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Table of Contents

1. Biosphere Reserve
2. Adaptation Finance Gap
3. Central Vigilance Commission
4. Elephant Corridors
5. Study On Zoonotic Disease
6. World Food India 2023
7. Future Leadership Program
8. INFUSE Mission
9. Awaous Motla
10. Antarctic Ozone Hole

THE HINDU

Page 8

BIOSPHERE RESERVE

(Syllabus: GS Paper 3 – Env and Eco)

Biosphere reserves are evolving as pockets of hope

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Away from the cacophony of urban life, most of us look for respite in sites with natural beauty, lush greenery, and peaceful surroundings. As the tourist season approaches, it is no surprise that while we search for unpolluted spots to explore, unconsciously our consumption of single-use plastic, in particular plastic water bottles, will also significantly increase. With 80% of all tourism taking place in coastal areas, would you call it a relaxing vacation if you found discarded plastic bottles while taking a stroll on the beach?

In the Island of Principe Biosphere Reserve, Sao Tome and Principe in Africa, schoolchildren have been equipped with stainless steel bottles for drinking water, so the daily production and consumption of single-use plastic bottles can be completely avoided. Acting as pockets of hope in the face of the climate crisis, the United Nations Educational, Scientific and Cultural Organisation (UNESCO) biosphere reserves are hidden oases, protecting biodiversity, reducing pollution, and enhancing climate resilience. They are living jewels of land, coastal and marine ecosystems, scattered across the globe, where nature and humans come together creating a symphony of life.

In aid of conservation

World Biosphere Reserve Day is celebrated on November 3 each year to raise awareness of the importance of biosphere reserves and to promote their conservation and sustainable use. In the heart of each biosphere reserve lies the strictly protected core zone, providing habitat for flora and fauna, and protecting water, soil, air, and biota as a whole ecosystem. There is a buffer zone surrounding the core zone, where people live and work in harmony with nature; a zone that also functions as a laboratory for scientists to study nature, and for training and education. The outermost edge is the transition zone where communities practise socio-culturally and ecologically sustainable human activities.

On the second anniversary of World Biosphere Reserve Day, November 3, it is important to reflect on the progress made in conserving and sustainably using these vital ecosystems

Designated by UNESCO to promote the conservation of biodiversity, sustainable development, and research, biosphere reserves are also supported by other United Nations agencies, for example the United Nations Development Programme, the United Nations Environment Programme, as well as the International Union for Conservation of Nature. According to UNESCO, there are currently 748 biosphere reserves across 134 countries, including 22 transboundary sites, enhancing the friendly cooperation between neighbouring countries. They impact the lives of more than 250 million people in 134 countries; 12 sites can be found in India alone.

Biosphere reserves are vital for the future of our planet. They are a living testament to the resilience of nature, that even amidst human activity, finds a way to flourish. They are home to a wide variety of ecosystems – from tropical rainforests to alpine deserts, and thereby provide home to countless unique and endangered plants and animals species. In addition to playing a vital role in the protection of biodiversity and ensuring the sustainable use of natural resources, they also provide opportunities for sustainable economic development. In recent years, biosphere reserves have become crucial in our fight against climate change, as these areas are home to many of the world's carbon sinks helping to absorb carbon dioxide from the atmosphere. Carbon sinks, like forests and the ocean, provide solutions in implementing adaptation strategies to fight climate change.

