



## Ek Ped Maa Ke Naam Campaign

[Source: PIB](#)

The **Ministry of Defence** will undertake a massive **15 lakh trees plantation drive** across the country on the occasion of **78th Independence Day ceremony** on **15<sup>th</sup> August 2024**.

- The plantation drive is part of the '[Ek Ped Maa Ke Naam](#)' campaign, to be conducted through the three Services, [Defence Research and Development Organisation \(DRDO\)](#), Defence PSUs, **Controller General Defence Accounts (CGDA)**, [National Cadet Corps \(NCC\)](#), [Sainik Schools](#), and Ordnance factories.
- The Prime Minister launched the 'Ek Ped Maa Ke Naam' campaign on [World Environment Day 2024](#), urging all to plant a tree as a tribute to mothers.

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## International Tiger Day 2024

[Source: LM](#)

[International Tiger Day](#) is celebrated every year on **29<sup>th</sup> July**, to raise awareness about the magnificent yet endangered animal.

- The day is a reminder of the **collective effort of 13 tiger range countries** to double the wild tigers' population by 2022 through the [TX2 global goal](#).
  - The TX2 goal is a global commitment to double the world's wild tigers by 2022.
  - The goal has been set by the [World Wildlife Fund \(WWF\)](#) through the Global Tiger Initiative, [Global Tiger Forum](#) and other critical platforms.
- The day was first **established in 2010 at the Saint Petersburg Tiger Summit**.
  - The main aim is to **urge the international community to intensify efforts for wildlife protection** through expanding **protected areas, promoting sustainable livelihoods**, and maintaining sufficient forest area in tiger roaming nations.

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# TIGER

Royal Bengal Tiger (*Panthera Tigris*) is the National animal of India.

## Subspecies of Tiger

- \* The continental (*Panthera tigris tigris*)
- \* The Sunda (*Panthera tigris sondaica*)

## Habitat

Tropical rainforests, evergreen forests, temperate forests, mangrove swamps, grasslands, and savannas



## Countries Where Tiger Population Is Found

- Found only in 13 Tiger Range countries- India, Nepal, Bhutan, Bangladesh, Myanmar, Russia, China, Thailand, Malaysia, Indonesia, Cambodia, Laos, and Vietnam
- As per the latest report by IUCN, tiger has gone extinct in Cambodia, Laos, and Vietnam

## Protection Status

- IUCN Red List: Endangered
- CITES: Appendix I
- WPA 1972: Schedule I

## Threats

- Habitat loss
- Poaching and illegal trade
- Human-Wildlife conflict

## Conservation Efforts

- International Big Cats Alliance (IBCA):** For conservation of seven big cats namely Tiger, Lion, Leopard, Snow Leopard, Cheetah, Jaguar and Puma (launched by India)
- Tx2 campaign:** Launched by WWF; stands for 'Tiger times 2' signaling the goal to double the tiger population by 2022
- National Tiger Conservation authority (NTCA):** Constituted under the WPA, 1972
- Project Tiger:** Launched in 1973
- Tiger Census:** Every 4 years

## Tigers In India

- India has the largest population
  - As of 2022, India has 3167 tigers
  - Largest population has been found in Central Indian Highlands & Eastern Ghats Landscape
- Tiger Reserves:** India now has 53 tiger reserves
  - Ranipur in UP is the latest
  - Nagarjun Sagar (Andhra Pradesh) is the largest while Orang (Assam) is the smallest (Core area)



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## Discovery of Dark Oxygen

Source: TH

### Why in News?

Recently, scientists reported an unknown process is producing **oxygen deep in the world's oceans**, where **photosynthesis** can't occur due to the lack of sunlight.

- This discovery is significant because oxygen supports marine life and suggests that there may be previously unknown ecosystems.

