



## Coal and Thermal Power Plants in India

**For Prelims:** [NITI Aayog's energy dashboard](#), India's [coal-fired thermal capacity](#), [solar capacity](#), [Wind power](#), [sulfur dioxide \(SO2\)](#), [Co-burning biomass \(organic matter\)](#), [Central Electricity Authority \(CEA\)](#)

**For Mains:** Current Status of the India's Power Sector, Grade of Indian Coal, Technologies to Reduce Emissions from Thermal Power Plant, Existing Challenges and Government Initiatives in Thermal Power Sector

**Source:** [IE](#)

### Why in News?

Recently, According to the data on [NITI Aayog's energy dashboard](#), India's [coal-fired thermal capacity](#) grew to 218 GW in FY24 from 205 GW in FY20, a 6% growth.

- A recent report alleges that in 2014, the a company **misrepresented low-grade Indonesian coal** as high-quality, and sold it to a public power generation company in Tamil Nadu.

### What is the Current Status of India's Power Sector?

- **Background:** The power market is experiencing a growing demand-supply mismatch due to a slowdown in new coal-fired power plant capacity and a lack of effective storage options for [renewable energy](#).
  - This has put pressure on the country's grid managers, especially with increasing power demand during [soaring temperatures](#).
- **Thermal Power Plants:** The share of coal-fired power generation has risen to 75% in FY2023-24 from 71% in FY2019-20.
  - Generation by coal-fired thermal plants also increased by 34% from 960 billion units (BU) to 1,290 BU, and the average plant load factor (PLF) rose from 53% to 68%.
  - In the past five years, [thermal capacity addition](#) has fallen short of the government's targets by an average of 54% annually with the **private sector** only contributing 7% of new capacity.
    - The private sector has contributed **only 1.7 GW**, or **7% of the total thermal capacity** added in the **last five years**.
  - **There has been a push for investments in new thermal power projects, including from the private sector, with a target of adding 80 GW of new thermal power capacity by 2032.**
- **Renewable Energy:** India's [solar capacity](#) has seen a significant surge, **doubling to 81 GW**. [Wind power](#) capacity has also witnessed impressive growth, **increasing by 22% to reach 46 GW**.
  - Setting up a new **coal plant (Rs 8.34 crore per MW)** is considerably **more**

expensive compared to setting up a solar power plant (per MW cost much lower).

## INDIA'S POWER MIX

Power source	Share in power generation		Capacity utilisation	
	FY20	FY24	FY20	FY24
Coal-fired	71%	75%	53%	68%
Solar	4%	7%	17%	16%
Wind	5%	5%	20%	21%
Hydro	12%	8%	39%	33%
Others	8%	5%	-	-

### What Grade of Coal does India Produce?

- **High Grade' vs 'Low Grade' Coal: The Gross Calorific Value (GCV) determines the gradation of coal based on the amount of heat or energy that can be generated from burning it.**
  - Coal is a **mixture of carbon, ash, moisture, and other impurities**. The higher the available carbon in a unit of coal, the better its quality or 'grade.'
  - The most important **uses of coal** are in thermal power plants and in powering blast furnaces for **steel production**, each requiring different kinds of coal.
    - **Coking coal** is needed for **producing coke**, an essential component of steel making, and **requires minimal ash content**.
    - **Non-coking coal** can still be used to generate useful **heat for running boilers and turbines** despite its ash content.
- **Characteristics of Indian coal: Indian coal historically has high ash content and low calorific value compared to imported coal.**
  - Domestic thermal coal has an average GCV of **3,500-4,000 kcal/kg**, while imported thermal coals have over **6,000 kcal/kg**.
  - Also, Indian coals also have **over 40% ash content**, while imported coal has **less than 10%**.
    - **Burning high-ash coal** results in higher particulate matter, nitrogen, and sulphur dioxide.
    - The **Central Electricity Authority (CEA)** recommended in 2012 that about **10-15% blending of imported coal can be safely used** in Indian power boilers designed for low-quality Indian coal.
- **Clean Coal: Clean coal is achieved by increasing the carbon content and reducing ash content.**
  - This can be done through **washing plants** on coal plant sites, which use blowers or a 'bath' to remove ash.
  - Another method is **coal gasification**, which converts coal into gas using steam and hot pressurised air or oxygen.
    - The **resulting syngas** are then cleaned and burned in a gas turbine to generate

electricity, increasing the efficiency of coal used.

- **Future of Coal in India: In 2023-24, India produced 997 million tonnes of coal, showing an 11% increase from the previous year. Most of the production came from the state-owned Coal India Ltd and its subsidiaries.**
  - Despite commitments to move away from fossil fuels, coal remains the main source of energy in India.

