



30 June, 2023

## India's Green Credit Programme (GCP)

**Context:** The Environment Ministry proposes a 'Green Credit Scheme' to incentivize activities such as afforestation, water conservation, waste management, and addressing air pollution through 'green credits'.

### About the GCP

- A national Green Credit Programme is proposed to incentivize voluntary environmental actions.
- It utilizes a competitive market-based approach for Green Credits.
- Individuals, industries, FPOs, ULBs, gram panchayats, and private sectors can earn green credits for eco-friendly actions.
- Tradable green credits will be available on a domestic market platform.
- The programme promotes sustainable lifestyles through the LiFE principle.
- It encourages behavioral changes for environmentally friendly practices.
- The scheme covers a wide range of actions beyond greenhouse gas emissions.
- Eight sectors, including tree plantation, water conservation, sustainable agriculture, and waste management, qualify for generating credits.
- The notification is open for public comment for 60 days.
- The government aims to create demand for green credits through future incentivizing regulations.
- The administration of the scheme will be under the Indian Council for Forestry Research and Education (ICFRE), which is an autonomous organization/governmental agency operating under the Ministry of Environment, Forest and Climate Change (MoEFCC).

### Objectives of GCP

- Create a market-based mechanism to incentivize voluntary environmental actions and individual/community behavior.
- Encourage the private sector and other entities to fulfill their existing obligations from other legal frameworks.
- Establish a supply and demand system to drive environmental actions and promote sustainability.

### Sectors that can qualify for generating Green Credits

- **Tree plantation-based Green Credit:** Promote increasing green cover through tree plantation and related activities.
- **Water-based Green Credit:** Encourage water conservation, harvesting, and efficient use practices.
- **Sustainable agriculture-based Green Credit:** Promote natural and regenerative agricultural practices and land restoration.
- **Waste management-based Green Credit:** Encourage sustainable waste management practices.
- **Air pollution reduction-based Green Credit:** Promote measures to reduce air pollution and other pollution-abatement activities.
- **Mangrove conservation and restoration-based Green Credit:** Encourage conservation and restoration of mangroves.
- **Ecomark-based Green Credit:** Incentivize manufacturers to obtain an eco-mark label for environmentally-friendly goods and services.
- **Sustainable building and infrastructure-based Green Credit:** Promote construction using sustainable technologies and materials.

## Euclid Space Telescope

**Context:** The European Space Agency (ESA) is preparing to launch the Euclid Space Telescope on July 1 from Cape Canaveral to conduct a comprehensive survey of billions of galaxies.

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- The European Space Agency's Euclid space telescope will launch on a SpaceX Falcon 9 rocket on July 1.
- It will be launched from Cape Canaveral, Florida, at 11:11 a.m. EDT (1511 GMT).
- The primary objectives of Euclid are to study dark matter and dark energy, which make up approximately 95% of the universe.
- Dark matter and dark energy cannot be directly detected, but their effects on gravitational warping can be observed.
- Euclid will greatly expand the search for gravitational warping effects by providing a wide field of view for observation.

## What is Euclid?

- The Euclid space telescope is named after the ancient Greek mathematician known as the "father of geometry."
- It stands at a height of 14.7 feet (4.5 meters) and has a diameter of 10.2 feet (3.1 meters).
- Euclid is equipped with two instruments: a near-infrared camera to measure the distance and brightness of galaxies, and a visible-light camera to study their shapes.
- What sets Euclid apart is the large field of view of its instruments, covering approximately one-third of the night sky.
- Over a billion galaxies are expected to be cataloged during Euclid's planned six-year scanning period.
- The telescope has the capability to observe up to 10 billion years into the past, providing valuable insights into cosmic history.
- Euclid's range is slightly less than that of the James Webb Space Telescope, which has observed objects from more than 13 billion years ago.