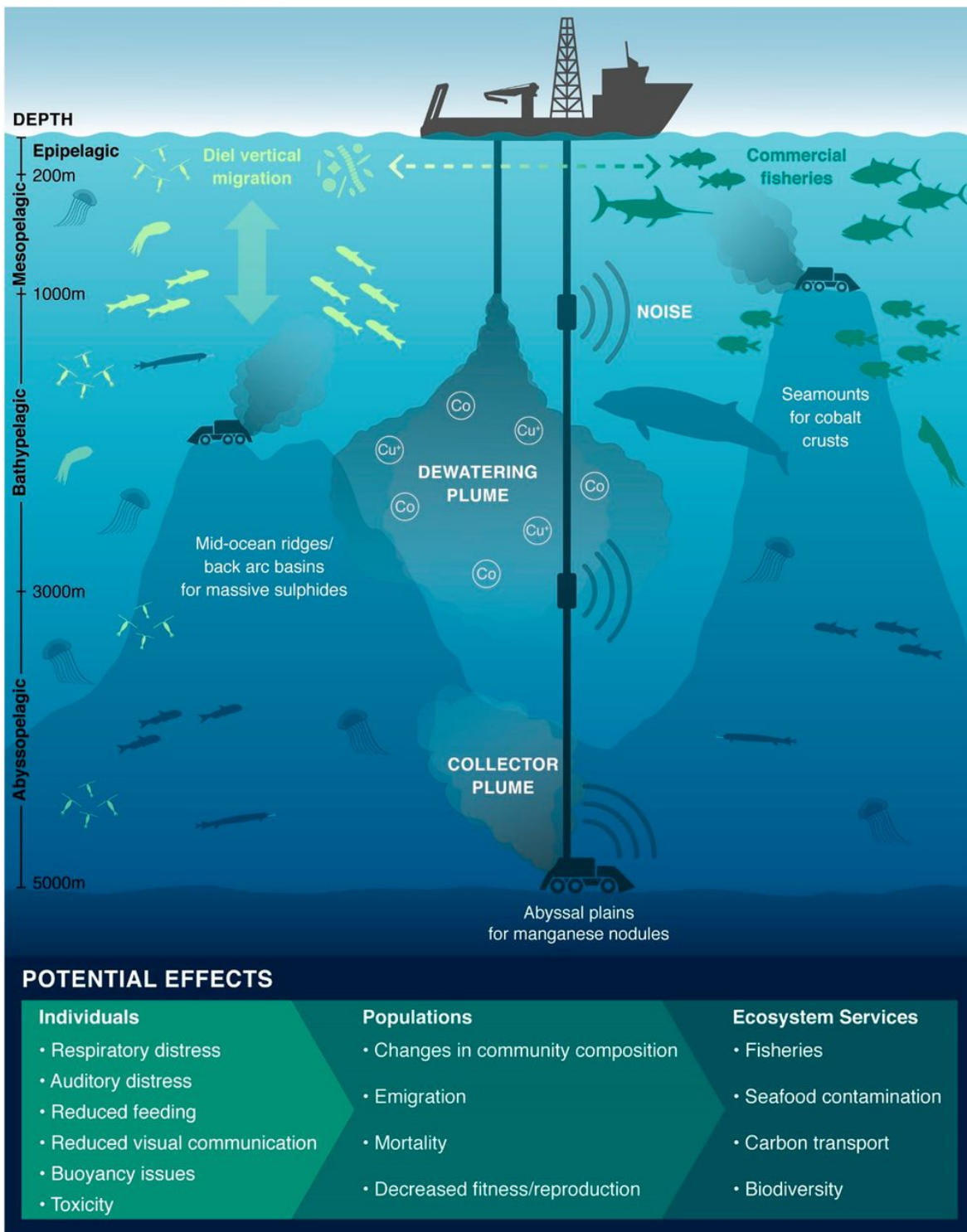
### What is Dark Oxygen?

- **About:**
  - Scientists observed an **unexpected increase in oxygen concentration** in some areas of the abyssal **zone** (where sunlight is extremely low and insufficient for photosynthesis).
  - Researchers noted that this finding represents a **new source of oxygen** where photosynthesis does not occur, and **termed it as 'dark oxygen'**.
- **Possible Cause of Generation of Dark Oxygen:**
  - Typically oxygen is provided by the '[Great Conveyor Belt](#)', a global circulation system which should decrease without local production, as small animals consume it.
  - **One hypothesis** for oxygen production is that [polymetallic nodules](#) are transporting electric charges that **split water molecules, releasing oxygen**.
    - Polymetallic nodules are lumps of iron, manganese hydroxides, and rock found on the ocean floor.
    - However, **the exact energy source for the nodules' ability to produce oxygen remains unclear**.
- **Place of Study:**
  - The study was conducted in the **Clarion-Clipperton Zone Region off Mexico's west coast**.
    - The Zone is noted for having the highest concentration of **polymetallic nodules** in the world.

