

# UPSC CURRENT NOTES 22-11-2023

## Exercise VAJRA PRAHAR

Recently, the Indo-US Joint Special Forces exercise “VAJRA PRAHAR 2023” commenced at the Joint Training Node, Umroi, Meghalaya.



It is a joint exercise conducted between the Indian Army and the US Army Special Forces.

It aims at sharing best practices and experiences in areas such as joint mission planning and operational tactics.

It is the 14th Edition of the Indo-US Joint Special Forces exercise “VAJRA PRAHAR 2023,” which commenced at the Joint Training Node, Umroi

The US contingent is represented by personnel from the 1st Special Forces Group (SFG) of the US Special Forces. The Indian Army contingent is led by Special Forces personnel from the Eastern Command.

The first edition was conducted in 2010 in India, and the 13th edition of the Indo-US Joint Special Forces exercise was conducted at the Special Forces Training School (SFTS), Bakloh (HP).

The current edition is being conducted in Umroi Cantonment, Meghalaya from 21st November to 11th December 2023.

It is also a platform to enhance interoperability and strengthen defence cooperation between the armies of India and the United States of America.

## Fight Against Climate Change



Like every year ahead of the COP summit, this year too many studies and reports have been released in the past month to assess where the world stands in the fight against climate change.

And just like every previous year, this year the situation appears grimmer, and the progress more marginal, than earlier.

### Latest Developments Suggesting Climate Change a Lost Cause

Temperature Milestone: The latest troubling news came on November 17 according to which the average global temperatures for the day went over 2



degrees Celsius compared to the temperatures before the industrial era, marking this happened first time.

### Continuously Rising Emissions

According to the Intergovernmental Panel on Climate Change (IPCC), global greenhouse gas emissions need to be cut by at least 43% from the 2019 levels by 2030.

This reduction is important to retain any realistic chances of keeping the rise in global temperatures within 1.5 degree Celsius from pre-industrial averages.

This means that global emissions, around 56 billion tonnes of CO<sub>2</sub> equivalent in 2019, would have to come down to about 32 billion tonnes by 2030.

But according to the Emissions Gap Report, emissions are rising. Global emissions in 2022 were at least a billion tonnes higher than in 2019. In fact, annual emissions have never shown a decline except in 2020, the Covid pandemic year.

Meeting the 2030 target would now mean ensuring a reduction of almost 9% every year on an average. This is almost impossible.

As a sort of comparison, even a disruption as big as Covid could cut emissions by just 4.7%.

Current levels of climate actions are projected to result in a reduction of just 2% emissions, or just about a billion tonnes, by 2030 from 2019 levels.

### Adaptation Struggle of Small and Developing Countries

With temperatures continuing to rise, countries need to learn to survive in a warmer environment, and deal with the consequences of climate change.

For this, some countries, like the small island states threatened by rising sea levels, would want to build sea-walls, others would like to make their infrastructure more resilient.

Still, others would want to set up early warning systems, or invest in temperature-resilient agriculture or water resources.



Meeting these needs involves significant amounts of money. Developing countries anticipated (as per the Paris Agreement) to receive financial assistance from wealthier nations.

Unfortunately, there has been limited support. During the 2021 climate conference in Glasgow, rich countries agreed to double the funding for adaptation projects by 2025.

This commitment aimed to raise international adaptation finance from around US\$ 20 billion to US\$ 40 billion.

However, the latest UN report suggests that the availability of adaptation money has actually declined by almost 15% last year.

In the meanwhile, combined requirements of developing countries are estimated to be at least US\$ 215 billion every year, more than 10 times the current level of flows.

### **Empty Loss and Damage Fund**

Along with mitigation and adaptation, 'Loss and Damage' is the third important pillar of the fight against climate change.

After a long and painful struggle, developing countries managed to get a loss and damage fund established at the Sharm el-Shaikh conference last year.

The fund is meant to provide financial help to countries struck by climate disasters. But it is empty right now.

It is expected that some money would flow in this year, but it is likely to be inconsequential compared to the estimated need of US\$ 400 billion every year.

