the Dibang.



Indus River

- The Indus River flows through China (western Tibet), India (Ladakh) and Pakistan.
- It originates in the Tibetan Plateau in the vicinity of Lake Manasarovar.
- The river merges into the Arabian Sea near the port city of Karachi in Sindh. It is the longest river of Pakistan.
- The Indus river dolphin is found only in the Indus River.
- It is subspecies of the South Asian river dolphin.
- According to the World Wildlife Fund it is one of the most threatened cetaceans with only about 1,000 still existing.

Galwan River

- The Galwan River flows from the disputed **Aksai Chin region administered by China to the Ladakh union territory of India.**
- It originates to the east of the area of Samzungling on the eastern side of the **Karakoram Range and flows west to join the Shyok River.**
- It is one of the upstream tributaries of the **Indus River.**

Rajaji National Park

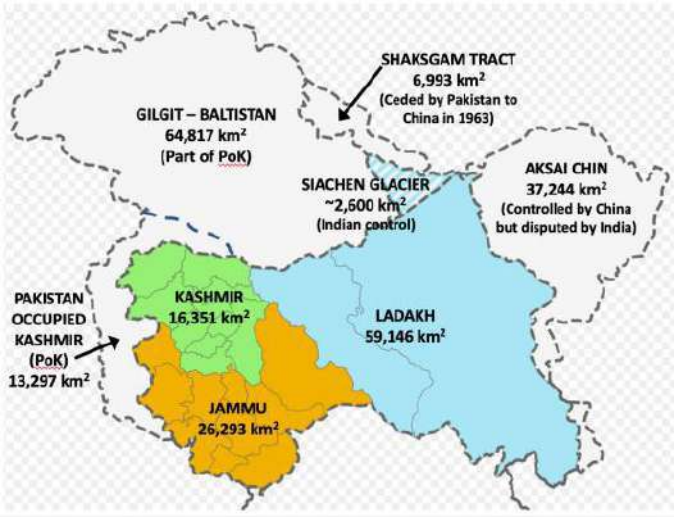
- Rajaji National Park is an Indian **national park and tiger reserve** that encompasses the Shivaliks, near the foothills of the Himalayas.
- The park is spread across **Uttarakhand.**
- The **Ganga and Song rivers** flow through the park.
- Rajaji National Park has been named after C. Rajagopalachari (Rajaji), a prominent leader of the Freedom Struggle.

Depsang Plains

- The Depsang Plains are located at the Line of Actual Control that separates the Indian and Chinese controlled region.
- The Chinese Army occupied most of the plains in 1962.
- India controls the western portion of the plains as part of Ladakh, whereas the eastern portion is part of the Aksai Chin region, which is controlled by China and claimed by India.

Azad Pattan

- Recently, Pakistan and China signed an agreement for the 700 MW Azad Pattan hydel power project **on the Jhelum River** in POK region.
- The project is one of five hydropower schemes on the Jhelum. The other four are:
  - Mahl,
  - Kohala,
  - Chakothi Hattian and
  - Karot projects.
- Azad Pattan, Kohala and Karotare being developed under the **CPEC framework.**
- Note: **Diamer-Bhasha Dam** is also in the preliminary stages of construction, on the **River Indus in Gilgit Baltistan,** Pakistan administered Kashmir. China is helping Pakistan in building it.
- The China Pakistan Economic Corridor (CPEC) is a collection of infrastructure projects meant to deepen economic ties between China and Pakistan. The CPEC will connect China's largest province Xinjiang with Pakistan's Gwadar port in Balochistan. It was launched in 2015 and passes through **Pakistan-occupied Kashmir**.



