Expanding Glacial Lakes in the Himalayas

For Prelims: Glacial Lake Outburst Flood, Indus, Ganga, Brahmaputra River, Indian Himalayan Region, Climate change, National Disaster Management Authority, Avalanche

For Mains: Factors Responsible for Expansion of Glacial Lakes in Himalayas, GLOF and Measures to Mitigate the Risk, Important Geophysical Phenomena.

Source: TH

Why in News?

Recently, satellite monitoring data by the **Indian Space Research Organisation (ISRO)** has shown a large expansion in glacial lakes between 1984 and 2023 in the **Himalayan region,** which has posed an alarming situation for the downstream areas.

What are ISRO's Observation on Expansion of Himalayan Glaciers?

- **Key Findings:**
  - Of the 2,431 lakes larger than 10 hectares identified during 2016-17, **676** glacial lakes have notably expanded since 1984.
    - 130 of these lakes are situated within India, with 65, 7, and 58 lakes located in the **Indus, Ganga, and Brahmaputra** River basins, respectively.
    - Of these lakes 601 lakes (89%) have expanded more than twice, 10 lakes have grown between 1.5 to 2 times and 65 lakes at 1.5 times.
  - **Elevation-based analysis reveals** that 314 lakes are located in the 4,000 to 5,000 m range and 296 lakes are above 5,000 m elevation.
  - Long-term changes in the **Ghepang Ghat glacial lake (**Indus River Basin**)** at an elevation of 4,068 m in Himachal Pradesh, India, show a **178% increase** in size from 36.49 to 101.30 hectares between **1989 and 2022.**
- **Types and Number of Glacial Lakes in Himalayas:**
  - **Moraine-dammed (307):** They are formed when piles of rocks and debris (moraines) left behind by retreating glaciers block valleys, creating natural dams that hold back meltwater.
  - **Ice-dammed (8)**: They are formed when a glacier itself acts as a dam, blocking the flow of meltwater.
  - **Erosion (265):** These lakes occupy depressions carved directly into bedrock by glaciers.
  - **Other Glacial lakes (96)**

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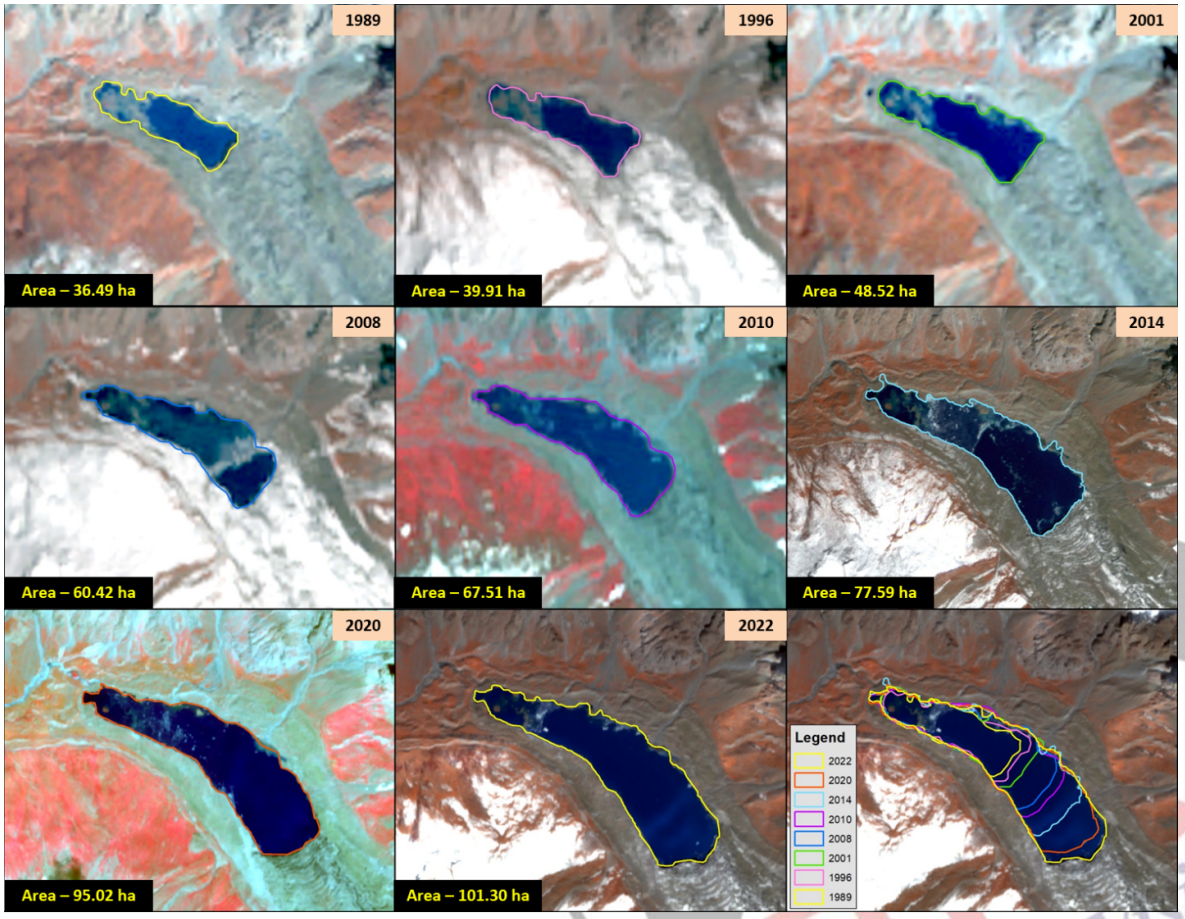


