UPSC Daily Current Affairs| Prelimbits 06-08-2025

Buoyancy Flux in Tropical Water

Prelims: *Current events of national and international importance| Indian & World Geography*

Why in News?

Recently, a new study by researchers at the University of Washington revealed the complicated process of tropical ocean waters.

- Scientists have long assumed so because rainwater is fresh and freshwater is lighter than seawater.
- **Recent Findings -** A recent study revealed that rain sometimes makes the surface heavier and more stable.
- **Reason -** Rain in the tropics often comes with large clouds and cold, dry air called ***cold pools.***
- These cold pools can actually cool the ocean's surface by blocking sunlight and increasing the transfer of heat from the water to the air.
- **Data taken from -** The researchers used data from 22 buoys across the equatorial oceans that measure *rainfall, sea surface temperature, wind speed, and heat transfer.*
- They analysed more than 31,000 hours of rainfall events from this data, focusing on the buoyancy flux, which combines the effects of heat and freshwater.

> ***Buoyancy flux*** *is the rate at which buoyancy is transported through a given area, typically per unit mass. It represents the vertical transport of potential energy due to density differences in a fluid.*

Buoyancy flux	Rain	Ocean stability
Positive	Light rain (0.2-4 mm/hr).	Less stable and promotes mixing happens mostly during night than day.
Negative	Heavy rain accompanied by stronger cold pools that pull heat out of the ocean more effectively.	More stable.

- **Key findings –** The study also found that at night, rainfall was more likely to cause instability than during the day.
- The researchers found two rain zones

    - **Cold rain zone –** In the western Pacific and Indian Oceans, where rain was associated with more heat loss.
    - **Hot rain zone –** In the central Pacific where heat loss was less intense.
- **Significance –** Ocean mixing plays a key role in regulating the climate by transporting heat, carbon, and nutrients.

Quick facts

Buoyancy
• It is the upward force exerted by a fluid on an object placed in it, making the object appear lighter. • This force is a result of pressure differences in the fluid surrounding the object, as described by *Archimedes' principle.* • **Affected by –** Density of the fluid, the volume of the fluid displaced by the object, the local acceleration due to gravity. • **Not affected by –** Mass of the immersed object and the density of the immersed object.

Reference

The Hindu| Buoyancy Flux in Tropical Water

Grant -in-aid to National Cooperative Development Corporation (NCDC)

Prelims - *Current events of national and international importance| Social Sector Initiatives.*

Why in news?

Recently, Cabinet approves central sector scheme, Grant in aid to National Cooperative Development Corporation (NCDC).

- **Duration -** 4 years from 2025-26 to 2028- 29.
- **Funds will be utilised by -** NCDC for granting loans to Cooperatives for setting up new projects / expansion of plants and loan for meeting the working capital requirements.
- **Implemented by -** National Cooperative Development Corporation (NCDC).
- **Features -** NCDC will provide loans to cooperatives either through state government or directly, as per NCDC guidelines.
- Criteria for Cooperatives, which are meeting the criteria of direct funding guidelines of NCDC would be considered for financial assistance directly against admissible security or state government guarantee.

National Cooperative Development Corporation (NCDC)

- **Established in** - 1963 as a ***statutory corporation.***
- **Nodal Ministry –** Ministry of Cooperation.

- **Headquarters-** New Delhi.
  - NCDC functions through 18 Regional/State Directorates.
- **Management –** It is overseen by a ***General Council and a Board of Management.***
- **Functions –** Planning, promoting and financing programmes for production, Processing, marketing, Storage, export and import of ***agricultural produce, food stuffs.***
- Supply of consumer goods and collection, export of minor forest products through cooperatives, besides income generating stream of activities such as poultry, dairy, fishery, sericulture, handloom.
- The NCDC Act has been amended to support a broader range of cooperatives and strengthen its financial resources.
- **Support for Rural projects** – It is also empowered to fund rural industrial cooperative projects and essential rural services.
- Loans and grants are given to State Governments to help fund primary and secondary level cooperative societies.
- They also given loan directly to national-level and other cooperative societies which operates in more than one State.
- It can also directly fund projects under its various assistance schemes upon fulfilment of the specified conditions.