### **Why is Money the Biggest Barrier in Fight Against Climate Change?**

#### **Reluctance of Rich and Developed Countries to Provide Financial Assistance**

Much of the fight against climate change rests on the premise that the rich and developed countries would take the lead, not just in making emission cuts, but also in providing money to developing countries.





However, it is extremely naïve to have expected rich countries to take money out of their budgets and offer it to developing countries for climate action.

### **Broken Financial Flow System**

Despite having almost complete control over the international financial flows, rich nations have not even been able to channelise private, development or aid money to the right places.

The last couple of years saw some talks about reforming the international financial system to align their priorities with the global climate goals. But nothing has materialised.

**Outdated Promise of US\$ 100 Billion:** The US\$ 100 billion annual flow, something that the developed countries had promised way back in 2009, has become outdated.

### **Growing Financial Requirements**

Climate change fight requirements are now in tens of trillions of dollars every year. And this would rise rapidly with every year of delayed action.

This is likely to result in some low-cost, low-risk finance being made available to countries, but matching the scale of requirements would be extremely difficult.

### **Has the World Lost Against Climate Change?**

#### **The Fight is Over for 2030 Emission Reducing Targets**

If it is about meeting 2030 emission reduction targets, consistent with 1.5 or even 2-degree Celsius pathways, the fight is as good as over.

Governments, international bodies, and even scientists, would like to focus on the theoretical possibilities that are still open.

However, it is extremely improbable that these targets would be met. Even historically, no climate target has ever been met.



As mentioned in the Emissions Gap Report, there have been 86 days already this year when daily temperatures exceeded pre-industrial averages by more than 1.5 degree Celsius.

And now, at least two days have been more than 2 degrees warmer.

The year 2023 is set to emerge as the warmest ever, surpassing the record of 2016, and it would not be surprising if it breaches the 1.5-degree threshold for the annual average.

According to a World Meteorological Organisation assessment, it is almost certain that this threshold would be breached in the next four years.

Yet, There Are Possibilities of a Pull-Back

There are still possibilities of a pull-back through technological interventions like carbon dioxide removal, though these technologies are far from becoming mainstream and economical.

But every climate scenario beyond 2040 relies heavily on these technologies to reduce the concentrations of greenhouse gases in the atmosphere and bring down temperatures rapidly.

## Conclusion

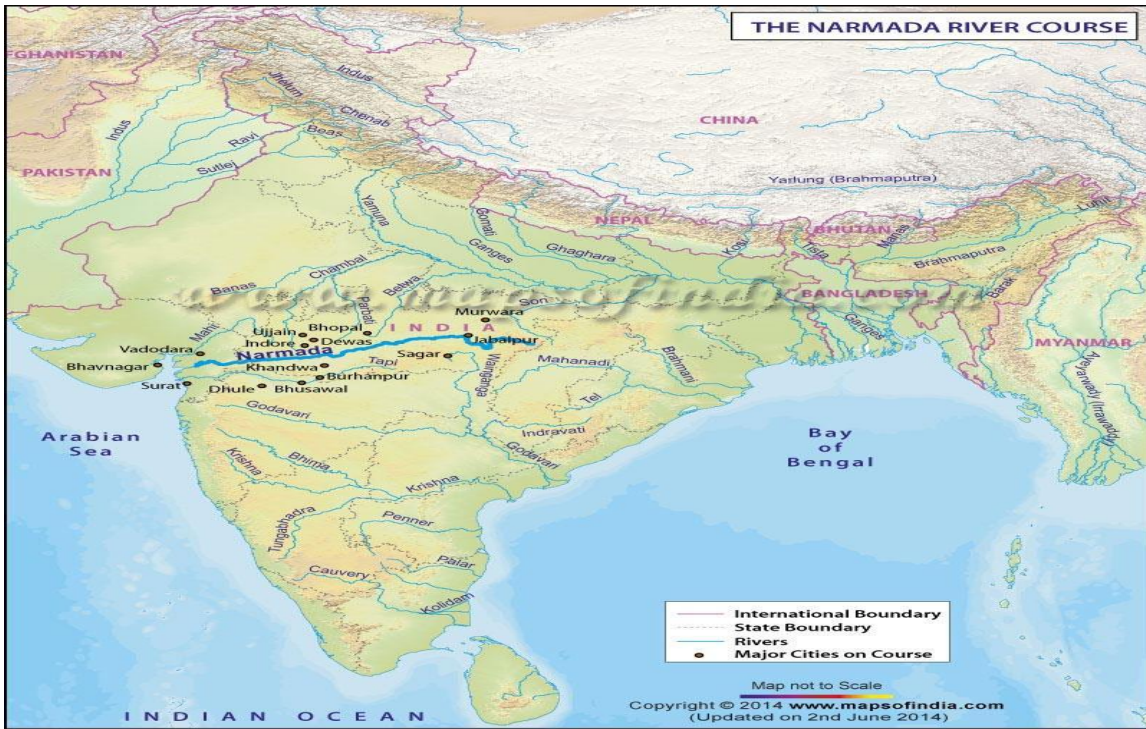
Recent developments such as spike in global warming, ineffective response, and the resultant increase in weather-related disasters suggest that climate change might already be a lost cause, at least as far as meeting the targets the world has set for itself is concerned.