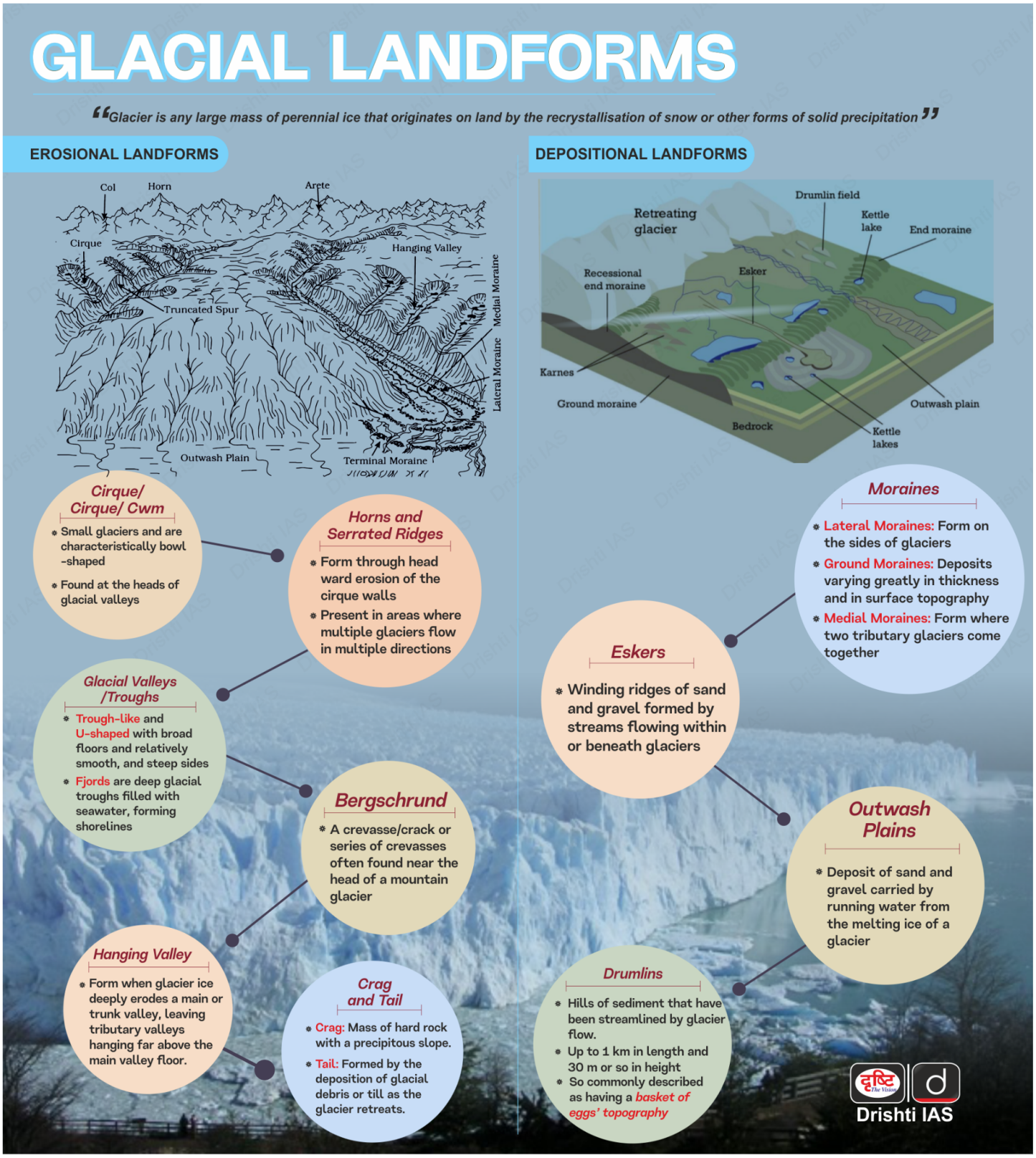
What are the Causes of Expanding Glacial Lakes in Himalayas?

- **Global Warming:** It is causing temperatures to rise in the Himalayas, leading to increased **melting of glaciers**. This meltwater feeds into existing glacial lakes, causing them to expand in size.
- **Retreating Glaciers:** As glaciers melt, they not only contribute water to the lakes but also expose new land surfaces. This allows for the formation of new glacial lakes.
- **Weakening Moraines**: Glaciers are often dammed by natural walls of rock and debris called **moraines.**
    - As glaciers shrink, these moraines become weaker and more susceptible to collapse. A sudden collapse can trigger a **Glacial Lake Outburst Flood (GLOF)**, a catastrophic event where a large volume of water is released downstream.
- **Increased Precipitation:** Changes in precipitation patterns, including increased rainfall and snowfall in the region, can contribute to the expansion of glacial lakes by providing more water to fill them.
- **Permafrost Thaw:** Permafrost**,** which is soil that remains frozen year-round, acts as a natural barrier to water drainage.
    - As permafrost thaws due to warming temperatures, it can create depressions that collect water, contributing to the expansion of glacial lakes.
- **Human Activities:** Infrastructure development, such as roads and hydropower projects, can alter the natural drainage patterns of glacial lakes, leading to their expansion.
    - Additionally, activities such as mining and deforestation can indirectly contribute to glacial lake expansion by accelerating climate change.

Recent Cases of GLOF in India

- In June 2013, **Uttrakhand had received an unusual amount of rainfall** leading to the melting of the Chorabari glacier and the eruption of the Mandakini river.
- In August 2014, a glacial lake outburst flood hit the village of Gya in **Ladakh.**

- In February 2021, **Chamoli district in Uttarakhand witnessed flash floods** which are suspected to have been caused by GLOFs.
- In October 2023, the South Lhonak Lake, a glacial lake located at an altitude of 17,000 feet in the state's northwest, **experienced a rupture as a result of continuous rainfall.**



Way Forward

- **Climate Change Mitigation:** Addressing the root cause of glacial melt and retreat by reducing **greenhouse gas** emissions is crucial.
    - This involves global efforts to mitigate climate change through measures such as transitioning to renewable energy, increasing energy efficiency, and implementing policies to reduce carbon emissions across various sectors.
- **Early Warning Systems**: Developing and implementing early warning systems for monitoring of glacial lakes, weather forecasting, and communication networks to disseminate timely alerts to at-risk communities.
- **Engineering Measures:** Implementing engineering measures to stabilize and manage glacial lakes can help reduce the risk of **GLOFs.**
    - This may involve constructing infrastructure such as spillways, drainage channels, and dams to control water levels and prevent uncontrolled releases of water.
- **Natural Infrastructure**: Restoring and conserving natural ecosystems, such as wetlands and forests, can help regulate water flow. These natural infrastructure solutions can also provide additional benefits, such as habitat conservation and carbon sequestration.
- **Community Engagement and Capacity Building:** Involving local communities in risk assessment, planning, and decision-making processes is essential for effective glacial lake management.
    - Building local capacity for disaster preparedness, including training in emergency response and evacuation procedures, can help communities better cope with **GLOFs** and other hazards.
- **International Cooperation:** Given the transboundary nature of many **glacial lakes** in the Himalayas, international cooperation is essential for effective management and risk reduction.
    - Collaborative efforts among countries sharing glacier-fed river basins can facilitate information sharing, joint monitoring, and coordinated action to address common challenges.

Drishti Mains Question:

What are the causes for the expansion of glacial lakes in the Himalayan region, and what are its implications and mitigation strategies?

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. When you travel in Himalayas, you will see the following: (2012)

1. Deep gorges
2. U-turn river courses
3. Parallel mountain ranges
4. Steep gradients causing land sliding

Which of the above can be said to be the evidence for Himalayas being young fold mountains?