Nag River

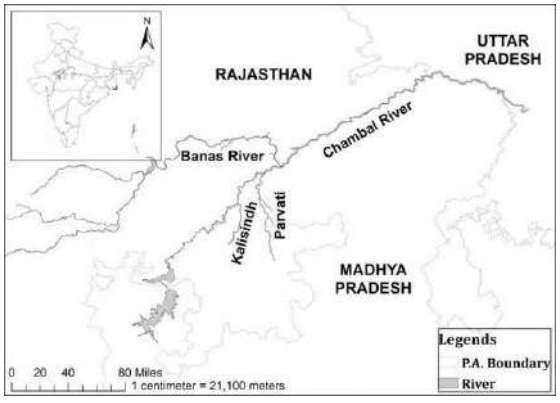
- The Nag River has been reduced to a cursed lady, thanks to industrialisation and urbanisation and alienation of the river: **Bombay High Court.**
- The river flows through the city of Nagpur in Maharashtra.
- Forming a part of the **Kanhan-Pench river system**, the Nag River originates in **Lava hills near wadi.**

Lonar Lake

- The colour of Lonar lake water in **Maharashtra's Buldhana**district turned pink due to a large presence of **the salt-loving 'Haloarchaea' microbes.**
- Lonar Crater sits inside the **Deccan Plateau** – a massive plain of **volcanic basalt rock** created by eruptions, some 65 million years ago.
- Lonar Lake was however, created by an **asteroid collision** with earth impact during the **Pleistocene Epoch.**
- Lonar Lake is **one of the four known, hyper-velocity, impact craters in basaltic rock anywhere on Earth.** The **other three basaltic impact** structures are in **southern Brazil.**

Chambal River

- Dolphin numbers have come down to 68 in the 435-km Chambal sanctuary.
- The Chambal River is a **tributary of the Yamuna River** and forms part of the greater Gangetic drainage system.
- The river flows through **Madhya Pradesh, Rajasthan, and Uttar Pradesh.**
- Chambal River originates from the **SingarChouri peak** on the northern slopes of the Vindhyan escarpment.
- The tributaries of the Chambal include **Shipra, ChotiKalisindh, Sivanna, Retam, Ansar, Kalisindh, Banas, Parbati, Seep, Kuwari, Kuno, Alnia, Mej, Chakan, Parwati, Chamla, Gambhir, Lakhunder, Khan, Bangeri, Kedel and Teelar.**
- The National Chambal Sanctuary lies in **Dholpur, Rajasthan.** It houses the **Critically Endangered gharial.**



Barak River

- Water level rises in Barak river creating flood-like situation.
- The Barak River flows through the states of **Manipur, Nagaland, Mizoram and Assam in India and into the Bay of Bengal via Bangladesh.**
- The principal tributaries of the Barak are River Sonai (Tuirial River), the Jiri River, the Tlawng, Jatinga River, the Longai and the Madhura. **Tipaimukh Dam** is a proposed embankment dam on the Barak River.
- The river enters Bangladesh as Surma and Kushiyara. Later, the river is called the Meghna and receives the combined flow of the Ganga and Brahmaputra.

Pulikat Lake

- Pulicat Lagoon is the second largest brackish water lagoon in India, after Chilika Lake.
- 96% of the lagoon is in Andhra Pradesh and 3% in Tamil Nadu.
- The lagoon encompasses the Pulicat lagoon Bird Sanctuary. The barrier island of Sriharikota separates the lagoon from the Bay of Bengal and is home to the Satish Dhawan Space Centre.
- Major part of the lagoon comes under Nellore district of Andhra Pradesh.
- Two rivers which feed the lagoon are the Arani River at the southern tip and the Kalangi River from the northwest.
- The Buckingham Canal, a navigation channel, is part of the lagoon on its western side.
- Nelapattu Bird Sanctuary is also located nearby in its catchment area.
- Every year approximately 15,000 greater flamingos are reported to visit the lagoon along with pelicans, kingfishers, herons, painted storks, spoonbills and ducks.