References

1. PIB| Cabinet approves Grant in aid
2. The National Cooperative Development Corporation

India's Economic Growth Projections 2025 & 26

Prelims: *Current events of national and international importance | Economic development*

Why in News?

Recently, the IMF forecasted India's growth at 6.4% for fiscal years 2025 and 2026, driven by reforms, strong consumption, and public investment.

> *The **International Monetary Fund** is an organization that works to foster global monetary cooperation, secure financial stability, promote sustainable economic growth, and reduce poverty around the world.*

- **India's growth projections** – 6.7 % for 2025 & 6.4 % for 2026 (India's growth rate was 6.5 % in 2024).
- **Driving factors** – Robust consumption growth and reforms in momentum and a push for public investment.

- **Priority sectors** – Fostering job creation,
  - Absorbing excess labour from the agricultural sectors by reskilling labour,
  - Allowing more labour market flexibility,
  - Continuing to invest in infrastructure,
  - Removing trade restrictions.
- **Measures needed** –Invest in education, Land reforms, Expand social safety nets, and reduce red tape to allow businesses perform better.
- **IMF's Global forecasts** – Emerging market and developing economies, growth is expected to be 4.1 % in 2025 and 4.0 % in 2026.
  - For **China** growth is revised upward by 0.8 % to 4.8 % in 2025 showcasing significant reduction in US-China tariffs.
  - **Global growth** – Projected at 3 % for 2025 and 3.1 % in 2026.
  - **Growth in advanced economies** – Growth to be 1.5 % in 2025 and 1.6 % in 2026.
  - In the **United States**, expand at the rate of 1.9 % in 2025, with tariff rates settling at lower levels than those announced and looser financial conditions.
  - Growth is to pick up slightly to 2.0 % in 2026 with some offset from private demand cooling faster than expected and weaker immigration.

Reference

The Economic Times| Indian Economic Growth Projections 2025 & 26

Biofortified Potatoes

Prelims **-** *Current events of national and international importance | General science*

Why in news?

India is set to introduce iron-rich bio-fortified potatoes, developed by the International Potato Center (CIP).

Biofortification *is a process of enhancing the nutritional quality of edible plant parts and animal products.*

- Bio-fortified potatoes are an improved variety with increased iron content, developed through conventional breeding and biotechnology.
- **Aim -** To help combat iron deficiency and hidden hunger.
- **Developed by -** Peru-based International Potato Centre (CIP).
- Biofortified sweet potatoes enriched with vitamin A were developed using technology created by the CIP.
- They are already available in Karnataka, Assam, West Bengal, and Odisha.
- **Agreement –**CIP and the Agriculture Ministry signed an agreement to set up the South Asia regional centre of the CIP in Agra.
- The focus was on iron fortification of potatoes, and the germplasm was shared with

ICAR's Central Potato Research Institute in Shimla.

Other biofortified Crops in India were Rice CR Dhan 310, Sweet potato (Bhu sana), Pearl millet (HHB 229).

Quick facts

International Potato Center (CIP)
• The International Potato Center (CIP) was founded in 1971 as a research for development organization with a focus on potato, sweet potato, and Andean roots and tubers.
• It delivers innovative science-based solutions to enhance access to affordable nutritious food, foster inclusive sustainable business and employment growth, and drive the climate resilience of root and tuber agri-food systems.
• **Headquartered** - Lima, Peru.
• CIP has a research presence in more than 20 countries in Africa, Asia and Latin America.
• CIP is a Consultative group for international agriculture research (CGIAR) center, a global research partnership for a food-secure future.

References

1. The Hindu| Bio-fortified potatoes
2. International Potato centre

One Liners 06-08-2025

History, Art and Culture

Buddhist Relics Piprahwa Gems
Buddhist relics, which an Englishman took from their resting place in India, have been brought back to the country.
• **Unearthed in –** 1898.
• **Located in –** Piprahwa, in UP, near the border of Nepal.
• **Illegal possessed by –** An Englishman *William Claxton Peppé.*
• Gemstones were taken out of India long before India's Antiquities and Art Treasures Act, 1972 came into being.
• **Returned by –** Godrej through Public-private partnership.