At the local level

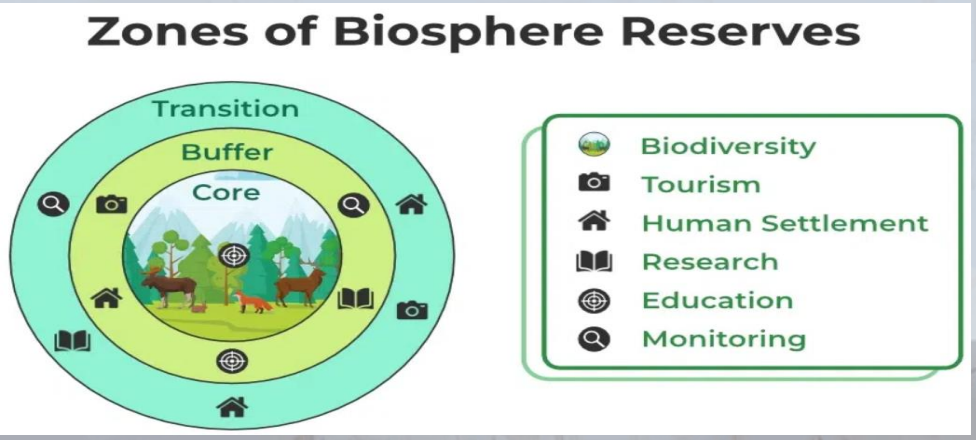
There have been significant advancements in the conservation of biosphere reserves on the local level. For example, in the Sundarban Biosphere Reserve in India, local communities are working together to manage mangrove forests and protect the biodiversity of the region. In the Gulf of Mannar Biosphere Reserve in India, local communities, including women, are contributing towards conservation efforts by forming self-help groups, while the youth are getting engaged in eco-tourism.

Recently recognised with the UNESCO Michel Batisse Award for Biosphere Reserve Management 2023, the Gulf of Mannar Biosphere Reserve Trust has also introduced the concept of 'plastic checkpoints'. Community members check all vehicles and tourists for plastic waste, which is collected, recycled and used for the construction of roads. In times of global challenges such as climate change, biodiversity loss and sustainable development, the role of biosphere reserves becomes even more important. Despite these sites being the most vital ecosystems protecting nature, these oases are not without threats such as deforestation, invasive species and land use changes such as mining. With increasing urbanisation and constant growth of the world population, exploitation by humans is ever increasing.

The Asian meet in Chennai

On this second anniversary of World Biosphere Reserve Day, it is important to reflect on the progress that has been made in conserving and sustainably using these vital ecosystems. In this context, UNESCO in partnership with the Ministry of Environment, Forests and Climate Change and the National Centre for Sustainable Coastal Management, concluded the 10th South and Central Asian Biosphere Reserve Network Meeting (SACAM) in Chennai, India (November 1-3). With the theme "Ridge to Reef," the SACAM provided a platform for exchanging knowledge and fostering collaborations in the realm of sustainable environmental practices in the South and Central Asia Region.

The UNESCO Man and the Biosphere (MAB) programme enhances the human-environment relationship through combining natural and social sciences to improve livelihoods, safeguard ecosystems, and promote sustainable economic development.



Context: On November 3, **World Biosphere Reserve Day underscores** the worldwide significance of **UNESCO-designated reserves** in the preservation of biodiversity and the alleviation of climate change.

