Today's Prelims Topics

Startup 20

Context

Startup20, launched under India's G20 Presidency in 2023, has been officially recognised as an engagement group, giving startups and early-stage ventures a formal policy voice in the G20 process for the first time.

About Startup20

Startup20 is an official **Engagement Group of the G20**, launched during **India's G20 Presidency in 2023**. It provides a **dedicated platform for startups and early-stage ventures** to participate in global policy discussions—previously dominated by large corporations through the Business20 (B20) group.

Key Highlights

- **Dual Pillar Structure**: G20 now has two business-focused groups:
  B20 – for established enterprises
  Startup20 – for startups and emerging businesses
- **Objective**: To promote **inclusive and sustainable economic growth** by integrating **startups, innovators, and entrepreneurs** into the global policy-making process.
- **Genesis**: Built upon years of effort by countries like Turkey, Indonesia, and India, and based on the idea that **SMEs and startups are critical engines of innovation**.
- **Impact**:
  - Helps develop **startup-friendly regulations and governance models**
  - Encourages **cross-border investment and collaboration**
  - Promotes **ethical innovation** and global market access
  - Supports emerging economies and inclusive growth
- **Continued Legacy**: Under **South Africa's G20 Presidency (2025)**, Startup20 continues with dedicated task forces in areas like **foundation, finance, alliances, inclusion, sustainability, and global market access**.

In essence, **Startup20 gives startups a seat at the global policy table**, enhancing their role in shaping the future economy.

Source: IndianExpress

Coral Reefs

Context

A 24-year-long study reveals that **coral cover in Lakshadweep has declined by nearly 50% since 1998**, due to repeated marine heatwaves linked to climate change.

Coral Reefs – Definition

- Coral reefs are **vibrant underwater ecosystems** formed by reef-building corals, which are marine invertebrates.
- Corals have a **symbiotic relationship with algae (zooxanthellae)**, aiding in photosynthesis and reef growth.
- Corals secrete **calcium carbonate**, forming the hard exoskeletons that build reefs over time.
- Though they cover **less than 0.1% of the ocean floor**, they support **25% of all marine life**.
- Often called the **"rainforests of the sea"** for their biodiversity.

Conditions Required for Coral Reef Formation

- **Temperature**: Ideal range is **23°C to 29°C**.
- **Depth**: Found typically at depths **< 50 meters** for adequate sunlight.
- **Salinity**: Thrive in **stable saline conditions**.
- **Water Clarity**: Clear water is essential for photosynthesis.
- **Substrate**: Require **hard surfaces** like volcanic rocks for coral larvae attachment.

Types of Coral Reefs

1. **Fringing Reefs** – Close to shorelines, with shallow lagoons.
2. **Barrier Reefs** – Offshore, separated by deeper lagoons (e.g., Great Barrier Reef).
3. **Atolls** – Ring-shaped reefs surrounding a lagoon, usually around submerged volcanoes.
4. **Patch Reefs** – Small, isolated reefs found within lagoons.

Global Coral Reef Locations

- **Tropical and subtropical regions**, mainly between Tropics of Cancer and Capricorn.
- Major regions:
  - **Coral Triangle** (Southeast Asia)
  - **Great Barrier Reef** (Australia)
  - **Indian Ocean Reefs** (Maldives, Seychelles)
  - **Pacific Reefs** (Fiji, Marshall Islands)
  - **Caribbean Reefs** (Belize, Bahamas)
  - **Red Sea Reefs** (Egypt, Sudan)
  - **Atlantic Reefs** (Bermuda, Brazil)

Coral Reefs in India

- Found in **Gulf of Kutch, Gulf of Mannar, Palk Bay, Andaman & Nicobar Islands, and Lakshadweep**.
- Types: **Fringing, Barrier, and Patch reefs**.
- Notable examples:
  - **Gulf of Mannar**: Over 3,600 marine species; declared a **Biosphere Reserve**.