## Scope of Study

- Euclid's data will be used to create two maps of the universe.
- The first map will show the distribution of dark matter through gravitational lensing, where the bending of light by matter reveals the presence of dark matter.
- Gravitational lensing occurs when light from distant sources is bent as it passes through the curved paths of space-time, resulting in magnification.
- The second map will utilize baryon acoustic oscillations, which are frozen shock waves created in the early universe, to study the universe's accelerating expansion and the role of dark energy.
- Baryon acoustic oscillations are massive shock waves formed when the universe was hot, leaving imprints similar to cosmic tree rings.
- By studying these shock waves, scientists can investigate the accelerating growth of the universe and the underlying cause, believed to be dark energy.
- Euclid's data will contribute valuable insights into the nature and behavior of dark matter and dark energy, advancing our understanding of the universe's structure and evolution.

## What is Dark Matter?

- Dark matter is an invisible and enigmatic form of matter that constitutes approximately 85% of the universe's total matter.
- It does not interact directly with light, rendering it completely invisible.
- The presence of dark matter is inferred through its gravitational effects on surrounding objects, such as the extreme gravitational warping of galaxies and the high-speed orbits of stars.
- The exact composition of dark matter remains unknown.
- One hypothesis proposes the existence of weakly interacting massive particles (WIMPs), hypothetical particles that could account for dark matter's properties.
- Another theory suggests that dark matter may consist of axions, which are minuscule particles much smaller than an electron.
- Research and ongoing observations aim to unravel the mysteries surrounding dark matter and its role in shaping the universe's structure and evolution.

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## What is Dark Energy?

- Dark energy is the mysterious force driving the universe's accelerating expansion.
- It accounts for about 68% of the universe.
- Dark matter, making up 27% of the universe, is distinct from dark energy.
- Visible matter comprises only 5% of the universe.
- Dark energy's role in the universe's expansion challenges our understanding of gravity and requires further exploration.

## Critical Minerals of India

**Context:** The Union Minister of Coal, Mines & Parliamentary Affairs has revealed the inaugural report on "Critical Minerals for India."

- The report was prepared by an expert team constituted by the Ministry of Mines.
- It identifies a comprehensive list of critical minerals essential for sectors like defense, agriculture, energy, pharmaceuticals, and telecom.
- India has become a partner in the Mineral Security Partnership (MSP) to strengthen critical mineral supply chains.
- The report identifies 30 critical minerals, and the Geological Survey of India (GSI) is focused on exploring these minerals.
- The list of critical minerals will be revisited periodically by the Ministry.
- The list will guide policy formulation, strategic planning, and investment decisions in the mining sector.
- It supports India's vision of achieving a "Net Zero" target and creating a robust and resilient mineral sector.

## What are Critical Minerals?

- Critical minerals are essential for industry and national security.
- Critical minerals are at risk of supply shortage and have a larger impact on the economy.
- They have complex global supply chains, concentrated in specific extracting and processing countries.
- The concentration of critical minerals in these countries increases the supply risks.
- They are scarce, valuable, and crucial for advanced technologies and defense.
- They are used in sectors like telecommunications, electronics, energy, agriculture, and defense.
- Examples include lithium, cobalt, rare earth elements, graphite, uranium, and platinum group metals.

## India's list of Critical minerals as per the report

1. Antimony	15. Nickel	iv. Neodymium	20. Rhenium
2. Beryllium	16. PGE	v. Promethium	21. Selenium
3. Bismuth	i. Platinum	vi. Samarium	22. Silicon
4. Cadmium	ii. Palladium	vii. Europium	23. Strontium
5. Cobalt	iii. Rhodium	viii. Gadolinium	24. Tantalum
6. Copper	iv. Ruthenium	ix. Terbium	25. Tellurium
7. Gallium	v. Iridium	x. Dysprosium	26. Tin
8. Germanium	vi. Osmium	xi. Holmium	27. Titanium
9. Graphite	17. Phosphorous	xii. Erbium	28. Tungsten
10. Hafnium	18. Potash	xiii. Thulium	29. Vanadium
11. Indium	19. REE	xiv. Ytterbium	30. Zirconium
12. Lithium	i. Lanthanum	xv. Lutetium	
13. Molybdenum	ii. Cerium	xvi. Scandium	
14. Niobium	iii. Praseodymium	xvii. Yttrium	

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## Global Forest Watch

**Context:** According to a study referenced by the World Resources Institute's Global Forest Watch, tropical regions witnessed a notable decrease in forest cover during 2022.