## What is Deep-Sea Mining?

- **About:**
  - [Deep-sea mining](#) involves extracting mineral deposits and metals from the ocean floor. There are three main types of Deep-sea mining.
    - **Removing polymetallic nodules rich in deposits from the seabed.**
    - **Mining massive deposits of seafloor sulfides.**
    - **Extracting cobalt crusts from rock formations.**
  - These nodules, deposits, and crusts contain valuable materials like **nickel, rare earth elements, and cobalt**, which are essential for batteries, renewable energy technologies, and everyday devices such as cell phones and computers.
  - The **deep-sea mining** is anticipated to become a major marine resource extraction activity in the coming decades due to availability of polymetallic nodules.
- **Environmental Concerns:**
  - The discovery of '**dark oxygen**' raises concerns about **potential damage to ecosystems** that rely on this oxygen source. Experts worry that deep-sea mining (that removes polymetallic nodules) could be harmful to these marine environments.
  - In November 2023, a study indicated that **deep-sea mining could harm deep-sea jellyfish** (by creating **mud plumes in ocean water which interfere with the nutrient and reproductive cycle** of marine species).
  - Limited scientific knowledge of **abyssal zone ecosystems** compared to those aboveground, may complicate efforts to gauge the potential impact of deep-sea mining on these ecosystems and their role in global climate processes.
- **Indian Context:**
  - India intends to apply for licenses to explore **deep-sea minerals** in the **Pacific Ocean**.
    - Also, **India was the first country to receive the status of a 'Pioneer Investor' in 1987** and was given an area of about 1.5 lakh sq. km in the **Central Indian Ocean Basin (CIOB) for nodule exploration**.
    - India's exclusive rights to explore polymetallic nodules from seabed in the **Central Indian Ocean Basin** was extended in 2017 for five years.
    - India in 2024, applied for Rights to Explore the Indian Ocean Seabed beyond its jurisdiction, including [Cobalt-Rich Afanasy Nikitin Seamount \(AN Seamount\)](#)
  - India's Ministry of Earth Sciences is developing a submersible vehicle ([Samudrayaan Mission](#)) as part of its '[Deep Ocean Mission](#)' to search for and mine similar resources in the [Indian Ocean](#).





## UPSC Civil Services Examination, Previous Year Question (PYQ)

### Prelims:

#### Q. Consider the following statements:

1. The Global Ocean Commission grants licences for seabed exploration and mining in international waters.
2. India has received licences for seabed mineral exploration in international waters.
3. 'Rare earth minerals' are present on the seafloor in international waters.

Which of the statements given above are correct?

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

Ans: (b)

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## Employment Data Collection Mechanism

[Source: TH](#)

The Union government is set to create an **Employment Data Collection Mechanism (EDCM)** in collaboration with all Ministries to address concerns over the **lack of comprehensive [data on employment trends](#)**, following concerns highlighted in the **Economic Survey for 2023-24**.

- The EDCM aims to improve employment data and address gaps in employment, **unemployment, wage loss, and job loss data**.
- The government is making reforms in sectors like labour, logistics, infrastructure, and manufacturing to boost employment. Initiatives such as [PM Gati Shakti](#), [Production Linked Incentive schemes](#), [Bharatmala](#), and [Sagarmala](#), and the **Employment-linked Incentive package** are aimed at generating employment.
  - The country's working-age population is **expected to grow by 9.7 million per year from 2021-31 and 4.2 million per year from 2031-41**.
  - The [Union Budget 2024-2025](#) allocates Rs 2 lakh crore for employment and skilling schemes, including three "**employment-linked incentive**" schemes under the **Prime Minister's package**.
    - The schemes focus on enrolling in the [Employees' Provident Fund Organisation \(EPFO\)](#) and **provide incentives for new employees** and their employers. These schemes are expected to benefit a total of **290 lakh youth entering employment**.
- The Central and State governments have various programmes and projects to create direct and indirect employment, but so far, they have **not been effectively utilised to estimate employment generation**.