- **Lakshadweep**: Known for **atolls and coral banks**.
- **Andaman & Nicobar**: Home to **all three reef types**.
- **Palk Bay**: Adapted to **high sedimentation**.
- **Gulf of Kutch**: Tolerant to **high salinity and tidal changes**.

Importance of Coral Reefs

- **Economic**:
  - Food for 500M people
  - $36B tourism industry
  - 64K jobs from Great Barrier Reef
- **Environmental**:
  - Home to 25% marine life
  - Blocks 97% wave energy
  - Maintains biodiversity
- **Cultural**:
  - Spiritual value
  - Preserves shipwrecks
- **Medicinal**:
  - Source of anti-cancer & HIV drugs (e.g., AZT)

Threats to Coral Reefs

- **From Climate Change**
  - **Coral Bleaching** due to ocean warming (e.g., 2016 El Niño).
  - **Sea Level Rise** increases sedimentation, blocking sunlight.
  - **Intense storms** cause physical reef damage.
- **From Pollution**
  - **Plastics and marine debris** injure corals.
  - **Ocean acidification** weakens coral skeletons.
  - **Nutrient runoff** causes algal blooms, suffocating reefs.
- **From Overfishing**
  - **Depletion of key species** disrupts reef food webs.
  - **Destructive techniques** (e.g., blast and cyanide fishing) physically damage coral structures.
- **From Coastal Development**
  - **Habitat destruction** from construction.
  - **Sedimentation** from land use changes reduces water clarity.
- **From Human Activities**
  - **Unregulated tourism** (anchor damage, trampling).
  - **Marine mining** alters ecosystems.

Coral Reef Conservation – Indian Initiatives

- **Wild Life Protection Act, 1972**: Hard corals protected under Schedule I.
- **Environment Protection Act, 1986**: Empowers marine conservation.
- **Coastal Regulation Zone (CRZ) 1991 & 2011**: Prohibits coral mining and regulates coastal activity.
- **Island Protection Zone (IPZ)**: Safeguards island ecosystems.
- **Marine Protected Areas (MPAs)**: Zones to conserve reef biodiversity.
- **National Coral Reef Research Centre**: Promotes research and awareness.