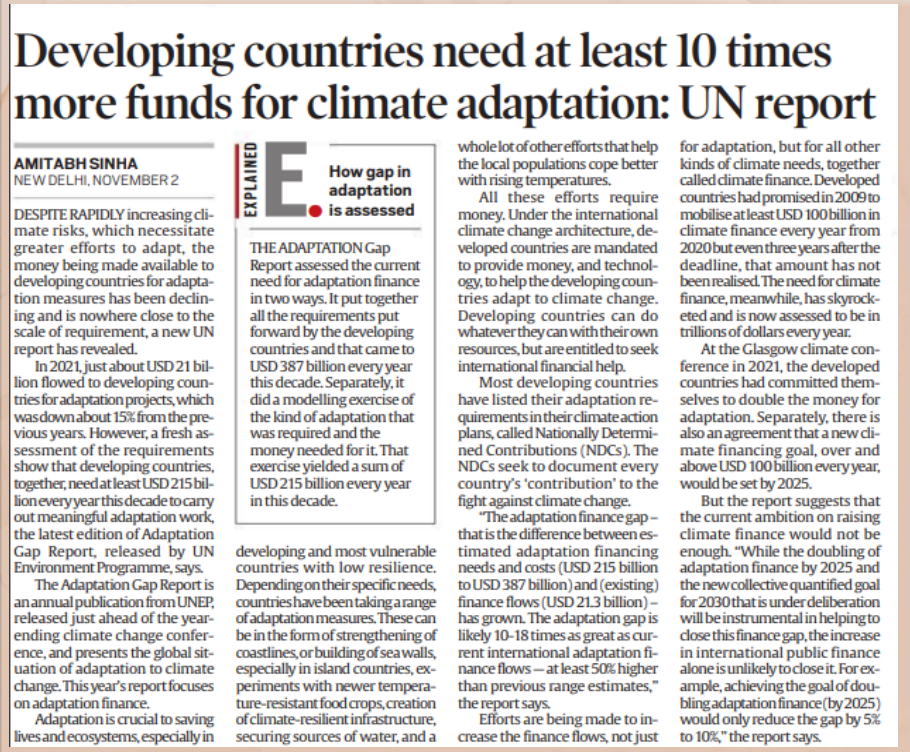
Biosphere Reserve

- **About**: BR is an international designation by UNESCO for representative parts of natural and cultural landscapes extending over a large area of terrestrial or coastal/marine ecosystems or a combination thereof.
- **In every biosphere reserve**, there exists a **core zone** that is strictly protected, serving to conserve the flora, fauna, and the entire ecosystem, encompassing water, soil, air, and biota.
- **Core Areas**: It is the most protected area of a biosphere reserve. It may contain endemic plants and animals.
- **Buffer Zone**: The buffer zone surrounds the core zone, and its activities are managed in this area in ways that help in the protection of the core zone in its natural condition.
- **Transition Zone**: It is the outermost part of the biosphere reserve. It is the zone of cooperation where human ventures and conservation are done in harmony.
- **World Biosphere Reserve Day:** Celebrated on November 3 each year.
- **Aim**: To raise awareness of the importance of biosphere reserves and to promote their conservation and sustainable use

INDIAN EXPRESS Page 9

ADAPTATION FINANCE GAP

(Syllabus: GS Paper 3 - Economy)



Developing countries need at least 10 times more funds for climate adaptation: UN report

AMITABH SINHA
NEW DELHI, NOVEMBER 2

DESPITE RAPIDLY increasing climate risks, which necessitate greater efforts to adapt, the money being made available to developing countries for adaptation measures has been declining and is nowhere close to the scale of requirement, a new UN report has revealed.

In 2021, just about USD 21 billion flowed to developing countries for adaptation projects, which was down about 15% from the previous years. However, a fresh assessment of the requirements show that developing countries, together, need at least USD 215 billion every year this decade to carry out meaningful adaptation work, the latest edition of Adaptation Gap Report, released by UN Environment Programme, says.

The Adaptation Gap Report is an annual publication from UNEP, released just ahead of the year-ending climate change conference, and presents the global situation of adaptation to climate change. This year's report focuses on adaptation finance.

Adaptation is crucial to saving lives and ecosystems, especially in developing and most vulnerable countries with low resilience. Depending on their specific needs, countries have been taking a range of adaptation measures. These can be in the form of strengthening of coastlines, or building of sea walls, especially in island countries, experiments with newer temperature-resistant food crops, creation of climate-resilient infrastructure, securing sources of water, and a whole lot of other efforts that help the local populations cope better with rising temperatures.

All these efforts require money. Under the international climate change architecture, developed countries are mandated to provide money, and technology, to help the developing countries adapt to climate change. Developing countries can do whatever they can with their own resources, but are entitled to seek international financial help.

Most developing countries have listed their adaptation requirements in their climate action plans, called Nationally Determined Contributions (NDCs). The NDCs seek to document every country's 'contribution' to the fight against climate change.

"The adaptation finance gap – that is the difference between estimated adaptation financing needs and costs (USD 215 billion to USD 387 billion) and (existing) finance flows (USD 21.3 billion) – has grown. The adaptation gap is likely 10-18 times as great as current international adaptation finance flows — at least 50% higher than previous range estimates," the report says.