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## Ocean Circulation and Climate Change

[Source: SD](#)

Why in News?

Recently, a study published in Nature Communications has gained attention for its unexpected findings about the **ocean's role in [climate change](#)**.

- The study reveals that a **weaker ocean circulation might increase atmospheric CO<sub>2</sub> levels**, contrary to previous assumptions.

## What is the Relation Between Climate Change and Ocean Circulation?

- **The Role of Overturning Circulation:** Ocean overturning circulation acts as a [global conveyor belt](#), moving water and nutrients across the ocean. It is a two-fold process.
  - As **surface waters absorb CO<sub>2</sub> and cool**, they become denser and sink into the deep ocean, **transporting carbon away from the atmosphere**.
  - **Deep waters upwell, bring nutrients and carbon** back to the surface, where they **support marine life** and help regulate atmospheric CO<sub>2</sub> levels.
- **Traditional Views on Ocean Circulation and Climate Change:** As climate change progresses, scientists predict a weakening of ocean overturning circulation due to various factors.
  - **Melting Ice Sheets:** Particularly around [Antarctica](#), melting ice sheets add freshwater to the ocean, disrupting circulation patterns.
  - **Temperature Changes:** [Global warming](#) affects ocean temperature gradients, further impacting circulation.
  - The traditional view is that weaker circulation would mean **less carbon is stored in the deep ocean**, but the ocean's carbon sink effect would **stay balanced due to less carbon coming back up**.
- **New Insights from Research:** New research reveals a **complex feedback mechanism involving ocean circulation**, iron availability, microorganisms, and ligands, showing that weaker ocean circulation could increase atmospheric CO<sub>2</sub> levels contrary to previous beliefs.
  - **Ligands are organic molecules** that bind with iron to keep it soluble and accessible for [phytoplankton](#) growth, but their **availability can limit the effectiveness** of iron fertilization efforts globally.
- **Implications for Climate Change Mitigation:** The study highlights the need to **reconsider the ocean's role in climate change mitigation**, as weaker ocean circulation could reduce [carbon sink](#) effectiveness, leading to higher atmospheric CO<sub>2</sub> and exacerbating global warming.

# OCEAN WARMING

The ocean absorbs most of the excess heat due to global warming caused by greenhouse gas (GHG) emissions, leading to rising ocean temperatures

Increase in Ocean Temperature

**1.2°C** from 1950 to 2020

Projected to Future Increase

**1.7°C to 3.8°C** from 2020 to 2100

### Impact of Ocean Warming

- ⌚ **Sea Level Rise:** Warmer water expands, causing sea levels to rise
- ⌚ **Coral Bleaching:** Corals expel the algae (*zooxanthellae*) living in their tissues and turn completely white
- ⌚ **Ocean Acidification:** Ocean absorbs ~1/4<sup>th</sup> of total CO<sub>2</sub> thus making it more acidic (non-metallic oxides - acidic in nature)
- ⌚ **Impacts on Marine Life:** Causes many marine species to shift towards the poles and disrupts food webs
- ⌚ **Impacts on Climate Patterns:** Influences atmospheric circulation patterns, such as El Niño and La Niña & extreme weather events

### Causes of Ocean Warming (due to Global Warming)

- ⌚ **GHG Emissions:** Fossil fuels burning releases CO<sub>2</sub> and GHG
- ⌚ **Deforestation:** Lesser trees → More CO<sub>2</sub> & GHG → Global Warming → Warming of Ocean
- ⌚ **Industrial Activities:** Emit various pollutants that contribute to greenhouse effect
- ⌚ **Agricultural Practices:** Produces methane and nitrous oxide – potent greenhouse gases
- ⌚ **Heat Absorption by Oceans:** Oceans absorb ~90% of excess heat generated by GHGs