(a) 1 and 2 only
(b) 1, 2 and 4 only
(c) 3 and 4 only
(d) 1, 2, 3 and 4

Ans: (d)

Mains

Q. Dam failures are always catastrophic, especially on the downstream side, resulting in a colossal loss of life and property. Analyze the various causes of dam failures. Give two examples of large dam failures. **(2023)**

Q. Bring out the causes for more frequent landslides in the Himalayas than in Western Ghats. **(2013)**

WHO Report on Global Immunisation

For Prelims: **Vaccination**, Public health Interventions, **Expanded Programme on Immunization (EPI)**, **National Health Family Survey**, **Sustainable Development Goals (SDGs)**, **Universal Immunization Programme (UIP)**, **Mission Indradhanush**, Pneumococcal Conjugate Vaccine (PCV), Accredited Social Health Activist.

For Mains: Global Immunization Programme, Significance of Indian Vaccination Programmes

Source: WHO

Why in News?

Recently, a study by the **World Health Organisation (WHO)** revealed that **Global Immunisation efforts** have saved an estimated **154 million** lives over the past 50 years.

- The Report was released on the occasion of **World Immunization Week,** ahead of the 50th anniversary of the **Expanded Programme on Immunization (EPI)** to take place in May 2024.

What are the Key Findings of the Report?

- Report shows that **Immunization** is the single greatest contribution of any health intervention to ensuring healthy lives of babies.
- **Measles vaccination:**
  - Nearly **94 million** of the estimated 154 million lives saved since 1974, were a result of protection by measles vaccines.
    - There are still 33 million children who missed a measles vaccine dose in 2022.
  - Currently, the **global coverage rate** of the first dose of measles vaccine is **83%** and the second dose is **74%,** contributing to a very high number of outbreaks across the world.
    - Coverage of **95%** or greater with 2 doses of measles-containing vaccine is needed to protect communities from outbreaks.
  - It accounts for **60%** of the lives saved due to immunisation and the vaccine likely remain the **top contributor** to preventing deaths in the future.
- **Coverage for DPT Vaccine:**
  - Before the launch of **EPI**, less than 5% of infants globally had access to routine immunisation.
  - Today, **84%** of infants are protected with 3 doses of the vaccine against **diphtheria, tetanus and pertussis (DTP).**
    - DPT refers to a class of combined vaccines given to protect **against three infectious diseases** in humans (diphtheria, pertussis or whooping cough and tetanus).
- **Reduced Infant Deaths:**
  - **40% Reduction** in infant death for 14 diseases like Diphtheria, Haemophilus influenzae type B, **Hepatitis B**, Japanese encephalitis, measles, meningitis A, pertussis, invasive pneumococcal disease, polio, rotavirus, rubella, tetanus, **tuberculosis**, and yellow fever.
  - Above 50% reduction in the African Region over the past 50 years.
- **Eradication and Containment of Disease:**

- **Wild poliovirus cases have decreased by over 99%** since 1988. Of the 3 strains of wild poliovirus (type 1, type 2 and type 3), **wild poliovirus type 2 was eradicated in 1999 and wild poliovirus type 3 was eradicated in 2020.**
- **India was declared polio-free** by the **World Health Organisation (WHO)** in 2014.
- Vaccines against malaria **and** cervical cancer have been highly effective in containment of these diseases.

- **Gain in Full Health Years:**
  - For each life saved through immunisation, an average of 66 years of full health were gained.
  - With a total of 10.2 billion full health years gained over the five decades.

What is the Status of Immunization In India?

- **About:**
  - India's immunisation programme, **UIP (Universal Immunization Programme)**, is one of the world's most extensive public health programmes.
  - Under the UIP, India **annually vaccinated more than 30 million pregnant women and 27 million children.**
    - A child is considered fully immunised if they receive all the required vaccines as per the national immunisation schedule within their first year of life.
- **Status:**
  - The country was certified **polio-free in 2014** and eliminated **maternal and neonatal tetanus** in 2015.
  - New vaccines, including the **Measles-Rubella,** Pneumococcal Conjugate Vaccine (PCV) and Rotavirus Vaccine (RVV)**,** have been introduced and expanded nationwide.
  - According to UNICEF, only **65%** of children in India receive full immunisation during the first year of their life.
  - Also, as per the latest **WUENIC (WHO-UNICEF Estimates National Immunization Coverage)** estimates, India has successfully reduced the number of zero-dose (ZD) children to 1.1 million in 2022 from 2.7 million in 2021, covering an additional 1.6 million children with life-saving vaccination.
    - **Zero-dose** refers to children who failed to receive any routine vaccination.
    - 63% of ZD children live in the five states of Bihar, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh.
  - **Mission Indradhanush (MI)** was launched by the Ministry of Health and Family Welfare (MOHFW) in 2014 with the aim to vaccinate all unvaccinated and partially vaccinated children under UIP.
    - **Intensified Mission Indradhanush (IMI)** has been launched to bring down the number of zero-dose children.
- **Other Supporting Measures:**
  - **Electronic Vaccine Intelligence Network (eVIN)**
  - **National Cold Chain Management Information System (NCCMIS).**
- **Challenges:**
  - **Lack of Access:**
    - In 2022**, 14.3 million** infants did not receive the first **DPT vaccine** globally, pointing to a lack of access to immunisation and other health services.
    - Of the 20.5 million who are either not vaccinated or partially vaccinated, nearly **60%** of children live in 10 countries, including India.
  - **Death by Infectious Diseases:**
    - It contributes to a significant proportion of **child mortality** and **morbidity.**
    - Nearly **one million children die before their fifth birthday.**
    - Many of these deaths are preventable and can be averted by interventions such as **breastfeeding**, immunisation and access to treatment.
  - **Full Coverage Goal Still to Achieve:** According to **National Family Health Survey (NFHS)-5,** 2019-21, the country's full immunisation coverage stands at 76.1%.
    - It means that one out of every four children is missing out on essential vaccines.

What is the Universal Immunization Programme (UIP)?

- **Background:**
  - The **Expanded Programme on Immunization** was launched in 1978. It was renamed as **Universal Immunization Programme** in 1985 when its reach was expanded beyond urban areas.
  - Since the launch of the National Rural Health Mission in 2005, the **Universal Immunization Programme(UIP)** has always been an integral part of it.
- **About:**
  - Under UIP, immunisation is provided free of cost against 12 **vaccine-preventable diseases.**
    - **Nationally Against 9 Diseases:** Diphtheria, Pertussis, Tetanus, Polio, Measles, Rubella, severe form of Childhood Tuberculosis, Hepatitis B and Meningitis & Pneumonia caused by Haemophilus influenzae type B.
    - **Sub-nationally Against 3 Diseases:** Rotavirus diarrhoea, Pneumococcal Pneumonia and Japanese Encephalitis.

What are the Major Global Initiatives Related to Immunization?