Efforts are being made to increase the finance flows, not just for adaptation, but for all other kinds of climate needs, together called climate finance. Developed countries had promised in 2009 to mobilise at least USD 100 billion in climate finance every year from 2020 but even three years after the deadline, that amount has not been realised. The need for climate finance, meanwhile, has skyrocketed and is now assessed to be in trillions of dollars every year.

At the Glasgow climate conference in 2021, the developed countries had committed themselves to double the money for adaptation. Separately, there is also an agreement that a new climate financing goal, over and above USD 100 billion every year, would be set by 2025.

But the report suggests that the current ambition on raising climate finance would not be enough. "While the doubling of adaptation finance by 2025 and the new collective quantified goal for 2030 that is under deliberation will be instrumental in helping to close this finance gap, the increase in international public finance alone is unlikely to close it. For example, achieving the goal of doubling adaptation finance (by 2025) would only reduce the gap by 5% to 10%," the report says.

EXPLAINED

How gap in adaptation is assessed

THE ADAPTATION Gap Report assessed the current need for adaptation finance in two ways. It put together all the requirements put forward by the developing countries and that came to USD 387 billion every year this decade. Separately, it did a modelling exercise of the kind of adaptation that was required and the money needed for it. That exercise yielded a sum of USD 215 billion every year in this decade.

Context: Despite **rapidly increasing climate risks which necessitate greater efforts** to adapt, the money being made available to **developing countries for adaptation** measures has recently been declining, and nowhere close to the scale of requirement, a **new report by the United Nations has revealed**.

Key Points of Report

- **About**: The **Adaptation Gap Report** is an annual publication from UNEP, r**eleased just ahead of the year-ending climate change conference**, and presents the global situation of adaptation to climate change.
  - This **year's report focuses on adaptation finance**, or the availability of money to carry out the adaptation projects.
  - The adaptation finance gap – that is the **difference between** estimated adaptation financing **needs and costs and (existing) finance flows** has grown.
- **According to report** - The adaptation gap is likely 10-18 times as great as current international adaptation finance flows — at least 50 per cent higher than previous range estimates,
- **Findings: Most of the developing countries** have listed their **adaptation requirements in their climate** action plans, called Nationally Determined Contributions or NDCs.
  - The **NDCs seek to document every country's 'contribution'** to the global fight against climate change.

Developing Countries

- **According to the UN**, a developing country is a country with a relatively low standard of living, undeveloped industrial base, and moderate to low Human Development Index (HDI).
  - This index is a **comparative measure of poverty, literacy, education**, life expectancy, and other factors for countries worldwide.

PIB

Nov 2

CENTRAL VIGILANCE COMMISSION

(Syllabus: GS Paper 2 – Polity)

CVC to hold panel discussion on “Disciplinary Proceedings” tomorrow

Context: The **Central Vigilance Commission (CVC) recently organized** a panel discussion on **"Disciplinary Proceedings" in New Delhi** as part of Vigilance Awareness Week 2023.

Central Vigilance Commission (CVC)

- **About**: It is an apex Integrity Institution, possessing full independence and autonomy in its operations.
- **Establishment**: As a result of the Government of India's Resolution, based on the **recommendations of the Committee on Prevention of Corruption**, led by Shri K. Santhanam in 1964.
- **Statutory Status**: The CVC gained its statutory status through the **CVC Act of 2003**.
- **Composition**: Central Vigilance Commissioner (Chairperson) and not more than two Vigilance Commissioners (Members).
- **Organization**: The CVC has its own Secretariat, the Chief Technical Examiners' Wing (CTE), and a wing of Commissioners for Departmental Inquiries (CDI).
- **Appointment**: By the President on the **recommendations of a Committee** consisting of the Prime Minister (Chairperson), the Minister of Home Affairs, and the Leader of the Opposition in the Lok Sabha.
- **Term**: The chairperson and the members are **four years from the date** on which they enter their office or till they **attain the age of 65 years**, whichever is earlier.
- **Removal**: The President can remove the chairperson or any other member from the office.