Eventually, countries would learn to minimise loss of lives in disasters, at least from the predictable events, but there would be more frequent disruptions and the poor and the weak would suffer the most.

But adversity can induce resilience in populations, therefore talks of extinction of the human race or an end to life on the planet might be vastly exaggerated.

# NARMADA RIVER

A division bench of the MP High Court has given the state administration time to provide in court the rules for construction in the vicinity of the river Narmada in the state's urban and rural districts.



## About Narmada River

The Narmada is peninsular India's greatest west-flowing river.

The Narmada River runs west through a rift valley formed by the Vindhya Range to the north and the Satpura Range to the south.

It rises at an elevation of roughly 1057 meters from the Maikala range near Amarkantak in Madhya Pradesh.

The Narmada basin spans the states of Madhya Pradesh, Gujarat, Maharashtra, and Chhattisgarh and has an area of one lakh square kilometers.

It is flanked on the north by the Vindhyas, on the east by the Maikala range, on the south by the Satpuras, and on the west by the Arabian Sea.



It runs 1,310 kilometers from its headwaters in Amarkantak to its estuary in the Gulf of Khambhat.

The higher sections of the basin are mountainous, but the lower-middle reaches are vast and fertile, making them ideal for farming.

Jabalpur is the basin's sole significant urban center.

Near Jabalpur, the river cascades (a small waterfall, especially one in a sequence) 15 metres into a canyon to produce the Dhanu Dhar (Cloud of Mist) Falls. Because the gorge is made of marble, it is also known as the Marble Rocks.

It creates two 12-metre-high waterfalls at Mandhar and Dardi.

Near Maheshwar, the river drops from another modest 8-meter-high waterfall known as the Sahastradhara Falls.

The Narmada estuary has various islands, the biggest of which is Aliabet.

The Narmada may be navigated for up to 112 kilometers from its mouth.

Indira Sagar, Sardar Sarovar, Omkareshwar, Bargi, and Maheshwar are the basin's largest hydropower projects.

### **Tributaries:**

The predominant tributaries from the right are – Hiran, Tendori, Barna, Kolar, Man, Uri, Hatni, and Orsang.

The predominant left tributaries are – Burner, Banjar, Sher, Shakkar, Dudhi, Tawa, Ganjal, Chhota Tawa, Kundi, Goi, and Karjan.

### **Dams:**

The Major dams on the river include Omkareshwar and Maheshwar dams.

### **Narmada Basin**

The Narmada basin has an area of 98,796 square kilometers, accounting for roughly 3% of the country's overall geographical area.





The Vindhyas border the basin on the north, the Maikala range on the east, the Satpuras on the south, and the Arabian Sea on the west.

The basin, located at the northernmost tip of the Deccan plateau, encompasses considerable regions in the states of Madhya Pradesh and Gujarat, as well as a minor area in Maharashtra and Chhattisgarh.