- **Immunization Agenda 2030**
- **World Immunization Week**
- **Expanded Programme on Immunization (EPI):**
  - It was founded in 1974 by the **World Health Assembly.**
  - EPI's original goal was to vaccinate all children against diphtheria, measles, pertussis, polio, tetanus, tuberculosis, as well as smallpox, the only human disease ever eradicated.
  - It includes **universal recommendations to vaccinate against 13 diseases**, and **context-specific recommendations for another 17 diseases,** extending the reach of immunisation beyond children, to adolescents and adults.

Drishti Mains Question:

Discuss the importance of vaccination for healthcare, particularly in developing countries like India. Also, discuss the measures taken by India to ensure universal immunisation of our population.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims:

Q. 'Mission Indradhanush' launched by the Government of India pertains to (2016)

(a) immunization of children and pregnant women
(b) construction of smart cities across the country
(c) India's own search for the Earth-like planets in outer space
(d) New Educational Policy

Ans: (a)

Q. Which of the following are the objectives of 'National Nutrition Mission'? (2017)

1. To create awareness relating to malnutrition among pregnant women and lactating mothers.
2. To reduce the incidence of anaemia among young children, adolescent girls and women.
3. To promote the consumption of millets, coarse cereals and unpolished rice.
4. To promote the consumption of poultry eggs.

Select the correct answer using the code given below:

(a) 1 and 2 only
(b) 1, 2 and 3 only

(c) 1, 2 and 4 only
(d) 3 and 4 only

Ans: (a)

Mains:

Q. Can the vicious cycle of gender inequality, poverty and malnutrition be broken through microfinancing of women SHGs? Explain with examples. **(2021)**

Balanced Fertilisation

For Prelims: Nutrient-Based Subsidy (NBS) schemes**,** urea consumption**,** Fertiliser Subsidy

For Mains: About the balanced fertilisation and its associated benefits, Challenges and government initiatives related to the balanced fertilisation.

Source: IE

Why in News?

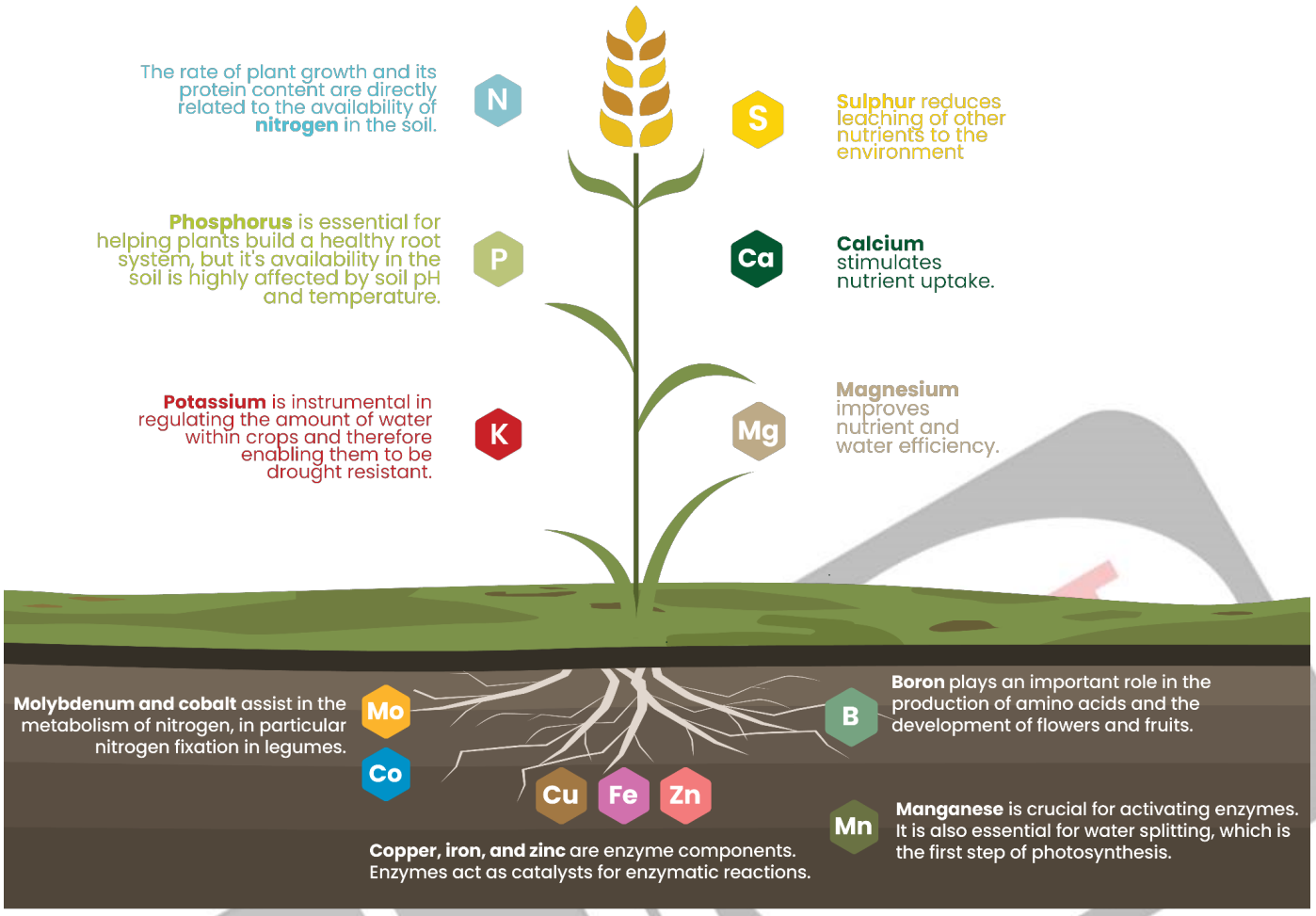
Post Lok Sabha elections 2024, balanced fertilisation is likely to be a key policy goal for the government taking over.

- Despite efforts to curb excessive fertiliser consumption, **urea consumption** has steadily increased in India, reaching a **record 35.8 million tonnes in 2023-24** (up 16.9% since 2013-14).

What is Balanced Fertilization?

- **About:**
  - **Balanced fertilisation** is a practice in agriculture that focuses on providing plants with the **optimal amounts of the nutrients** that are needed for their healthy growth and development.
- **Essential Nutrients:**
  - **Primary Nutrients:** Nitrogen (N), Phosphorus (P), and Potassium (K) are the most crucial nutrients needed in larger quantities. They play **vital roles in plant** structure, energy production, and overall health.
  - **Secondary Nutrients**: Sulphur (S), Calcium (Ca), and Magnesium (Mg) are also essential but **required in smaller amounts** compared to primary nutrients.
  - **Micronutrients:** Trace elements like Iron (Fe), Zinc (Zn), Copper (Cu), Manganese (Mn), Boron (B), and Molybdenum (Mo) are needed in very small quantities but are still critical for specific plant functions.
- **Right Proportion:**
  - Balanced fertilisation emphasises supplying these essential nutrients in the correct ratios based on several factors:
    - **Soil Type**: Different soil types have varying levels of inherent nutrients. Testing the soil reveals its nutrient profile**, guiding fertiliser selection and application rates.**
    - **Crop Requirements:** Different crops have **specific nutrient needs at different**

stages of growth. For example, legumes might require more nitrogen for nitrogen fixation, while fruits might benefit from additional potassium for better quality.