DTE

Nov 2

ELEPHANT CORRIDORS

(Syllabus: GS Paper 3 – Env and Eco)

Elephant corridor report plagued with inconsistencies, could escalate conflict with humans, says expert

Context: An expert has **flagged multiple inconsistencies** in the recently published report on **elephant corridors** in India by the central government. Recently, **Project Elephant has shifted its focus** towards landscape, habitats, and corridors to ensure a sustainable elephant population on viable terrains.

Elephant Corridors

- **About:** It can be defined **as a narrow stretch of land that facilitates** the movement of elephants between two or more adjacent habitats that are conducive to their well-being.
- **State Wise Distribution**: West Bengal takes the **lead with 26 corridors**, making up 17% of the total.
  - **East central India** - 52 corridors, **The North East region** - 48 corridors, **Southern India** - 32 corridors., and **Northern India** - 18 corridors.

Project Elephant

- **Launched;** In 1992 as a centrally sponsored scheme.
- **Objectives: (1)** To protect elephants, their habitat & corridors**, (2)** To address issues of man-animal conflict**, (3)** Welfare of captive elephants.
- **It provides**: Financial and technical support to major elephant bearing states for protection of elephants, their habitats and corridors.
- Under the Project, **Elephant reserves** have been established across states.

Asian Elephant: Conservation in India

- **IUCN Status**: Endangered
- **Wildlife (Protection) Act, 1972:** Schedule I
- **CITES:** Appendix I
- **CMS:** Appendix I.

HINDUSTAN TIMES Page 13

STUDY ON ZOONOTIC DISEASE

(Syllabus: GS Paper 2 – HEALTH)

{ ANALYSIS OF 60 YRS OF EPIDEMIOLOGICAL DATA }

Study flags rise in 4 zoonotic infections

Rhythma Kaul
letters@hindustantimes.com

BASED ON TRENDS, THESE PATHOGENS ARE COLLECTIVELY SET TO KILL 12 TIMES AS MANY PEOPLE IN 2050 AS THEY DID IN 2020

NEW DELHI: Four types of zoonotic infections (those that travel from animals to humans) have been increasing at an exponential rate, amid a general pattern of increasingly larger and more frequent spillover epidemics, according to an analysis of 60 years of historical epidemiological data, published in journal BMJ Global Health on Thursday.

Based on current trends, these four types of viral pathogens are collectively set to kill 12 times as many people in 2050 as they did in 2020, warns the research team led by Amanda Jean Meadows, Ginkgo Bioworks, Emeryville, California, in the paper, with climate and land use changes predicted to drive the frequency of spillover events, facilitated by population density and connectivity.

Animal-to-human infections have been the cause of most modern epidemics, including Covid-19.

But the implications for future global health are difficult to characterise, given limited historical data on annual frequency and severity of zoonotic spillover over time, the researchers add.

To get around this, they drew on their own extensive epidemiological database to look for trends in spillover events that might shed light on future patterns. This database draws on a wide range of official sources. It covers epidemics reported by the World Health Organization in the form of Disease Outbreak News reports (WHO DON); outbreaks caused by a viral pathogen that killed 50 or more people; and historically significant outbreaks, such as the 1918 and 1957 flu pandemics.