Daulat Beg Oldie

- Established during the Sino-Indian conflict in 1962, the world's highest airfield Daulat Beg Oldie in Eastern Ladakh was reopened amid recent India-China conflict.
- Daulat Beg Oldi lies near the easternmost point of the Karakoram Range.
- It lies just 8 km south of the Chinese border and 9 km northwest of the Aksai Chin Line of Actual Control between China and India.

Pong Dam

Context

- 336 migratory birds were reported to be dead in Himachal's Pong Dam region.

About

- MaharanaPratapSagar, also known as Pong Reservoir or Pong Dam Lake was created in 1975, by building the highest earth fill dam in India on the Beas River in the wetland zone of the Siwalik Hills of Himachal Pradesh.

- The reservoir is a wildlife sanctuary and one of the 27 international wetland sites declared in India by the RamsarConvention.

Pangda Village

Context

- According to media reports, China has established a village called **Pangda**, 2 km within Bhutan's territory which is very close to Doklam.
- This was later denied by Bhutan and China.

About

- Pangda is situated just east of the Doklam plateau and approximately 10 km eastof the India-Bhutan-China trijunction.
- Doklam is an area with a plateau and a valley, lying between China's ChumbiValley to the north, Bhutan's Ha Valley to the east and India's Sikkim state's Nathang Valley to the west.

Shahtoot Dam

Context

- India will be constructing the Shahtoot Dam on Kabul river in Afghanistan.

Project impact

- Supply drinking water for around 2 Million people in Kabul city
- Recharge of ground water for drinking purposes in Kabul ground water aquifer.
- Contribution to the national food security (production of more crops, fishery and industry)
- Promotion of tourism industry
- Increase in the job opportunities and income.

Kabul River

- The Kabul River emerges in MaidanWardak Province in the Sanglakh Range of the Hindu Kush mountains in Afghanistan, and is separated from the watershed of the Helmand River by the Unai Pass. The Kabul River empties into the Indus River near Attock, Pakistan.

Saffron Bowl

Context

- The saffron bowl, which was so far confined to Kashmir, may soon expand to the North East of India.
- Plants from seeds transported from Kashmir to Sikkim and acclimatized there are now flowering in Yangyang in the Southern part of the North-East state.

About

- Pampore region, in India, commonly known as Saffron bowl of Kashmir, is the main contributor to saffron production, followed by Budgam, Srinagar, and Kishtiwar districts.
- Saffron has traditionally been associated with the famous Kashmiri cuisine.
- It's its medicinal values were considered as part of the rich cultural heritage of Kashmir.

ECONOMIC GEOGRAPHY

Deepening and Optimization of Inner Harbour Facilities at Paradip Port

Context

- The Cabinet Committee on Economic Affairs has approved the project 'Deepening and Optimization of Inner Harbour Facilities at Paradip Port.

Implementation Strategy

- The project would be developed by the selected Concessionaire on BOT basis. However, the Port will provide the Common Supporting Project Infrastructure.

Mandate

- On commissioning of the project, it shall cater to the requirement of coal & limestone imports.
- It will also aid in export of granulated slag & finished steel products considering the large number of steel plants established in the hinterland of Paradip Port.
- The project shall also facilitate
  - de-congestion of the Port,
  - reduce Sea freight making coal imports cheaper, and
  - boost the industrial economy in the hinterland of the port leading to creation of job opportunities.

Paradip Port

- Paradip Port is a natural, deep-water port on the East coast of India in Jagatsinghpur district of Odisha.
- It is situated at confluence of the Mahanadi River and the Bay of Bengal.
- It is situated 210 nautical miles south of Kolkata and 260 nautical miles north of Visakhapatnam.