What are the Benefits Associated with Balanced Fertilisation?

- **Improved Crop Yields:**
  - By providing the **optimal mix of nutrients,** plants can grow to their full potential, leading to higher yields.
- **Enhanced Crop Quality:**
  - Balanced nutrients contribute to stronger plants with **better resistance to pests and diseases**, ultimately improving the quality of the harvest.
- **Promotes Soil Health:**
  - Overuse of **single-nutrient fertilisers** can disrupt soil health. Balanced fertilisation helps maintain a **healthy soil ecosystem,** promoting long-term sustainability.
- **Reduced Environmental Impact:**
  - Excessive fertiliser application can contribute to **nutrient runoff, polluting water** bodies. Balanced use minimises this risk.
- **Cost-Effectiveness:**
  - By **preventing over-fertilisation** and nutrient deficiencies, balanced fertilisation can optimise resource utilisation and reduce overall fertiliser costs.

What are the Challenges related to Balanced Fertilisation?

- **Price Distortions:**
  - **Urea**, a single-nutrient nitrogen fertiliser, is heavily subsidised by the government, making it c**heaper than other fertilisers like DAP** (diammonium phosphate) containing phosphorus and MOP (muriate of potash) containing potassium.
  - This incentivises overuse of urea and neglects other crucial nutrients.
- **Distorted Fertiliser Pricing Hinders Potash Use:**

    - The current system for setting fertiliser prices **fails to consider market forces,** leading to imbalances. For example, the price of Muriate of Potash (MOP), a key source of potassium, is **too high for both** farmers using it directly and fertiliser companies including it in blends.
    - This **discourages MOP use,** contributing to widespread potassium deficiencies in Indian farms.
- **Soil Testing Infrastructure:**
    - **Lack of adequate soil testing facilities** in the rural and remote areas of India, makes it difficult for farmers to access them for balanced fertilisation.
    - Even if tests are done, **interpreting the results and translating them** into fertiliser recommendations requires proper training and mechanism for both farmers and extension workers.
- **Farmer Awareness and Education:**
    - Many farmers lack awareness about soil testing and the specific needs of their crops.
    - Traditional practices and limited knowledge mostly hinders adoption of balanced **fertilisation techniques .**
        - It is due to the lack of precise fertiliser application techniques resulting in issues of over-fertilisation and under-fertilisation alongwith **limited focus on micronutrients.**
- **Limited Success of Past Schemes:**
    - The **Nutrient-Based Subsidy (NBS) scheme**, meant to encourage balanced use, failed because it didn't address urea pricing. Urea consumption continued to rise despite NBS.

Drishti IAS

Nutrient Based Subsidy Scheme

About:

- A fixed rate of subsidy (in ₹per Kg) **decided on an annual basis**
- Being implemented since **2010**

Implemented by:

- Department of Fertilisers, **Ministry of Chemicals & Fertilizers**

Ambit of NBS:

- Given on nutrients - **Nitrogen, Phosphate, Potash and Sulphur**
- For Phosphatic and Potassic (P&K) fertilisers
- **Doesn't include Urea based fertilisers**
- NBS is **available for imported complex fertilisers** except **Ammonium Sulphate**

Nutrient	Main Source
Nitrogen (N)	Urea
Phosphorus (P)	DAP
Potassium (K)	MOP

Aim:

- Ensure the **availability of fertilisers** to farmers at an **affordable price**
- Increase consumption of P&K fertilizers to achieve optimum **NPK ratio (4:2:1)**

Fertilisers in India:

- 3 basic fertilisers – **Urea, Diammonium Phosphate (DAP),** and **Muriate of Potash (MOP)**
- **Urea** is the **most – produced, consumed, imported** and **physically regulated** fertiliser of all
- Urea is subsidised only for agricultural uses

What are the Government Initiatives to Ensure Balanced Fertilization?

- **Nutrient-Based Subsidy (NBS) Scheme**
- **PM Programme for Restoration, Awareness, Nourishment and Amelioration of Mother Earth (PRANAM)**
- **Soil Health Card (SHC) Scheme**
- **Paramparagat Krishi Vikas Yojana (PKVY)**
- Liquid Nano Urea **and** Nano DAP

What Steps Can be Taken by India to Achieve Balanced Fertilisation?

- **Integrated Nutrient Management (INM):**
  - It recognises the limitations of relying solely on chemical fertilisers or organic matter.
  - It advocates for a holistic approach that combines:
    - **Chemical Fertilisers**: Provide **essential nutrients** like NPK.
    - **Organic Matter: Improves soil health, water retention,** and nutrient availability. This **includes manure (cow dung), compost, and crop residues (dhaincha crop).**
    - **Crop Rotations:** Introducing diverse crops helps **break pest and disease cycles** and improves nutrient utilisation.
- **Customising Fertilisers Using Technology:**
  - Customised fertilisers are **multi-nutrient carriers** containing **macro and micronutrients** for satisfying crop needs that are **site-specific and validated by scientific crop models.**
  - It is the **emerging concept** based on the **balanced nutrient fertilisation approach** to address the crops' multiple nutrient needs.
  - **In Israel**, some remarkable steps are being followed:
    - **High-resolution** soil mapping and its integration with **Geographic Information Systems (GIS)** to create user-friendly maps and fertiliser application recommendations for farmers.
    - **Advanced laboratory analyses** go beyond basic NPK tests and delve into micronutrients, organic matter content, and cation exchange capacity (CEC).
- **Advanced Approaches Beyond Soil Testing:**
  - **Soil Test Crop Response (STCR):**
    - Tailors **fertiliser recommendations** based on specific soil type, crop variety, and climatic conditions.
    - It considers nutrient uptake by the crop and soil nutrient availability.
  - **Diagnosis and Recommendation Integration System (DRIS):**
    - **Analyses plant tissue** for nutrient ratios (e.g., N/P, N/K) and compares them to established optimal ratios for high yields.
    - **Deficient nutrients** are then supplemented through top dressing. (More suitable for long-duration crops).
- **Other Steps:**
  - **Farmer Education and Training:** Equipping farmers with the knowledge and skills to implement these approaches effectively.
  - **Improved Market Access:** Ensuring the availability of customised fertilisers and micronutrients at reasonable prices.
  - **Policy and Subsidy Reforms:** Encouraging the use of balanced fertilisers through targeted subsidies and promoting sustainable practices.
  - **Continued Research and Development:** Developing new technologies and crop-specific nutrient management solutions.