### Key Findings

- Tropical areas experienced a significant decline in forest cover in 2022, with a loss of 4.1 million hectares.
- This is equivalent to an area the size of 11 football fields disappearing every minute.
- Primary forest cover loss in tropical regions was 10% higher in 2022 compared to the previous year.
- The world is not on track to meet its forest-related commitments, including the goal of ending deforestation by 2030.
- Global deforestation rates need to decrease by at least 10% annually to meet the 2030 target.
- Despite a 3.1% reduction in deforestation rates in 2022 compared to the 2018-2020 baseline, the levels still exceed the necessary threshold by over one million hectares.
- The overall change in tree cover over the past two decades has been a net loss of 100 million hectares, indicating a lack of progress in forest restoration.
- Countries like Brazil, the Democratic Republic of Congo, and Bolivia experienced significant forest losses in 2022.

### What is Global Forest Watch?

- Global Forest Watch (GFW) is an online platform by the World Resources Institute (WRI).
- It monitors and analyses global forest cover and related data.
- GFW uses satellite imagery and crowdsourced data.
- It tracks deforestation and forest changes worldwide.
- GFW promotes transparency and accountability in forest management.
- The platform provides interactive maps and tools for monitoring forests.
- It supports informed decision-making by governments and organizations.
- GFW helps address issues related to forest conservation.

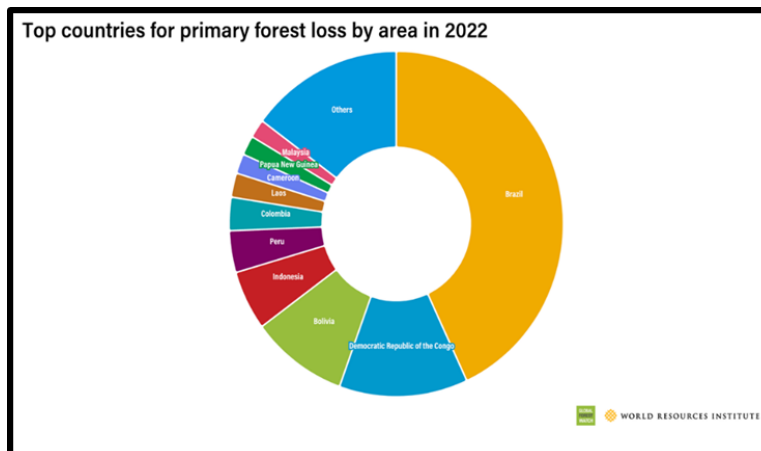
### World Resources Institute

- The World Resources Institute (WRI) is a global research non-profit organization.
- It was founded in 1982 with funding from the MacArthur Foundation.
- WRI focuses on sustainable practices in areas such as business, economics, finance, and governance.
- The organization works in **six key areas: food, forests, water, energy, cities, and climate**.
- WRI produces the **World Resources Report**, a flagship report series covering various topics.
- WRI promotes initiatives for monitoring, data analysis, and risk assessment.

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## NEWS IN BETWEEN THE LINES

### Gravitational Waves



#### Context:

Recently, the scientists have made a significant discovery regarding the ripple effect of gravitational waves across the universe.

#### Gravitational Waves:

Gravitational waves are ripples in the fabric of spacetime that propagate outward from massive objects in the universe.

#### Formation of Gravitational Waves:

- According to scientists, supermassive black holes, which can be billions of times the mass of the sun, are responsible for generating these gravitational waves as they circle each other before merging.
- The gravitational waves propagate through the universe, carrying information about the cosmic events that gave rise to them.

#### NANOGrav:

- NANOGrav is a Physics Frontiers Center funded by the National Science Foundation.
- It comprises more than 190 scientists from the United States and Canada, including researchers from NASA's Jet Propulsion Laboratory and other NASA centers.

#### Complementing Previous Discoveries:

- The recent discovery of background ripples complements the first-ever detection of gravitational waves in 2015 by the Laser Interferometer Gravitational Observatory (LIGO).
- While the previous detection focused on shorter wavelength signals from black holes approximately 30 times the mass of the sun, the new discovery provides insights into gravitational waves generated by much larger supermassive black holes.