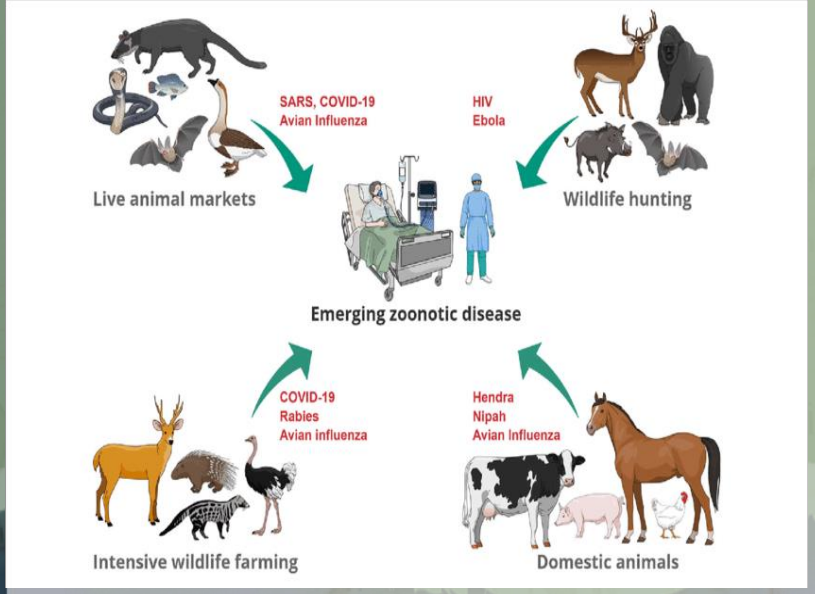
The researchers focused on Filoviruses (Ebola virus, Marburg virus), SARS Coronavirus 1, Nipah virus, and Machupo virus, which causes Bolivian hemorrhagic fever, because of their potential to pose a significant risk to public health and economic or political stability.

As part of the study, at least 3,150 outbreaks and epidemics were assessed between 1963 and 2019 to analyse time trends in the number of outbreaks and associated deaths caused by these viral pathogens.

A total of 75 spillover events occurring in 24 countries were identified during this period. These caused a total of 17,232 deaths, of which 15,771 in 40 outbreaks–mostly in Africa—were caused by Filoviruses. Their analysis, which excluded Covid-19, shows that the number of spillover events and reported deaths attributable to these four groups of viruses has been increasing by 5- 9% every year between 1963 and 2019.

"If these annual rates of increase continue, we would expect the analysed pathogens to cause four times the number of spillover events and 12 times the number of deaths in 2050 than in 2020," estimated the researchers in the paper.

"Our evaluation of the historical evidence suggests that the series of recent epidemics sparked by zoonotic spillover are not an aberration or random cluster, but follow a multi-decade trend in which spillover-driven epidemics have become both larger and more frequent," the researchers said.



Context: Recently, a **comprehensive analysis of 60 years of historical epidemiological data** published in the journal BMJ Global Health revealed that **four types of zoonotic infections, which can transmit from animals to humans**, have been increasing at an exponential rate.

- These are the four zoonotic diseases: Filoviruses (Ebola virus, Marburg virus), SARS Coronavirus, Nipah virus, and Machupo virus.

Key Points

- Based on current trends, **these four types of viral pathogens** are collectively set to kill 12 times as many people in 2050 as they did in 2020.
- **The researchers focused** on these diseases, which **causes Bolivian haemorrhagic fever**, because of their potential to pose a significant risk to public health and economic or political stability.
- **As part of the study**, at least **3150 outbreaks and epidemics** were assessed between 1963 and 2019 to analyse time trends in the number of outbreaks and associated deaths caused by these viral pathogens.

Zoonotic Diseases

- **About:** It is a disease that has passed into the human population from an animal source directly or through an intermediary species.
- **Zoonotic infections:** It can be bacterial, viral, or parasitic in nature, with animals playing a vital role in maintaining such infections.
- **Examples**: HIV-AIDS, Ebola, Lyme disease, malaria, rabies, West Nile fever, and the current novel coronavirus disease (COVID-19) disease.

PIB Nov 2

WORLD FOOD INDIA 2023
(Syllabus: GS Paper 2 – IR)

PM to inaugurate World Food India 2023 on 3rd November

Context: Prime Minister of India will inaugurate the second edition of the Mega food event '**World Food India 2023**' at Bharat Mandapam, Pragati Maidan, New Delhi. With the **aim to strengthen Self Help Groups,** the Prime Minister will disburse Seed Capital Assistance for over one lakh SHG members.