Conclusion

- Balanced fertilisation offers a compelling solution to numerous challenges in Indian agriculture. **Sri Lanka's recent attempt at a rapid transition towards fully organic agriculture** serves as a

cautionary tale for Indian policymakers considering similar drastic shifts.
- By providing the right mix of nutrients to crops, it promises not only increased yields and improved quality but also enhanced soil health and reduced environmental impact.
- However, achieving balanced fertilisation on a large scale necessitates overcoming obstacles like skewed fertiliser pricing policies, limited soil testing infrastructure, and a knowledge gap among farmers.

Drishti Mains Question:

Q. Discuss about balanced fertilisation and its associated benefits. Also, mention the key challenges and government initiatives related to it.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. With reference to chemical fertilizers in India, consider the following statements: (2020)

1. At present, the retail price of chemical fertilizers is market-driven and not administered by the Government.
2. Ammonia, which is an input of urea, is produced from natural gas.
3. Sulphur, which is a raw material for phosphoric acid fertilizer, is a by-product of oil refineries.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 and 3 only

(c) 2 only

(d) 1, 2 and 3

Ans: (b)

Q. With reference to the cultivation of Kharif crops in India in the last five years, consider the following statements: (2019)

1. Area under rice cultivation is the highest.
2. Area under the cultivation of jowar is more than that of oilseeds.
3. Area of cotton cultivation is more than that of sugarcane.
4. Area under sugarcane cultivation has steadily decreased.

Which of the statements given above are correct?

(a) 1 and 3 only

(b) 2, 3 and 4 only

(c) 2 and 4 only

(d) 1, 2, 3 and 4

Ans: (a)

Mains:

Q1. How do subsidies affect the cropping pattern, crop diversity and the economy of farmers? What is the significance of crop insurance, minimum support price and food processing for small and marginal farmers? **(2017)**

Q2. In what way could replacement of price subsidy with direct benefit Transfer (DBT) change the scenario of subsidies in India? Discuss. **(2015)**

Q3. What are the different types of agriculture subsidies given to farmers at the national and at state levels? Critically, analyse the agricultural subsidy regime with reference to the distortions created by it. **(2013)**

SC Rejects Centre's Plea for Administrative Spectrum Allocation

For Prelims: Supreme Court of India, **Spectrum**, Telecommunications Act, 2023, Presidential Reference, Article 143, **Central Bureau of Investigation**

For Mains: Telecommunications Act, 2023, Government Policies & Interventions, IT and Computers

Source: TH

Why in News?

In a significant decision, the **Supreme Court of India** has refused to entertain the Centre's plea to allow the **administrative** allocation of spectrum**,** reaffirming the principle of open and transparent auction for allocating this scarce natural resource.

- The **electromagnetic spectrum** encompasses a range of radio frequencies, which are utilised by wireless devices for communication, including making calls and accessing social media.

Why Did the Supreme Court Reject the Centre's Application?

- The Registrar found the **application for clarification to be misconceived,** the Registrar invoked Order XV Rule 5 of the Supreme Court Rules, 2013, **which allows refusal to receive a petition if it lacks reasonable cause, is frivolous, or contains scandalous matter.**
    - SC asserted that spectrum allocation to private players **must be through open and transparent auction**, as established by the landmark 2G spectrum case, often referred to as the **"2G spectrum scam,"** judgement 12 years ago.
- Spectrum allocation is a crucial process, and allowing "administrative allocation" would have placed the **government solely in charge of selecting operators** to distribute airwaves, a move deemed contrary to principles of fairness and transparency.

What is the Legal Framework Regarding the Allocation of Spectrum?

- **Telecommunications Act, 2023:**
    - It empowers the **government to assign spectrum for telecommunication through administrative processes** other than auction for entities listed in its First Schedule of the act.
        - These entities include those engaged in national security, defence, and law enforcement, as well as Global Mobile Personal Communication by Satellites such

as SpaceX, and Bharti Airtel-backed OneWeb.
    - The government can also assign part of a spectrum that has already been assigned to one or more additional entities, **known as secondary assignees,** and even terminate assignments where a spectrum or a part of it has remained underutilised for insufficient reasons.

What is the 2G Spectrum Scam?

- **2G Spectrum Scam:**
    - The 2G spectrum allocation scam dates back to 2008, the government then allegedly sold 122 licences on a **first-come-first-serve basis (FCFS)** to specific private telecom operators.
    - In 2009 ,the **Central Vigilance Commission** directed the **Central Bureau of Investigation (CBI)** to investigate claims that there were illegalities in the allocation of licences, following which the CBI filed a **first information report** against unknown officers of the **Department of Telecommunications (DoT)**, private persons and companies.
    - In 2011, the **CBI** alleged that there was a loss of Rs 30,984 crore to the exchequer as a result of discrepancies in the allocation process.
- **Supreme Court's Verdict:**
    - In February 2012, the Supreme Court cancelled the 122 telecom licences that were allocated on a FCFS basis, stating that **this method was prone to misuse.**
        - The Court emphasised that the **"non-discriminatory method" of auction should be adopted** for the allocation of bnatural resources like spectrum to ensure fairness and transparency.
- **Centre's Current Plea:**
    - More than a decade after the Supreme Court's landmark 2G spectrum scam judgement, the Union government has moved an **application for a "certain class" of spectrum to be allocated through administrative processes** instead of competitive auctions.
    - The Centre has pointed out that the assignment of spectrum is required not only for commercial telecom services but also to **discharge sovereign and public interest functions such as security, safety, and disaster preparedness.**
        - The government has argued that administrative allocation is required when **demand is lower than supply or for space communication,** where it would be more optimal and efficient for spectrum to be shared by multiple players.

What is Spectrum?

- Spectrum is the radio frequencies that wireless signals use to travel, allowing users to make calls and use social media.
- Spectrum is part of the electromagnetic **spectrum,** which also includes other frequencies that people interact with daily.
    - Spectrum can be divided into three bands: **low (used for mobile communication, including 2G, 3G, and 4G services), mid (utilised for 4G LTE services and some** 5G deployments**), and high-band (primarily used for 5G and beyond)**, each with different characteristics and essential for different types of communication.

What was the 2012 Presidential Reference Regarding Natural Resource Allocation?

- The Union government cites observations from a Constitution Bench **regarding a Presidential reference** made concerning the 2012 verdict.
- The Bench clarifies that the **auction method prescribed in the verdict is not a "constitutional mandate"** for the alienation of natural resources excluding spectrum.
- It stated that the word "perhaps" in the verdict suggested that auction was not intended as a blanket principle for all natural resources, and other methods could be considered.