Doppler Weather Radars

Context

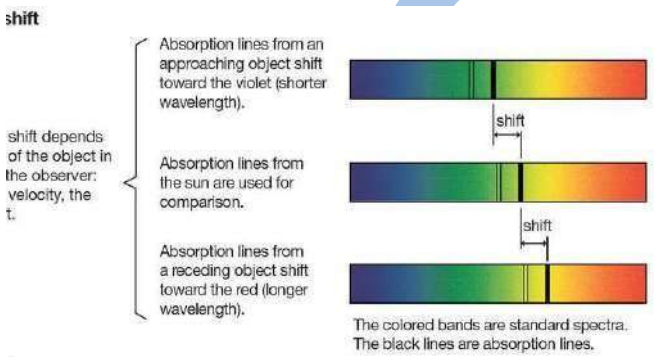
- Union Ministry for Earth Sciences commissioned two of the ten indigenously built Doppler weather radars which will closely monitor the weather changes over the Himalayas.

About Doppler weather Radar

- Doppler weather radar, is a type of radar used to locate precipitation, calculate its motion, and estimate its type (rain, snow, hail etc.).
- Modern weather radars are mostly pulse-Doppler radars, capable of detecting the motion of rain droplets in addition to the intensity of the precipitation.
- Both types of data can be analyzed to determine the structure of storms and their potential to cause severe weather.

Description

- Doppler Effect works on both light and sound objects.
- For instance, when a sound object moves towards you, the frequency of the sound waves increases, leading to a higher pitch.
- Conversely, if it moves away from you, the frequency of the sound waves decreases and the pitch comes down.
- The drop in pitch of ambulance sirens as they pass by and the shift in red light are common examples of the Doppler Effect.
- Edwin Hubble made the discovery that the universe expands as a consequence of the Doppler Effect.
- It has important applications in the fields of astronomy and space technology.



Digital Ocean

Context

- Recently, The Minister of Earth Sciences, Science & Technology and Health & Family Welfare inaugurated —Digital Ocean.

About

- Digital Ocean is a web-based application developed by INCOIS of M/o Earth sciences.
- It is a **first of its kind digital platform** for Ocean Data Management.

Function

- It will facilitate an online interactive web-based environment for data integration, 3D and 4D data visualization, data analysis to assess the evolution of oceanographic features obtained from multiple sources like on site monitoring devices, remote sensing and model data.
- It is a one stop-solution for all data related needs of a wide range of users, including research institutions, operational agencies, strategic users, academic community, maritime industry, and the public.

INCOIS

Indian National Center for Ocean Information Services (INCOIS) is **an autonomous organization** and a unit of the Earth System Science Organization (ESSO) under the **Ministry of Earth Sciences**.

- ESSO-INCOIS was established in **2007.**
- ESSO- INCOIS is mandated to provide the best possible ocean information and advisory services to society, industry, government agencies and the scientific community.
- It provide information about Potential Fishing Zone (PFZ) advisories, Ocean State Forecast (OSF), high wave alerts, tsunami early warnings, storm surge and oil-spill advisories, among others through sustained ocean observations and constant improvements through systematic and focused research.
- The institute has been **serving as the National Argo Data Centre and Regional Argo Data Centre** of the International Argo Programme.

Kaladan Multimodal Project

Context

- India and Myanmar have agreed to work towards the operationalization of the Sittwe port in the Rakhine state in the first quarter of 2021.

Sittwe Port

- Sittwe Port is a **deepwater port constructed by India** at on Lakadan river mouth, Sittwe, the capital of Rakhine State in Myanmar, on the Bay of Bengal.
- Situated at the **mouth of the Kaladan River**, the port is being financed by India as a part of the **Kaladan Multi-Modal Transit Transport Project.**
- The project is aimed at developing transport infrastructure in south western Myanmar and north eastern India.

Kaladan Multi Modal Project

- It is a Multimodal Transit project connecting Kolkata Port with Mizoram via the Sittwe port of Myanmar.
- The project has several sections combining multimodes of transport.
  - 539 km shipping route from seaport of Kolkata
  - in India to Sittwe seaport in Myanmar via Bay of Bengal.
  - 158 km River boat route from **Sittwe seaport to Paletwa** Inland Water Terminal in Chin Statevia Kaladan river in Myanmar.
  - Four-lane road route from **Paletwa (IWT) to Zochawchhuah (India)-Zorinpui (Myanmar)** at Indo-Myanmar border.
  - Road route from Indo-Myanmar border at **Zochawchhuah-Zorinpui to Aizawl**, Mizoram.