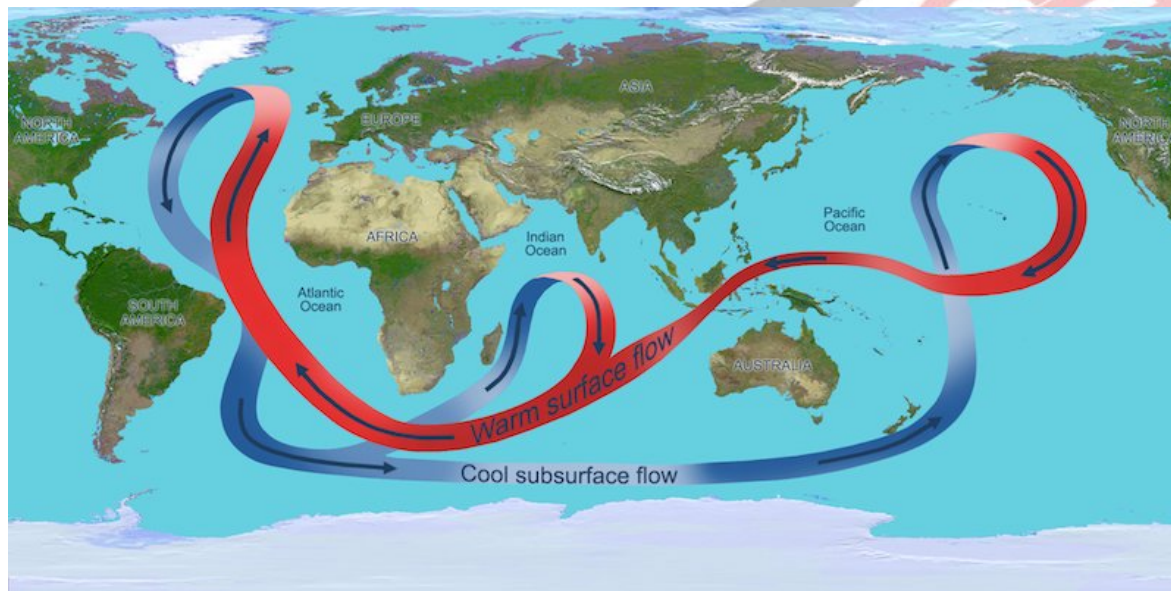


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## What is Meridional Overturning Circulation (MOC)?

- **Definition:** The [Meridional Overturning Circulation \(MOC\)](#) is a **crucial component of global ocean circulation**, moving water, heat, salt, carbon, and **nutrients primarily in the north-south direction** within and between ocean basins. It plays a **vital role in regulating the Earth's climate**.
- **Mechanism:**
  - **Northward Flow:** In the Atlantic Ocean, warm and salty surface water is transported from the South Atlantic **towards the Nordic Seas** (near Greenland, England, and Northern Canada). Here, it **cools, becomes denser**, and sinks to **form deep water currents** that flow southwards towards Antarctica.
  - **Antarctic Contribution:** Near Antarctica, **even denser waters are formed**. These waters flow north along the seafloor into the North Atlantic, where they **rise and mix with other waters** before flowing back to the south.
- **Significance:**
  - The MOC is responsible for about two-thirds of the oceanic **northward heat transport**, making it essential for climate regulation.
  - Changes in the MOC influence regional and global heat distribution, **affecting climate and weather patterns**.
- **Cycle Duration:** The entire circulation cycle of the MOC, also known as the **oceanic conveyor belt**, is **extremely slow**. It takes approximately **1,000 years** for a parcel (any given cubic meter) of water to complete its journey along the belt.



### UPSC Civil Services Examination, Previous Year Question (PYQ)

#### Prelims:

**Q. At the national level, which ministry is the nodal agency to ensure effective implementation of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006? (2021)**

- (a) Ministry of Environment, Forest and Climate Change
- (b) Ministry of Panchayati Raj
- (c) Ministry of Rural Development
- (d) Ministry of Tribal Affairs

**Ans: (d)**

**Q. Stiglitz Commission established by the President of the United Nations General Assembly was in the international news. The commission was supposed to deal with (2010)**

- (a)** The challenges posed by the impending global climate change and prepare a road map
- (b)** The workings of the global financial systems and to explore ways and means to secure a more sustainable global order
- (c)** Global terrorism and prepare a global action plan for the mitigation of terrorism
- (d)** Expansion of the United Nations Security Council in the present global scenario

**Ans: (b)**

**Mains:**

**Q. Assess the impact of global warming on the coral life system with examples. (2019)**

PDF Reference URL: <https://www.drishtias.com/current-affairs-news-analysis-editorials/news-analysis/30-07-2024/print>