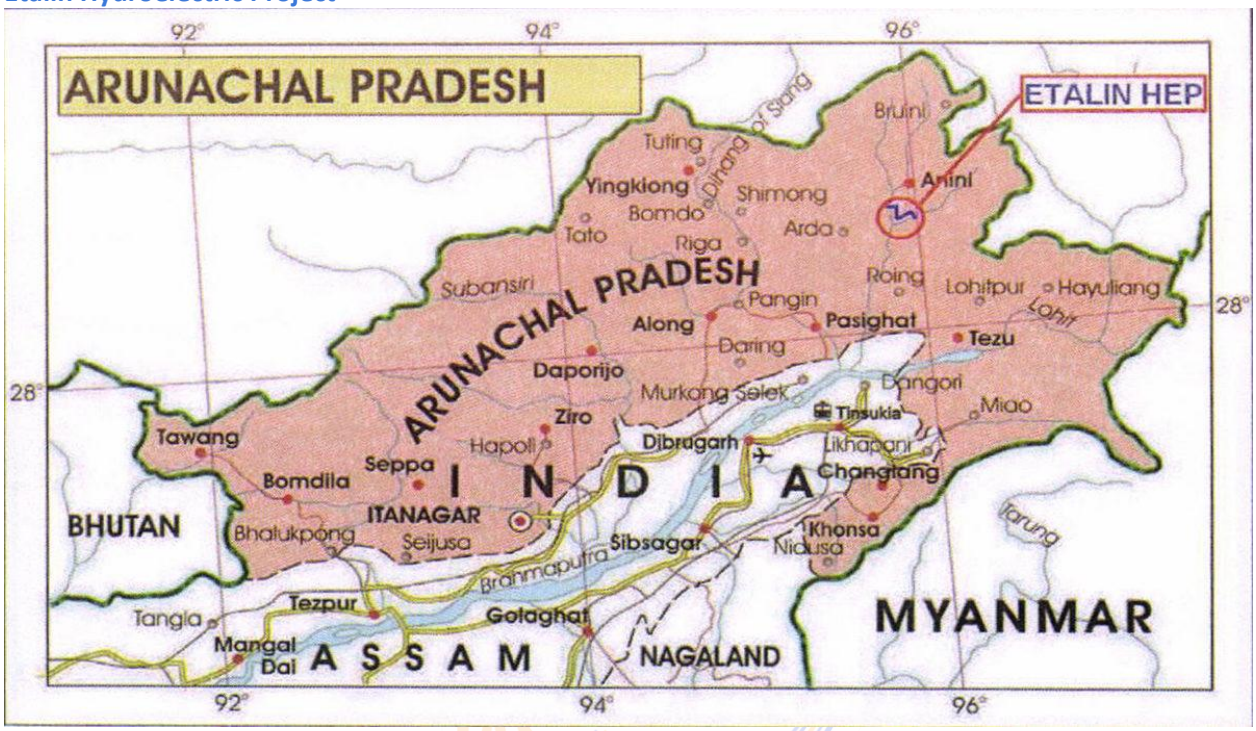
Source: TheHindu

Etalin hydel project

Context

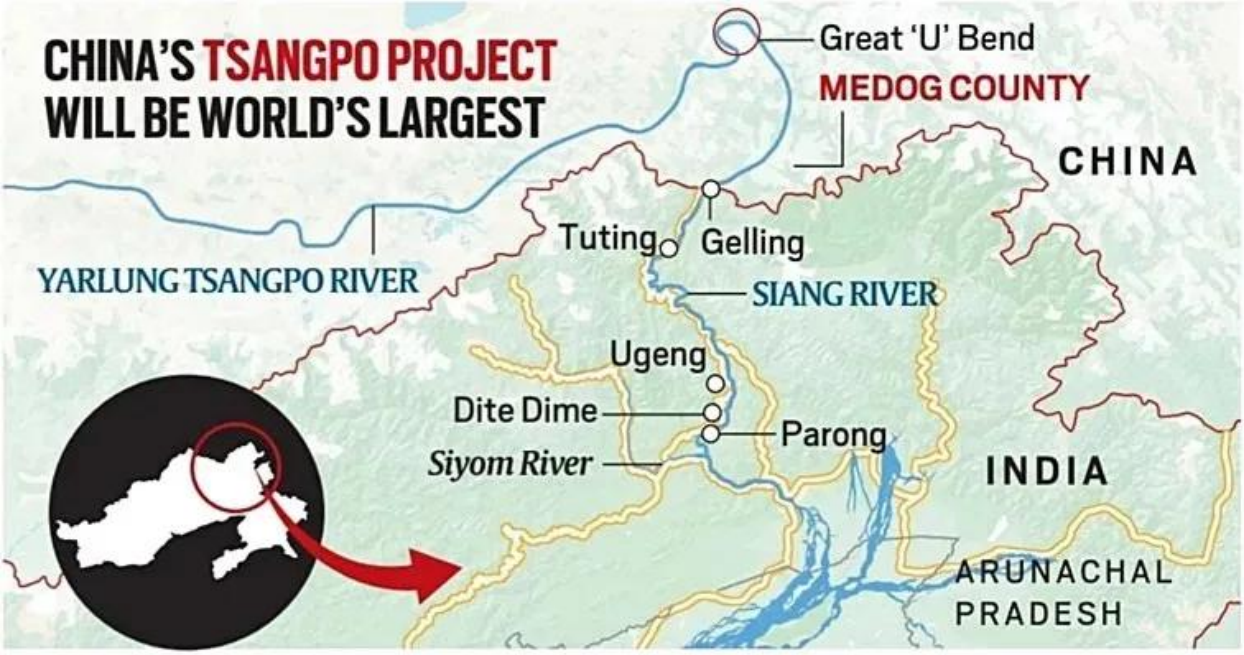
The Union Environment Ministry is set to evaluate the **environmental clearance for the 3,087 MW Etalin dam project** in Arunachal Pradesh's Dibang Valley—just days after China initiated construction of what is expected to be the **world's largest hydroelectric dam** upstream on the Yarlung Zangbo (Brahmaputra) river.