Kaladan River

- Kaladanis a river **in eastern Mizoram** and in Chin State and Rakhine State of western Myanmar.
- The Kaladan River is **called the Chhimtuipui River in India.**
- It forms the international border between India and Burma.
- **Source:** Mount Zinghmuh, Chin State, Myanmar
- **Tributary –** Tiau River
- **Mouth-**Sittwe, Bay of Bengal
- Kaladan is the fifth largest river in the world to remain completely unfragmented by dams anywhere in its catchment.
- The first four are Fly, Mamberamo and Sepik in New Guinea and the Pechora in Russia.

Rakhine State

- Formerly known as Arakan, Rakhine is a state in Myanmar.
- Capital: Sittwe
- The Arakan Mountains or RakhineYoma separates Rakhine State from central Burma from North to South.
- Part of Delhi Sultanate and Mughal Empire (under Aurangzeb) in the medieval times. It was followed by Mrauk Kingdom period.
- In the **Treaty of Yandabo (1826)**, Burma was forced to cede Arakan to
- British India.

- In 1948, Arakan became part of the newly independent Union of Burma (later renamed as Myanmar).
- The Rohingya conflict is an ongoing conflict in the northern part of Rakhine State (formerly known as Arakan), characterized by sectarian violence between the Rohingya Muslim and Rakhine Buddhist communities.
- Group active: ArakanRohingya Salvation Army (formerly **Harakah al-Yaqin**).

'Swabhiman Anchal' & Gurupriya Bridge

Context

- Odisha's **remote 'SwabhimanAnchal' the hotbed of Maoists** in the state got access to mobile network connectivity. The area got its first road connectivity two years ago, when Gurupriya Bridge was inaugurated and the region was declared as 'SwabhimanAnchal'.

Gurupriya Bridge

- The Bridge connects villages situated on the other side of the **Balimela Reservoir** with the mainland-Chitakonda Block of Odisha.
- The Balimela Reservoir is located in Malkangiri district, Odisha, **on the river Sileru** which is a tributary of the GodavariRiver.

Mekedatu Project

- Mekedatu is a place at the confluence of **Cauvery** and Arkavathi rivers, 110 kms from Bengaluru.
- And a **multi-purposebalancing reservoir project** over river Kaveriwas built termed as **Mekedatu Project.**
- The aim was to solve the drinking water problems of Bengaluru and Ramnagar district.
- The project intends to store excess water that would otherwise flow into the Bay of Bengal.
- Between 250 MW to 400 MW of electricity is expected to be produced.

Kaveri

- Kaveri rises at **Talakaveri in the Brahmagiri range** in the Western Ghats in Karnataka. It flows through Karnataka andTamil Nadu.
- River Basin: In Tamil Nadu, Karnataka, Kerala and Puducherry.
- Tributaries: **Harangi, Hemavati, Kabini, Bhavani, Lakshmana Tirtha, Noyyal and Arkavati.**
- In Chamarajanagar district it forms the island of **Shivanasamudra**, on either side of which are the Shivanasamudra Falls.

Kosi Rail Mahasetu

Context

- Recently, the Kosi Rail Mega bridge of Indian Railways was inaugurated.

About

- The 1.9 km bridge **connects the Mitihila and Kosi region**. This bridge is of strategic importance along the Indo-Nepalborder.
- It would also make it easy for long distance travel to Kolkata, Delhi and Mumbai for the people of the region.

Baghjan Oil Well

- Recently, Baghjan Oil Well in **Assam**, near the **Dibru-SaikhowaNationalPark**, exploded releasing a continuous stream of natural gas into the atmosphere.
- It occurred due to failing pressure systems in the oil well. Thousands of people and several villages were evacuated.
- This Gas Leak incident is also being referred to as **Tinsukia gas leak**.