The mountainous regions are in the basin's higher reaches, while the lower middle reaches are broad and fertile lands well suited for farming.

## **Risk weight**

Recently, the Reserve Bank of India (RBI) has increased the cost of funds for banks and non-bank financial companies (NBFCs) by increasing the risk weight of such loans.

The Reserve Bank of India has raised the risk weight on consumer credit by banks and NBFCs to 125%, compared to 100% earlier.

### **About Risk weight:**

Every rupee lent by the bank is a cost or has an implication on its capital position.

Risk-weighted assets: These are used to determine the minimum amount of capital a bank must hold in relation to the risk profile of its lending activities and other assets.

The Reserve Bank of India decided in April 1992 to introduce a risk-asset ratio system for banks (including foreign banks) in India as a capital adequacy measure in line with the Capital Adequacy Norms prescribed by the Basel Committee.

### **Impacts**

Lower the risk weight, lower the rate of interest. Therefore, risk weights impact borrowers indirectly and are felt through the pricing of loans.

The increase in risk weights by the RBI will elevate funding costs for NBFCs and impact capital requirements.

## NITROGEN 9

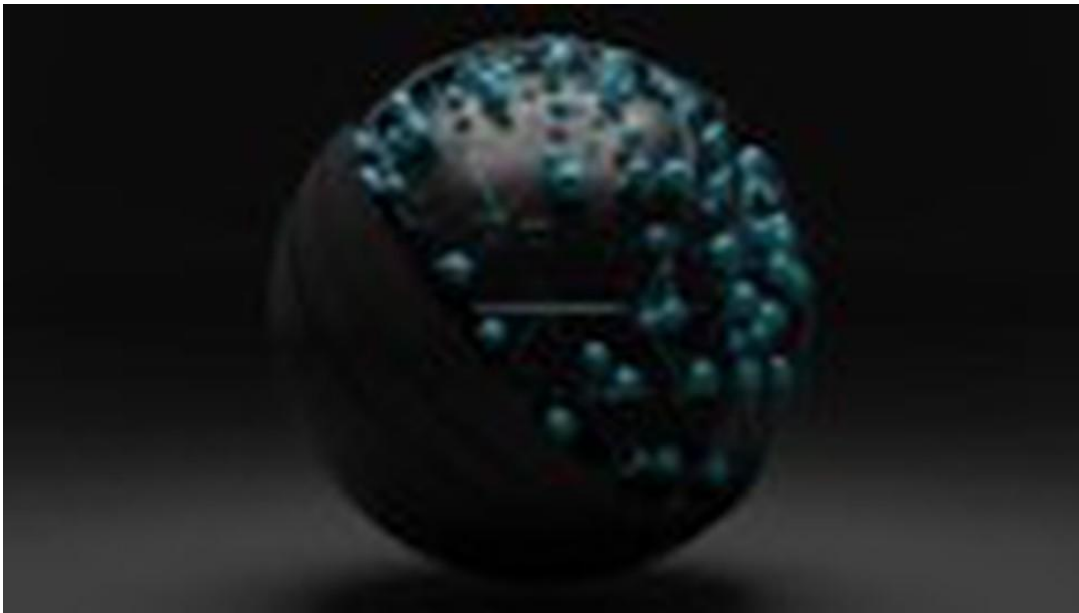
A study recently published in Physical Review Letters points out the existence of one particularly unusual isotope, nitrogen-9.

### Introduction to Isotopes and Unusual Nitrogen-9

There are 118 elements distinguished by their unique atomic structures, including different numbers of electrons, protons, and neutrons.

Isotopes are variants of an element with varying neutron numbers.

Nitrogen-9 is an unusual isotope characterized by seven protons and two neutrons, possessing a high proton-to-neutron ratio, challenging traditional stability thresholds.



### Understanding Stability and Drip Lines

Stability boundaries in atomic nuclei are defined by proton and neutron drip lines.

Nitrogen-9's unique proton-to-neutron ratio places it beyond conventional stability thresholds, prompting scientific interest.