Etalin Hydroelectric Project



- **Location & Capacity:** Planned in Dibang Valley, Arunachal Pradesh with an installed capacity of **3,097 MW**, making it one of India's largest proposed hydropower projects.
- **Project Structure:**
  - Combines two **run-of-the-river schemes**, involving the construction of two **concrete gravity dams** (101.5 m and 80 m high) on the **Dri and Tangon rivers** (tributaries of Dibang River).
  - Will divert water via gravity dams without major storage.
- **Ecological Sensitivity:**
  - Located in a **biodiversity hotspot** within the "richest bio-geographical province" of the Himalayan zone.
  - **Involves diversion of 1,175 ha Forest land with felling of ~2.7 lakh trees**
- **Tribal Presence:** The region is home to **Idu-Mishmi tribes**, an indigenous community with deep cultural and ecological ties to the area.
- **Executing Body:** The project is managed by **Etalin Hydro Electric Power Company Limited**, a joint venture between:
  - **Jindal Power Limited** (74% stake)
  - **Hydro Power Development Corporation of Arunachal Pradesh Ltd.** (26% stake – a state government undertaking).

China's Mega Dam



- Construction began mid-July 2025.
- Targeted output: **~60 GW capacity**, generating **300 billion kWh/year**, eclipsing the Three Gorges Dam.
- India and Bangladesh have flagged concerns over potential impacts on downstream **water flow, sediments, agriculture**, and **riverine ecosystems.**

Source: [IndianExpress]

Asian Development Bank Lowers India's Growth Forecast

Context

The **Asian Development Bank (ADB)** lowered **India's FY26 GDP growth forecast** from **6.7% to 6.5%**, citing **US tariffs and policy uncertainty** as key reasons. Despite strong domestic demand, global trade tensions are expected to slow investment flows.

India's Growth Forecast by ADB

India's GDP Outlook (ADB - July 2025 Report)

- **2025 GDP Growth Projection:** 6.5%
- **2026 GDP Growth Projection:** 6.7%
- Confirms **India as the fastest-growing major economy** in the world.

Reasons Behind Strong Growth

- **Robust domestic demand** – driven by rising consumption and investment.
- **Normal monsoon** – supports agriculture and rural consumption.
- **Anticipated monetary easing** – potential interest rate cuts could boost credit and investment.
- **Low inflation** – supports purchasing power and economic stability.

Inflation Trends

- **Forecast for 2025:** 3.8%
- **Forecast for 2026:** 4.0%
- **June 2025 CPI:** 2.1% – lowest in over 6 years due to falling food prices.

Source: IndianExpress

Editorial Summary

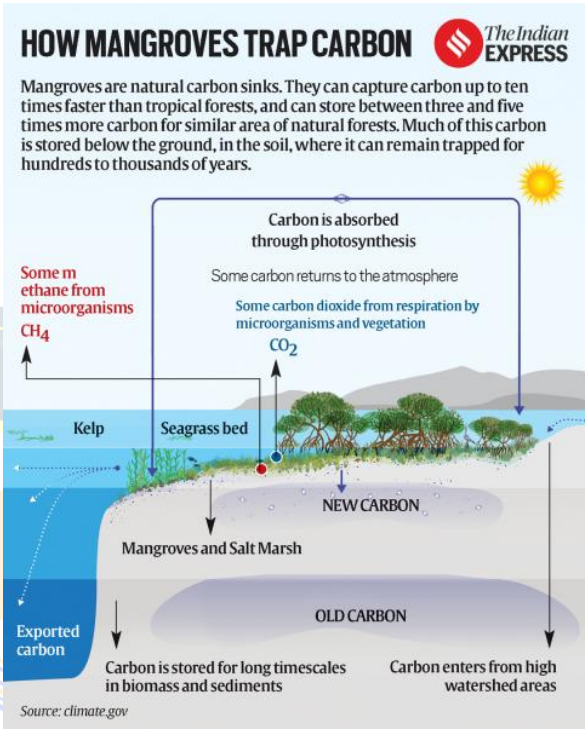
International Day for the Conservation of the Mangrove Ecosystem

Context

As the world marks the International Day for the Conservation of the Mangrove Ecosystem on July 26, there is a need to renew India's commitment to protect these vital coastal ecosystems amid rising climate threats.