Kholongchhu Hydropower Project

- Recently, India and Bhutan have signed concession agreement on the 600 MW Kholongchhu hydroelectric projects (KHEL).
- The project will be the first-ever Joint Venture project to be implemented in Bhutan. It will be located on the lower course of the Kholongchhu River.
- India recently completed 720 MW Mangdechhu Hydro Electric Power Project(onMangdechhu River) and both sides are in process of expediting the completion of other ongoing projects including the1200MW Punatsangchhu-1& 1020MW Punatsangchhu-2.

Athirappilly Hydroelectric Project

- Kerala government's NOC permitting the Kerala State Electricity Board to obtain clearances for the Athirappilly hydroelectric project has evoked protests from **Kadar tribe** and ecologists, who have been campaigning against it.
- Athirappilly project is proposed to be implemented across the **Chalakudy river.**
- Chalakudy River is the **fifth longest river in Kerala**. 1404 km² of the total drainage area of the river lies in Kerala and the rest 300 km² in Tamil Nadu.
- Though Chalakudy river in strict geological sense is a tributary of the **Periyar river**, for all practical purposes it is treated as a separate river by Government and other agencies.
- The Kadar's are a designated Scheduled Tribe in the Indian states of **Tamil Nadu, Karnataka and Kerala.**

Kohala Hydroelectric Project

- The Kohala Hydropower Project is a proposed project that will be located near Kohala, in Azad Kashmir.
- China under the multi-billion-dollar China Pakistan Economic Corridor (CPEC)is set to build up the 1,124-megawatt power project in Pakistan-occupied Kashmir despite India's objection to it.
- The Project will be built on **Jhelum River.**
- The Belt and Road Initiative (BRI), formerly known as One Belt, One Road (**OBOR**) is China's imperialistic and expansionist agenda in large parts of Eurasia, South-Asia, and Africa.
- Dubbed as —**The New Silk Road, it connects China to Africa through seaways and highways**.
- A flagship of the BRI, is the China Pakistan Economic Corridor (CPEC), a collection of infrastructure projects that are currently under construction throughout Pakistan and it passes through the POK region despite India's objections.

Magnetotellurics (MT)

Context

- The National Centre for Seismology (NCS) has started a geophysical survey over the Delhi region for accurate assessment of seismic hazards. This survey is called Magnetotellurics (MT).

Magnetotellurics (MT)

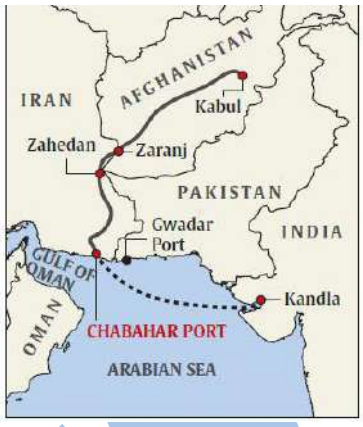
- Magnetotellurics (MT) is an electromagnetic geophysical method for inferring the earth's subsurface electrical conductivity from measurements of natural geomagnetic and geoelectric field variation at the Earth's surface.
- Investigation depth ranges from 300 m below ground by recording higher frequencies down to 10,000 m or deeper with long-period soundings.
- The method is now used in exploration surveys around the world.
- Commercial uses include hydrocarbon (oil and gas) exploration, geothermal exploration, carbon sequestration, mining exploration, as well as hydrocarbon and groundwater monitoring.
- Research applications include experimentation to further develop the MT technique, long-period deep crustal exploration, deep mantle probing, and earthquake precursor prediction research.

Kholongchhu Hydroelectric Project

- India and Bhutan signed concession agreement on the 600 MW Kholongchhu Hydroelectric Projects (KHEL).
- It is the first-ever Joint Venture (JV) project between India and Bhutan.