Chowkhang Vihara Monastery
Recently, 14th Dalai Lama in Leh laid the foundation of the Chowkhang Vihara for reconstruction.
• **Located in –** Ladakh.
• **Founded by –** Bakula Rinpoche in 1957.
• **Primary deity –** Chow Rinpoche of Lhasa(deity).
• It is the seat of the *Buddha statue*, in association to Tibetan Buddhism of Nalanda tradition.

PM Ekta Mall (Unity Mall)

• **Announced in –** Union Budget 2023-24.
• **Nodal ministry –** Ministry of Commerce & Industry.
• **Aim –** To promote and sale *One District One Product, Geographical Indication products,* and other handicrafts from across the country.
• **Funding –** Rs.5000 Cr.
• **Location –** *State capital or a prominent tourism Centre* of the State on basis of '*First-come First-served'.*
• Unlike other states U.P, being a large state, to construct 3 Ekta Malls.
• **Recommended by –** Department for Promotion of Industry and Internal Trade (DPIIT), Department of Expenditure has approved Detailed Project Reports' (DPRs) for 27 States.
• **Land allocation –** Made available by the State Government.

Geography

Krasheninnikov Volcano

The eruption of the Krasheninnikov volcano was recorded for 1st time after 600 years.
• **Type –** *Complex stratovolcano* system as part of "Pacific Ring of Fire".
• **Structure –** It is composed of *two overlapping cones* within a large caldera.
• **Location –** Kamchatka, in Russian.
• **Aviation hazard code –** "orange".

Polity & Governance

Right to Access Safe Motorable Roads

Supreme Court has clarified that access to safe, motorable and well-maintained roads is an essential part of the fundamental right.
• **Under Fundamental rights –** Article 19(1)(g) & Article 20.
• **Article 19(1)(g) –** Right to access any part of the country.
• **Article 21 –** Right to safe, well-maintained, and motorable roads.

Environment

Red Panda

Birth of red panda cubs after a gap of 7 years at a conservation programme at the Himalayan Zoological Park.
• **Scientific name -** Ailurus fulgens.
• **Taxonomic family –** Ailuridae.
• **Range countries –** Nepal, Bhutan, India, Burma, and China.
• **India's distribution –** Sikkim, Darjeeling Hills, and Arunachal Pradesh.
• **Conservation status**
  - IUCN **–** Endangered.
  - Wildlife Protection Act – Schedule I.
  - CITES – Appendix I.
• **Rare male activity –** Male was observed participating in nest-building, generally do not engage in cub-rearing.

Red Panda Conservation Programme

• **Initiated in –** 1997.
• **Aim** – To increase the genetically healthy population.
• To donate stock to other zoos.
• **Need –** Habitat loss and fragmentation.
• **Mission –** To breed genetically and demographically viable to *augment the in-situ and ex-situ population.*

Matri Van Initiative

• A *theme based urban forest* dedicated to nurturing generations through mother-nature-inspired green efforts.
• **Launched by –** Ministry of Environment, Forest and Climate Change.
• **Umbrella scheme –** *'Ek Ped Maa Ke Naam' Programme.*
• **Aim –** To provide a unique ecological and cultural space thereby enhancing biodiversity, public well-being, and urban sustainability.
• **Coverage –** *Aravalli Hill* area, along the Gurugram-Faridabad Road.
• **Collaboration –** A multi-stakeholder collaboration involving school children and government organizations.
• **Van mitra –** To encourage citizens to imbibe the tradition of preventing deforestation and planting more trees to become part of this initiative.
• **Initiatives –** Green buildings, eco-tourism through wildlife safaris, theme-based biodiversity parks etc.

Ek Ped Maa Ke Naam

• It is an effort that shows our respect and dedication towards our motherland and nature.
• **Aim –** To plant a tree in the name of a mother and create a lasting memory.
• It will protect the environment also contribute to building a greener and more prosperous future.

Science

Canine Distemper

• **Caused by –** *Virus*.
• **Impacts –** It affects the respiratory, gastrointestinal, and nervous systems of dogs and other carnivores.
• **Symptoms –** Fever, coughing, reduced appetite, vomiting, diarrhoea, nervous disorders and discharge from the eyes & nose.
• **Transmitted by –** Airborne exposure to the virus from an infected dog or wild animal.
• **Treatment –** No cure, and no antiviral drugs.

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