What are Mangroves and Where Are They Found in India?

- Salt-tolerant trees and shrubs that grow in estuarine and intertidal zones.
- **Adaptations**: Aerial roots, waxy leaves, and vivipary (seeds germinate while still on the tree).
- **Climatic Preference**: Rainfall (1,000–3,000 mm) and temperature range (26°C–35°C).
- **Key Indian Regions**:
    - **West Bengal** – *Sundarbans* (largest mangrove forest globally).
    - **Gujarat** – *Gulf of Kutch* and *Gulf of Khambhat*.
    - **Odisha** – *Bhitarkanika*.
    - **Others** – Andhra Pradesh (Godavari-Krishna delta), Kerala, Andaman & Nicobar Islands.



What is the Multifaceted Significance of Mangroves?

- **Ecological Role**:
    - ***Bio-shields*:** Protect coastlines from erosion, storm surges, and tsunamis.
    - ***Carbon Sinks*:** Store more carbon than other forest types (3,754 tons/hectare).
    - ***Biodiversity Hubs*:** Provide habitat and nursery grounds for diverse flora and fauna.
- **Economic Role**:
    - ***Livelihoods*:** Support fisheries, honey collection, boating, ecotourism.
    - ***Blue Economy*:** Sustain aquaculture and marine biodiversity.

What are the Threats Faced by Mangrove Forests in India?

- **Anthropogenic Pressures**: Deforestation, pollution, dam construction, shrimp farming, urban expansion.
- **Climate Change Impacts**: Sea-level rise, increased storms, rising temperatures.
    - Mangroves are unable to migrate inland due to human settlements, risking submergence.
- **Global Trends**: Mangroves are declining 3–5 times faster than other forests.
    - 33% of global mangroves are threatened (International Union for Conservation of Nature's (IUCN) Red List of Ecosystems).

What Steps Has the Government Taken for Mangrove Conservation?

- **National Initiatives**:
  - **MISHTI (2023)**: Mangrove Initiative for Shoreline Habitats & Tangible Incomes.
    - **Launched**: Ministry of Environment, Forest and Climate Change (MoEFCC) on 5th June 2023.
    - **Objective**: Promote mangrove conservation and afforestation with a focus on:
      - Livelihood generation.
      - Carbon sequestration.
      - Acting as natural bio-shields.
  - **Amrit Dharohar**: Promotes unique ecosystems.
  - **State-Level Projects**:
    - ***SAIME* (West Bengal):** Sustainable aquaculture in mangrove areas.
    - ***Vana Samrakshana Samitis* (Andhra Pradesh):** Community-based forest protection.
    - ***Green Tamil Nadu Mission*.**
- **Global Collaborations**:
  - **Mangrove Alliance for Climate (MAC)**: Launched at COP27 to unite countries for restoration and conservation.
  - **Mangroves for the Future (MFF)**: IUCN-UNDP initiative focusing on coastal ecosystem conservation across South and Southeast Asia.
- **Additional Measures Needed**:
  - Legal framework strengthening.
  - Cross-country collaboration and best practice sharing.
  - Scientific research for adaptive strategies.

UPSC PYQ

Discuss the causes of depletion of mangroves and explain their importance in maintaining coastal ecology. (UPSC CSE 2019)

Q. Which one of the following regions of India has a combination of mangrove forest, evergreen forest and deciduous forest? (UPSC CSE 2015)

(a) North Coastal Andhra Pradesh
(b) South-West Bengal
(c) Southern Saurashtra
(d) Andaman and Nicobar Islands

Answer: D

Source: Indian Express

Why Renewables Alone Can't Help

Context

- According to the recent report of International Renewable Energy Association (IRENA) in recent years, the world has witnessed a boom in the growth of renewable energy capacity.
    - However, this has not reduced the use of fossil fuels, which has led to an unabated rise of greenhouse gas emissions.