- Location: Kholongchhu River in eastern Bhutan's Trashiyangtse district.
- Mode: 50:50 joint ventures.
- Till now, Government of India has constructed three Hydroelectric Projects (HEPs) in Bhutan totaling 1416 MW
  - 336 MW Chukha HEP,
  - 60 MW Kurichhu HEP and
  - 1020 MW Tala HEP,
- These are operational and exporting surplus power to India.
- India has recently completed 720 MW Mangdechhu Hydroelectric Power Project.
- Other ongoing projects
  - 1200MW Punatsangchhu-1
  - 1020MW Punatsangchhu-2

Chabahar Port



- Chabahar Port is a seaport located in southeastern Iran, **on the Gulf of Oman** at the mouth of **Strait of Hormuz.**
- It serves as **Iran's only oceanic port,** and **consists of two separate ports named Shahid Kalantari and ShahidBeheshti**.
- It is the **only Iranian port with direct access to the Indian Ocean.**
- Being close to Afghanistan and the Central Asian countries of Turkmenistan, Uzbekistan etc, it has been termed the **"Golden Gate" to these energy rich land-locked countries.**

Petrapole

- Petrapole is the Indian side of Petrapole-Benapole **border checkpoint** between India and Benapole of Bangladesh, on the **Bangladesh-India border**, near Bongaon in North 24 Parganas district of West Bengal.
- Petrapole border is the **only land port in south Bengal**. It is also the **largest land customs station in Asia.**
- The land port alone accounts for nearly 60 per cent of the bilateral trade between India and Bangladesh.

Kolkata Port Trust Renamed

- The Union Cabinet recently approved the renaming of Kolkata Port Trust as Shyama Prasad Mukherjee Port Trust.
- It is the **only riverine major port** of India located in the city of Kolkata.
- It is the oldest operating port in India, and was **constructed by the British East India Company.**
- Job Charnock, an employee and administrator of the British East India Company, is believed to have founded a trading post at the site in 1690.

Kochi-Managaluru Natural Gas Pipeline

Context

- Prime Minister Modi dedicated the Kochi - Mangaluru Natural Gas Pipeline to the nation.

About the Pipeline

- The 450 km long pipeline has been built by GAIL (India) Ltd. It has transportation capacity of 12 Million Metric Standard CubicMetres per day, and will carry natural gas from the Liquefied Natural Gas (LNG) Regasification Terminal at Kochi (Kerala) to Mangaluru (Dakshina Kannada district, Karnataka)

Significance

- The pipeline will supply environment friendly and affordable fuel in the form of Piped Natural Gas (PNG) to households and Compressed Natural Gas (CNG) to the transportation sector.
- It will also supply Natural Gas to commercial and industrial units across the districts along the pipeline.
- Consumption of cleaner fuel will help in improving air quality by curbing air pollution.

Char-Chaporis

Context

- Proposal of ―Miya museum‖ reflecting the ―culture and heritage of the people living in char-chaporis has stirred up acontroversy in Assam.

About

- The Char-chaporis constitute an area of the Brahmaputra River that is comprised from sediments carried by the river.
- Char' indicates **a floating island** while ‗Chapori' signals towards **low-lying riverbanks prone to flooding.**
- They keep changing shapes — a char can become a chapori, or vice versa, depending on the push and pull of the Brahmaputra.

Miyas

- The Miya' community comprises descendants of Muslim migrants from Bangladesh to Assam.
- They came to be referred to as ‗Miyas', often in a derogatory manner.
- The community migrated in several waves — starting with the British annexation of Assam in 1826, and continuing into Partition and the 1971 Bangladesh Liberation War.
- Years of discontent among the indigenous people led to the six-year-long (1979-85) anti-foreigner Assam Agitation to weed out the Miyas.
- Miyas were perceived as trying to take over jobs, language and culture of the indigenous population.