## Nuclide Chart

Scientists use a nuclide chart to map isotopes based on their combinations of protons and neutrons, revealing relationships between isotones, isobars, and isodiaphers.

## Methodology of the Study

Researchers conducted an experiment involving the collision of oxygen-13 atoms with a beryllium-9 target to create nitrogen-9 isotopes.

High-resolution detectors were employed to analyze emitted particles and study different energy states (resonant states) of nitrogen-9.

## Findings and Analysis

Distinct energy peaks were observed, indicating specific resonant states, denoted as  $\frac{1}{2}+$  and  $\frac{1}{2}-$ , indicating angular momentum and symmetry characteristics.

The Gamow shell model was used to support and analyze these findings, especially regarding the characteristics of nitrogen-9's resonant states.

## Implications of the Discovery

The confirmation of nitrogen-9's existence challenges previous assumptions about nuclear states and extends the boundaries on the nuclide chart, expanding scientific possibilities.

Understanding exotic isotopes like nitrogen-9 can offer insights into fundamental nuclear physics and potentially aid in astrophysical models, enhancing our understanding of elemental synthesis in stars.

## Nitrogen: A Overview

Nitrogen is a chemical element with the symbol N and atomic number 7 in the periodic table.

It is non-metal and constitutes about 78% of Earth's atmosphere by volume, making it the most abundant gas in the air.

## Properties and Characteristics:



Nitrogen is a colorless, odorless, and tasteless gas at room temperature and pressure.

It exists in various forms, with diatomic nitrogen gas (N<sub>2</sub>) being the most common, exhibiting strong triple covalent bonds between nitrogen atoms.

Nitrogen is relatively inert, not readily reacting with other elements under normal conditions.

### **Occurrence and Importance:**

Apart from being a major component of Earth's atmosphere, nitrogen is an essential element in living organisms and is crucial for the formation of proteins, DNA, and other biomolecules.

It is present in soil and is a vital component of the nitrogen cycle, playing a key role in plant growth and agriculture.

Nitrogen compounds are used in various industrial applications, including fertilizers, explosives, and pharmaceuticals.

### **Isotopes of Nitrogen:**

Nitrogen has two stable isotopes: nitrogen-14 (<sup>14</sup>N) and nitrogen-15 (<sup>15</sup>N).

Nitrogen-14 is the most abundant isotope, constituting about 99.6% of naturally occurring nitrogen, while nitrogen-15 makes up the remaining 0.4%.

### **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**

Trade in precious timber and sharks and conservation of elephants and big cats were among the many critical matters reviewed during the 77th Meeting of the Standing Committee (SC77) of the CITES in Geneva recently.





About the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES):

It is an international agreement between governments that aims to ensure that international trade in wild animals and plants does not threaten their survival.

**CITES was adopted in 1973 and entered into force in 1975.**

There are 184 member parties, and trade is regulated in more than 38,000 species.

Although CITES is legally binding on the Parties– in other words, they have to implement the Convention–it does not take the place of national laws.

The CITES Secretariat is administered by the United Nations Environment Programme (UNEP) and is located in Geneva, Switzerland.



Representatives of CITES nations meet every two to three years at a Conference of the Parties (or COP) to review progress and adjust the lists of protected species, which are grouped into three categories with different levels of protection:

Appendix I:

It includes species threatened with extinction and provides the greatest level of protection, including a prohibition on commercial trade.

Appendix II:

It includes species that are not currently threatened with extinction but may become so without trade controls.

Regulated trade is allowed if the exporting country issues a permit based on findings that the specimens were legally acquired and the trade will not be detrimental to the survival of the species or its role in the ecosystem.

Appendix III:

It includes species for which a country has asked other CITES parties to help control international trade.

Trade in Appendix III species is regulated using CITES export permits (issued by the country that listed the species in Appendix III) and certificates of origin (issued by all other countries).

Countries may list species for which they have domestic regulations in Appendix III at any time.

CITES also brings together law enforcement officers from wildlife authorities, national parks, customs, and police agencies to collaborate on efforts to combat wildlife crime targeted at animals such as elephants and rhinos.