What Did the Recent IRENA Report Reveal About Renewable Energy?

- **Record Capacity Addition:** In **2024**, the world added **582 GW** of renewable energy capacity — a **15% increase** over the previous year.
    - This is the **largest annual increase** ever in renewable capacity.
- **Global Renewable Status:** Total installed renewable capacity has reached **4,442 GW**.
    - Renewables now generate about **30% of the world's electricity**.
- **COP28 Goal Within Reach:** At the current pace, the world may **come close to tripling renewable capacity by 2030**, a goal agreed upon at **COP28 (Dubai, 2023)**.
- **China's Dominance** China alone added **62%** (364 GW) of global renewable capacity in 2024.
    - **Asia** contributed 71% of the global additions, but Africa received **less than 1%**.

Why Renewables Alone Can't Solve the Climate Crisis

Despite the rapid growth, renewables are **not displacing fossil fuels**, but only **meeting new demand**.

- **Rising Electricity Demand:** Global electricity demand has **tripled since 1990** and continues to rise.
- **Fossil Fuel Use Still Growing:** Fossil fuels still contribute **over 70% of global electricity**.
    - In **absolute terms**, fossil fuel use is **higher than 10 years ago**.
- **Limited Share in Total Energy:** Electricity makes up only **20–22%** of global energy use.
    - Since only 30% of electricity is renewable, clean energy accounts for **just ~6%** of total energy consumption.
- **Geographical Disparity:** Deployment of renewables is **concentrated in a few countries** (China, US, India).
    - Many regions, especially **Africa**, lag behind due to infrastructure and investment gaps.
- **Technology Access Inequality:** Although sunlight and wind are universal, the **technology to harness them is not**.
    - China dominates **solar PV manufacturing**, controlling supply chains and export markets.

Pathways to a Real Energy Transition

- **Rapid and Just Phase-Out of Fossil Fuels: Introduce carbon pricing** and gradually remove fossil fuel subsidies.
    - **Ban new coal power plants** and incentivize clean alternatives.
    - Establish clear **phase-out timelines** for coal, oil, and gas, especially in G20 countries.
- **Accelerate Renewable Energy Deployment: Tripling global renewable capacity by 2030**, as agreed at COP28.
    - **Fast-track grid expansion**, energy storage systems, and smart grids.
    - Promote **hybrid systems** (e.g., solar-wind-storage) for reliability.
- **Make Renewable Technology Accessible and Affordable:** Diversify manufacturing away from China through:
    - **Incentives for local production** (like India's PLI scheme).
    - **International cooperation** to build supply chains in Africa, Latin America, and ASEAN.
    - **Cut import tariffs** on clean energy tech for developing countries.
- **Tackle Regional Imbalances in Deployment: Target concessional finance** to low-income countries.

  - Strengthen institutions like the **International Solar Alliance (ISA)** and **IRENA**.
  - Launch **"Renewable for All" missions** with support from MDBs (e.g., World Bank).
- **Invest in Carbon Removal and Efficiency:** Scale up **carbon capture, utilization, and storage (CCUS)**.
  - Promote **nature-based solutions** like afforestation, blue carbon (mangroves).
  - Improve **energy efficiency** in buildings, industry, and transport.
- **Focus on Total Energy, Not Just Electricity:** Electrify transport, cooking, and heating using clean sources.
  - Encourage **green hydrogen** for hard-to-abate sectors (steel, cement).
  - Promote **bioenergy and sustainable fuels** where electrification is difficult.
- **Ensure a Just and Inclusive Transition:** Create **green jobs** and reskill fossil-fuel-dependent workers.
  - Build **community-owned renewable energy systems** in rural areas.
  - Safeguard **energy access, affordability, and equity** across all regions.

Source: Indian Express