- However, it cautioned that spectrum **must be allocated only through auction as per the law declared in the 2G case.**

Presidential Reference

- It is a procedure in the **Constitution of India** that allows the **President to request the Supreme Court of India** to provide advice on matters of law or fact that the President deems to be of public importance.
- **Article 143 of the Indian Constitution** empowers the President to refer any matter of law or fact to the Supreme Court for its opinion.
    - This can be done in relation to issues that have arisen or are likely to arise, and must be of public importance.
    - The Supreme Court may refuse to answer any queries raised in the reference, and the issue should not have already been decided by the Court.

What are the Spectrum Allocation Methods Across the Globe?

- **New Zealand:** Initiated the **use of auctions for spectrum** allocation in 1989, a method that has since been adopted by many other countries, including those in emerging markets.
- **United States:** In the 1980s, the United States experimented with allocating cellular licences through lotteries, which attracted speculative applicants and resulted in notional losses for the government.
    - The **lottery method,** initially seen as faster and cheaper than the administrative process, has drawbacks.
        - It is susceptible to speculation and cannot reliably assess the technical competence of licensees.
    - In 1993, the US transitioned to **auctions for granting new mobile communication licences.**
        - This transition had a global impact, leading to over USD 100 billion in radio spectrum sales worldwide.
- **Canada and European Union:** These regions often use an administrative process, also known as a **"beauty contest,"** where criteria are set by the government and proposals are evaluated by an expert committee.
    - This method provides flexibility and government control, aligning decisions with government plans and objectives. **However, it is time-consuming, but ensures adherence to government priorities.**

Drishti Mains Question:

Q. Discuss the significance of the recent Supreme Court decision regarding the administrative allocation of spectrum. How does this decision uphold the principles of fairness and transparency in resource allocation?

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. With reference to Visible Light Communication (VLC) technology, which of the following statements are correct? (2020)

1. VLC uses electromagnetic spectrum wavelengths 375 to 780 nm.
2. VLC is known as long-range optical wireless communication.
3. VLC can transmit large amounts of data faster than Bluetooth.
4. VLC has no electromagnetic interference.

Select the correct answer using the code given below:

(a) 1, 2 and 3 only
(b) 1, 2 and 4 only
(c) 1, 3 and 4 only
(d) 2, 3 and 4 only

Ans: (c)

Q. A layer in the Earth's atmosphere called Ionosphere facilitates radio communication. Why? (2011)

1. The presence of ozone cause the reflection of radio waves to Earth.
2. Radio waves have a very long wavelength.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

Ans: (d)

Q. Consider the following statements: (2010)

The Supreme Court of India tenders advice to the President of India on matters of law or fact

1. on its own initiative (on any matter of larger public interest).
2. if he seeks such an advice.
3. only if the matters relate to the Fundamental Rights of the citizens.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) 3 only

(d) 1 and 2

Ans: (b)

Diplomatic Passport

Source: IE

Why in News?

Recently, the topic of **diplomatic passports** has been in the news, particularly in relation to the power regarding the issuance and revocation of diplomatic passports.

- A **passport is an official government-issued document** that serves as a form of identification and travel document **for individuals who wish to travel internationally.**

What is a Diplomatic Passport?

- **About:**
  - Diplomatic passports are issued to individuals **representing a country** on official diplomatic missions or government business.
  - They are used by diplomats, government officials, and sometimes their **immediate family members.**
  - These passports are a **form of identification** and carry certain **legal privileges** and immunities under **international law,** such as immunity from arrest, detention, and certain legal proceedings in the host country.
- **Eligibility:** In India, the **Ministry of External Affairs'** Consular, Passport & Visa Division issues diplomatic passports, also known as **'Type D' passports,** to individuals falling into **several categories:**
  - Government-appointed individuals and officers working under branches A and B of the **Indian Foreign Service (IFS)** traveling abroad for official business
  - Select individuals on official travel, including union ministers and **Members of Parliament (MPs).**
- **Revoking Power:**
  - The **authority to revoke** a diplomatic passport lies with the **passport authority.**
    - However, the government can revoke a diplomatic passport **only after a court order** to that effect.
  - Under the **Passport Act of 1967,** a **diplomatic passport may be revoked** if the holder is in wrongful possession, obtained it through **suppression of material information,** if the passport **authority deems it necessary for India's interests**, or if the holder has been convicted or is facing criminal proceedings in India.
- **Difference Between Passport and Visa:**

Feature	Passport	Visa
Issuing Authority	Ministry of External Affairs of India	Embassy or Consulate of the foreign country
Purpose	Proof of Indian citizenship and identity for international travel	Permission to enter a specific foreign country
Validity	10 years	Varies depending on type, country, and purpose
Requirement	Mandatory for all Indian citizens traveling abroad (with exceptions)	Varies depending on the country (visa-free agreements exist)

International Law Covering Diplomatic Passports

- **Vienna Convention on Diplomatic Relations:**
  - This convention outlines the r**ules for diplomatic law, including the privileges and immunities** of diplomatic passport holders.
- **Operational Visa Exemption Agreements:**
  - It allows diplomatic passport holders to visit these countries without a visa for **stays up to 90 days, provided their travel is not for private purposes.**
  - India has operational visa exemption agreements with 34 countries, including **Germany**, for holders of diplomatic passports.

Types of Passport:

Passport Type	Validity	Colour	Issued To
Ordinary (Type P)	10 years for adults, 5 years for minors	Blue	All Indian citizens
Official	Same as an Ordinary passport	White	Government officials
Diplomatic	Five years or less	Maroon	Diplomats, senior government officials, their dependents
Emigration Check Required (ECR)	Same as Ordinary passport	Orange	Indian citizens who haven't completed 10th-grade education
Emergency Certificate	Short validity	-	Indian citizens abroad in exigencies (Single journey to India when the passport is lost/expired)

New Collective Quantified Goal on Climate Finance (NCQG)

Source: DTE

Why in News?

Recently, in response to the pressing threat of **climate change**, the New Collective Quantified Goal on Climate Finance (NCQG) **has emerged as a crucial initiative** aimed at mobilizing resources for developing countries to combat climate challenges.

- It is a crucial topic for the upcoming **29th Conference of the Parties (COP29)** to the **United Nations Framework Convention on Climate Change (UNFCCC)**, which will take place later this year in **Baku, Azerbaijan.**

What is the New Collective Quantified Goal on Climate Finance (NCQG)?

- **About:**
  - The NCQG is a **new annual financial target that developed countries must meet from 2025 onward** to provide climate finance to developing countries.
    - It will replace the previous commitment of **USD 100 billion per year** that developed nations had pledged in 2009 but failed to deliver.
- **Importance of NCQG:**
  - **Empower Developing Countries**: Developing countries are often **disproportionately affected** by climate change despite contributing less to **greenhouse gas emissions.**
    - The NCQG provides them with the financial resources needed to invest in clean energy, adaptation measures, and climate-resilient infrastructure.
  - **Accelerate Climate Action:** Climate change mitigation and adaptation require significant investments.