World Food India 2023

- **About:** World Food India 2023 serves as an **entry point to the Indian food economy**, fostering collaborations between Indian and international investors.
- **Aim**: to exhibit India's rich food culture and draw international investments into the food processing sector.
  - It will create a gathering of manufacturers, producers, investors, policymakers, and organizations representing the global food ecosystem.
- **Benefits**: It will present investment prospects in areas such as **backward linkages, processing equipment, research and development**, cold chain storage, startups, logistics, and retail chains.
- **First Edition:** World Food India was held in 2017
- **Focus Areas:** Leveraging millets as a superfood; positioning India as a global hub for food processing; unlocking growth potentials in strategic segments; establishing an efficient ecosystem, and promoting sustainable development.

Self Help Groups

- **About**: SHGs are informal associations of individuals who join together with the goal of improving their living conditions.
- They can be **defined as self-governed, peer-controlled groups** comprising people with similar socio-economic backgrounds who share a collective desire to pursue a common purpose.
- SHGs operate based on **the principle of "Self Help"** to promote self-employment and poverty reduction.
- **Objectives**
  - Enhancing the **functional capabilities of economically disadvantaged** individuals for employment and income-generating activities.
  - Resolving conflicts through collective leadership and mutual discussions.
  - Offering collateral-free loans with terms determined by the group, aligned with market-driven rates.

Imperial College London unveils major scholarship scheme for Indians

Context: Recently Imperial College London announced its biggest-ever scholarship programme for Indian students.

Future Leaders Scholarship Programme

- **About**: Over the next three years, the **scholarship program will provide** support to **30 of the most talented Master's scholars** in the country.
- The scholarship **covers all expenses, including tuition and living costs**.
- **Eligibility: Pursuing Master's programs** in engineering, natural sciences, business, and medical research.
  - Within this program, **half of the scholarships are designated for female** scholars.
- **Aim**: **To create a pathway for India's most talented students** to enhance their education and broaden their horizons at one of the world's leading universities.
  - Additionally, the **university has entered into a new partnership with the UK** government's Chevening Scholarships program.
- **Funding**: As part of this collaboration, **funding will be provided for an extra three Master's scholars** from India over the next three years.

WION Nov 2

INFUSE MISSION
(Syllabus: GS Paper 3 – Sci and Tech)

NASA launches mission to 20,000-year-old supernova remnant to understand life cycle of stars

Context: Recently, the **National Aeronautics and Space Administration (NASA) launched** a sounding rocket as part of its **INFUSE mission**.

INFUSE Mission

- **About**: The Integral Field Ultraviolet Spectroscope Experiment (INFUSE) was launched from the White Sands Missile Range in New Mexico.
- It **was launched with the aim of studying the Cygnus Loop**, a supernova remnant.

What will the INFUSE mission do?

- The INFUSE mission is **expected to collect information about the remnant** for a few minutes from a height of 150 miles (240 km).
- Specifically, the **instrument will gather light in far-ultraviolet wavelengths** emanating from the Cygnus Loop.
- It will **observe how the supernova releases energy into the Milky Way**, capturing light emitted as the blast wave interacts with pockets of cold gas scattered throughout the galaxy.
- The **mission's goal is to study the Cygnus Loop** and gain insights into the life cycle of stars.

Cygnus Loop

- The Cygnus Loop is the remains of a star that was **once 20 times the size of our Sun.**
- Approximately **20,000 years ago, this star underwent a collapse** due to its own gravity and exploded into a supernova.
- **Even from a distance of 2,600 light-years away**, astronomers estimate that the resulting burst of light would have been bright enough to be visible from Earth during the daytime.

TIMES OF INDIA Nov 2

AWAOUS MOTLA

(Syllabus: GS Paper 3 – Env and Eco)

Researchers discover new freshwater fish species in Odisha's Mahanadi river



Context: Recently, a group of scientists discovered an edible freshwater fish available in the markets of western Odisha.

Awaous Motla

- It **is a fish** with a vibrant yellow-coloured body and a fleshy upper lip.
- It was collected from the **Mahanadi River.**
- The discovery was made during the ongoing research project funded by the Department of Science and Technology of the Odisha government.
- The species belongs to the **family 'Awaous' (Oxudercidae)** and is thus named 'Awaous motla.