#### Future Contributions:

- NASA is actively involved in the Laser Interferometer Space Antenna (LISA) mission led by the European Space Agency (ESA).
- LISA is a space-based observatory that aims to detect gravitational waves within a wavelength range between those detected by NANOGrav and LIGO.

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## PM-PRANAM

### Scheme



PM-PRANAM Scheme

**Context:** The Cabinet Committee on Economic Affairs (CCEA) recently approved the PM-PRANAM (PM Programme for Restoration, Awareness, Generation, Nourishment and Amelioration of Mother Earth) scheme.

#### What is PM-PRANAM Scheme?

- The PM-PRANAM scheme is a step towards promoting sustainable agriculture and reducing the dependency on chemical fertilizers.
- By incentivizing the adoption of alternative fertilizers and encouraging responsible fertilizer usage, the scheme aims to protect the environment and ensure the long-term health of the agricultural sector.

#### Objective:

The main objective of the PM-PRANAM scheme is to encourage the balanced use of fertilizers by promoting the adoption of alternative fertilizers and reducing the reliance on chemical fertilizers.

#### Funding Mechanism:

- The PM-PRANAM scheme will be financed through the savings from existing fertilizer subsidies under various schemes.
- Half of the subsidy savings will be given to the states as a grant.
- This grant can be used to create assets related to the adoption and production of alternate fertilizers at the village, block and district levels.

#### Rewarding and Encouraging Stakeholders:

The remaining 30% of the grant money will be used to reward and encourage farmers, panchayats and other stakeholders involved in reducing fertilizer usage and generating awareness about sustainable practices.

## Qing Dynasty



**Context:** A five-colour silk imperial edict from the Qing Dynasty has been discovered in Hebei Province, China, through a recent archaeological excavation.

#### Qing Dynasty:

- The Qing Dynasty, also known as the Ch'ing Dynasty or Manchu Dynasty, marked the final imperial dynasty in China, reigning from 1644 to 1912.
- Preceded by the Han-led Ming Dynasty (1368–1644) and followed by the Republic of China era (1912–1949), the Qing Dynasty witnessed a substantial expansion of the empire's territory.

#### Historical Background:

- In the early 1600s, the Manchu people of northern China formed a unified front against the ruling Ming Dynasty.
- Their military organization and strength led to their successful invasion of China in 1644, establishing the Qing Dynasty.
- The first Qing Emperor, the five-year-old Shunzhi Emperor, took control of Beijing and initiated the dynasty.

**Trade and Commerce:** The Qing Dynasty played a prominent role in international trade, exporting porcelain, textiles, tea, paper, sugar and steel to various parts of the world.

#### Decline:

- During the late 18th century, military campaigns drained the government's finances, leading to increased corruption.
- Combined with population pressures and natural disasters, these circumstances contributed to the Opium Wars and the Taiping and Nian rebellions.

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## Places in News

### Tanzania

**Context:** Recently, India and Tanzania wrapped up their second Joint Defence Cooperation Committee meeting in Arusha on June 29, 2023. The objective of the meeting was to strengthen security in the Indian Ocean Region by fostering collaboration and discussions on multiple facets of defence cooperation.

**Geographical Location:**

- Tanzania is located on the eastern coast of Africa. It is situated in the eastern part of the continent, bordered by Kenya and Uganda to the north, Rwanda, Burundi and the Democratic Republic of the Congo to the west, and Zambia, Malawi and Mozambique to the south.
- It also has a coastline along the Indian Ocean to the east.



**Capital City:**

The capital city of Tanzania is Dodoma. However, the largest city and major economic hub is Dares Salaam, located on the eastern coast.

**Administrative Divisions:**

Tanzania is divided into 31 regions, including Zanzibar, which has its own semi-autonomous status.

**Natural Features:**

- The country is known for its diverse geography and natural landmarks.
- It is home to Africa's highest mountain, Mount Kilimanjaro, located in the northeastern part of the country.
- Tanzania also hosts the famous Serengeti National Park, Ngorongoro Conservation Area and the islands of Zanzibar, which attract tourists from around the world.

**Languages:**

- The official languages of Tanzania are Swahili and English.
- Swahili, also known as Kiswahili, is widely spoken and serves as a lingua franca for communication among different ethnic groups.

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