        - The NCQG can **unlock the necessary funds** for developing countries to implement ambitious climate action plans aligned with the Paris Agreement's goals.
    - **Promote a Just Transition:** The NCQG can **support a just transition** to a low-carbon and climate-resilient economy, creating new jobs and opportunities while protecting vulnerable communities.
    - **Boost Global Cooperation**: Fulfilling the NCQG **necessitates collaboration** between developed and developing countries.
        - This fosters international cooperation and strengthens the global response to climate change.

Paris Climate Accord

- **Legal status:** It is a **legally binding** international treaty on climate change.
- **Adoption:** It was adopted by 196 countries at the Conference of the Parties COP 21 in Paris in December 2015.
- **Goal:** To limit **global warming** to well below 2° Celsius, and preferably limit it to 1.5° Celsius, compared to pre-industrial levels.
- **Objective:** To achieve the long-term temperature goal, countries aim to reach global peaking of **greenhouse gas emissions** as soon as possible to achieve a climate-neutral world by mid-century.
- **India** is a **signatory** to the **Paris Agreement.** India reaffirmed its commitment to the agreement in August 2022 by submitting an updated NDC to the UNFCCC. The NDC outlines India's goals for 2021–2030

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims:

Q. The term 'Intended Nationally Determined Contributions' is sometimes seen in the news in the context of (2016)

(a) pledges made by the European countries to rehabilitate refugees from the war-affected Middle East

(b) plan of action outlined by the countries of the world to combat climate change

(c) capital contributed by the member countries in the establishment of Asian Infrastructure Investment Bank

(d) plan of action outlined by the countries of the world regarding Sustainable Development Goals

Answer: (b)

Q. With reference to the Agreement at the UNFCCC Meeting in Paris in 2015, which of the following statements is/are correct? (2016)

1. The Agreement was signed by all the member countries of the UN and it will go into effect in 2017.
2. The Agreement aims to limit the greenhouse gas emissions so that the rise in average global temperature by the end of this century does not exceed 2°C or even 1.5°C above pre-industrial levels.
3. Developed countries acknowledged their historical responsibility in global warming and committed to donate $1000 billion a year from 2020 to help developing countries to cope with climate change.

Select the correct answer using the code given below.

(a) 1 and 3 only

(b) 2 only

(c) 2 and 3 only

(d) 1, 2 and 3

Answer: (b)

Study Advocates Removal of Exotic Plant Species

Source: TH

A recent study conducted by the **Kerala State Forest Protective Staff Organisation (KSFPSO),** an association of frontline forest officers highlights the importance of **removing exotic** plant species **from forests** to ensure ample food for wild animals, particularly elephants, at Chinnakkanal in Munnar, Kerala.

- The KSFPSO emphasises the necessity of removing exotic species like ***Acacia mearnsii (black wattle) and Eucalyptus (Eucalyptus teriticornis)*** from forest areas to mitigate **human-elephant conflicts.**
    - Exotic plants **inhibit the growth of other species** and restrict animal movement, leading to **food scarcity for wildlife.**
    - Changing these areas to natural grasslands will provide food and water for wild elephants at Chinnakkanal and improve the landscape.
- The Chinnakkanal landscape is overrun by **West Indian Lantana (kongini)**, hindering the growth of diverse vegetation and posing challenges for animal access.
- **Nearly 4,000 hectares of forestland** in the district are **affected by exotic species,** impacting prey availability and consequently attracting predators like **tigers** and **leopards** to adjacent areas.

Read more: Invasive Alien Species , Planting of Exotic Trees in Nilgiris is Harmful

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Delhi's Improved Air Quality in April 2024

Source: PIB

Delhi witnessed a significant **improvement in** air quality **in April 2024,** recording the highest number of 'Good to Moderate' air quality days (23 days) in six years.

- **Control of Poor Air Quality Days:**
  - The number of days with an Air Quality Index (AQI) **> 200** is limited to 07 in April 2024, indicating effective control measures implemented by the **Commission for Air Quality Management in NCR and Adjoining Areas (CAQM)** and stakeholders.
- **PM 2.5 and PM 10 Reduction:** Daily average concentrations of Particulate matter (PM) 2.5 **and** PM10 witnessed a significant reduction in April 2024 compared to previous years.

    - PM is a mixture of **solid particles and liquid droplets in the air.** PM can include dust, dirt, soot, smoke, and liquid droplets.
        - PM10 (coarse particles)- Particles with a diameter of 10 micrometres or less.
        - PM2.5 (fine particles)- Particles with a diameter of 2.5 micrometres or less.
- An **AQI between 0 and 50 is considered 'Good',** 51 and 100 'Satisfactory', 101 and 200 'Moderate', 201 and 300 'Poor', 301 and 400 'Very Poor', and 401 and 500 is considered 'Severe'.

Read more: Air Pollution in India & NCAP

Chinese Road Construction in Shaksgam Valley

Source: TH

India expresses concern over recent **Chinese road construction** activities in the **Shaksgam Valley** in the t**rans-Karakoram tract of Pakistan-occupied Kashmir (PoK),** a territory ceded by Pakistan to China in 1963.

- **India has consistently rejected the 1963 China-Pakistan Boundary Agreement,** which attempted to cede the Shaksgam area to China and assert Shaksgam Valley as its territory.
- The **Siachen glacier,** a vital piece of Indian territory, is situated **adjacent to the Shaksgam Valley** and holds strategic importance, particularly **amidst the 2020 standoff between Indian and Chinese troops in** eastern Ladakh**.**
- China's extensive military build-up along the **Line of Actual Control**, especially in eastern Ladakh, poses threats to Indian positions in regions like **Depsang and** Daulat Beg Oldie.

Read more: Pakistan-China Relationship & India

Orangutan Treats Wound With Medicinal Plant

Source: DTE

- An **orangutan** named **Rakus in** Sumatra **(Indonesia)** treated a **facial wound** with a medicinal plant called **Akar Kuning (*Fibraurea tinctoria*).**
    - This is the **first documented** instance of a **great ape** using a tool with medicinal properties to treat a wound.
- The plant is known for its antibacterial, **anti-inflammatory**, and **anti-fungal properties.**
- Rakus' behaviour suggests that **wound treatment** may have **originated** in a common **ancestor** of humans and orangutans.
- **Great apes** belong to the taxonomic family ***Hominidae*** within the primate superfamily ***Hominoidea.***
    - ***Bonobo (Pan paniscus); Chimpanzee (Pan troglodytes); Eastern Gorilla (Gorilla beringei); Western Gorilla (Gorilla gorilla), and orangutans (Pongo)*** are referred to as **great apes** due to their large size and humanlike features.

Read more: Hollongapar Gibbon Sanctuary