Mahanadi River

- It is one **of the major east-flowing** peninsular rivers in India.
- **Origin:** The river originates from **the Sihawa range of hills** in the Dhamtari district of Chhattisgarh state.
- **Course:** It flows in a southeastern direction through **Chhattisgarh and Odisha.**
  - The catchment area of the basin extends over major parts of Chhattisgarh and Odisha and comparatively smaller portions of **Jharkhand, Maharashtra, and Madhya Pradesh.**
- **Bounded by**: In the north by Central India hills, in the south and east by the Eastern Ghats, and in the **west by Maikal hill range.**
- **Tributaries:** The main tributaries of Mahanadi are Seonath River, Jonk River, Hasdeo River, Mand River, Ib River, Ong River, and Telen River.

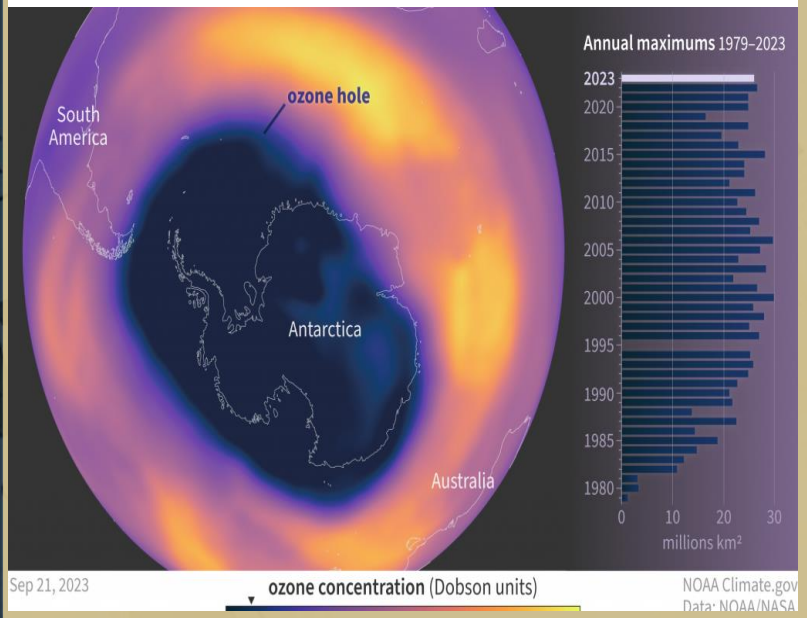
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Nov 2

ANTARTIC OZONE HOLE

(Syllabus: GS Paper 3 – Env and Eco)

‘Modest’ 2023 Antarctic ozone hole ranks 12th overall but still sign of recovery



Context: The **Antarctic ozone hole recently reached its largest size** of 10 million square miles on September 21, 2023, according to an **analysis of satellite and balloon-based observations** conducted by the United States National Oceanic and Atmospheric Administration (NOAA) and the National Aeronautics and Space Administration (NASA).

Key Points of Study

- The **size of the Antarctic ozone hole** varies annually, with it opening in August and closing in November or December.
  - **In 2022, when the average size** of the ozone hole over Antarctica was 8.91 million square miles and in 2021, it was 8.99 million square miles.
- According to experts, the **ozone hole forms due to the Earth's rotation**, which generates unique winds over the isolated landmass of Antarctica.
- **These winds establish a microclimate**, acting as a shield over Antarctica, preventing it from mixing with the surrounding air.
- **Antarctic Ozone Hole:** It is defined as the total area where ozone amounts are below the historical threshold of 220 Dobson units.
- **Ozone Hole**: An ozone hole is a **region of the stratosphere over Antarctica** where the ozone layer is exceptionally depleted.
  - The **ozone hole is not technically a “hole”** where no ozone is present.

Ozone Layer

- The **ozone layer is located in the stratosphere**, and it serves as a protective gas shield by absorbing harmful ultraviolet (UV) radiation.
- This **shield helps protect us from the negative consequences** of excessive UV exposure.
- **UV radiation has a significant impact on skin cancer** rates, emphasizing the crucial role of preserving the ozone layer.

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