## What are the Technologies to Reduce Emissions from Thermal Power Plants?

- **Flue Gas Desulfurization (FGD): FGD systems scrub flue gas (exhaust gas) with methods like wet or dry scrubbing process that absorbs SO<sub>2</sub>, removing it from the emissions before they are released into the atmosphere.**
  - This technology targets [sulfur dioxide \(SO<sub>2</sub>\)](#), a major air pollutant linked to respiratory problems.
- **Selective Catalytic Reduction (SCR): SCR systems tackle nitrogen oxides (NOx), another group of pollutants contributing to smog and acid rain.**
  - During the SCR process, hot flue gas passes through a catalyst coated with precious metals like **platinum**. This triggers a chemical reaction that converts harmful NOx into **harmless nitrogen gas and water vapor**.
- **Electrostatic Precipitators (ESPs): It targets [particulate matter \(PM\)](#), tiny particles linked to respiratory illnesses.**
  - ESPs use **high voltage electricity** to charge particles in the flue gas. These charged particles then stick to collector plates, which are periodically cleaned.
- **Fabric Filters (Baghouses): Similar to ESPs, baghouses capture particulate matter. They may be used in conjunction with ESPs or as a standalone technology.**
  - Flue gas passes through a **fabric filter bag**, trapping PM on the fabric's surface. The bags are periodically shaken to release the collected particles.
- **Coal Washing: This pre-combustion technology aims to reduce emissions by improving coal quality.**
  - Coal is washed with water to **remove impurities like [ash and sulfur](#)**, which can contribute to air pollution when burned.
- **Co-firing with Biomass:** This approach involves [co-burning biomass \(organic matter\)](#) along with coal.
  - The revised **Biomass Policy of 2023**, mandates **5% biomass co-firing** in thermal power plants from FY 2024-25.

## What are the Existing Challenges and Government Initiatives in Thermal Power Sector?

- **Challenges:**
  - **Demand-Supply Mismatch:** Rising electricity demand is outpacing the addition of new [capacity of thermal power plant](#), particularly from renewable sources due to their **unreliable** nature.
  - **Reliance on Coal:** Coal remains the **dominant source** of power generation, despite its environmental impact and rising costs.
  - **Limited Private Sector Participation:** The **private sector is hesitant to invest** in new coal plants due to financial and environmental concerns.
  - **High-Ash Indian Coal:** Domestic coal has **lower calorific value** and higher ash content compared to imported coal, leading to higher emissions.
  - **Technological Limitations:** Large-scale battery storage solutions are still under developed which are crucial for integrating renewables into the grid.
- **Government Initiatives:**

- [UDAY \(Ujwal Discom Assurance Yojana\)](#)
- [PM-KUSUM](#)
- [Green Energy Corridor \(GEC\)](#)
- [National Smart Grid Mission \(NSGM\) and Smart Meter National Programme](#)
- [International Solar Alliance \(ISA\)](#)
- [Sovereign Green Bonds](#) for Solar Sector

## Way Forward

- Accelerating the **growth of solar and wind** power, with a focus on grid integration solutions like large-scale battery storage.
- Implementation of technologies like **Flue Gas Desulfurization (FGD)** and **Selective Catalytic Reduction (SCR)** to reduce emissions from existing coal plants.
- Offering **financial and regulatory incentives** for private companies to invest in cleaner and more efficient power generation technologies.
- Promoting **energy efficiency** measures to reduce overall demand and lessen the pressure on the grid.
- Modernising the **grid infrastructure** to handle the integration of variable renewable energy sources and improve overall efficiency.
- Exploring alternative sources like clean **coal gasification, gravity battery, harnessing ocean energy** and **nuclear power** (with strict safety protocols) to meet energy needs.

## Conclusion

India's power sector transformation requires a well-defined roadmap that balances immediate energy needs with long-term sustainability goals. By focusing on renewables, clean coal technologies, and energy efficiency, India can ensure a reliable and sustainable power supply for its growing economy.

### Drishti Mains Question:

Q. Highlighting the current status of India's power sector, discuss the existing challenges and Government Initiatives in the thermal power sector.

## UPSC Civil Services Examination, Previous Year Questions (PYQs)

### Prelims

#### Q1. Consider the following statements: (2022)

1. "The Climate Group" is an international non-profit organization that drives climate action by building large networks and runs them.
2. The International Energy Agency in partnership with the Climate Group launched a global initiative "EP100".
3. EP100 brings together leading companies committed to driving innovation in energy efficiency and increasing competitiveness while delivering on emission reduction goals.
4. Some Indian companies are members of EP100.
5. The International Energy Agency is the Secretariat to the 'Under2 Coalition'.

**Which of the statements given above are correct?**

**(a)** 1, 2, 4 and 5

(b) 1, 3 and 4 only

(c) 2, 3 and 5 only

(d) 1, 2, 3, 4 and 5

**Ans: (b)**

**Q2. Consider the following statements: (2019)**

1. Coal sector was nationalised by the Government of India under Indira Gandhi.
2. Now, coal blocks are allocated on lottery basis.
3. Till recently, India imported coal to meet the shortages of domestic supply, but now India is self-sufficient in coal production.

**Which of the statements given above is/are correct?**

(a) 1 only

(b) 2 and 3 only

(c) 3 only

(d) 1, 2 and 3

**Ans: (a)**

**Q3. Which of the following is/are the characteristic/characteristics of Indian coal? (2013)**

1. High ash content
2. Low sulphur content
3. Low ash fusion temperature

**Select the correct answer using the codes given below:**

(a) 1 and 2 only

(b) 2 only

(c) 1 and 3 only

(d) 1, 2 and 3

**Ans: (a)**

---

### **Mains**

**Q.** "In spite of adverse environmental impact, coal mining is still inevitable for development". Discuss. (2017)

---

## **Sticky Inflation and RBI's Monetary Policy**

---

**For Prelims:** [Reserve Bank of India](#), [Repo rate](#), [Inflation](#), [Union budget](#), Sticky Inflation

**For Mains:** Economic Growth in India, Significance of interest rate in fiscal policy and monetary policy

[Source: IE](#)

## Why in News?

The [Reserve Bank of India \(RBI\)](#) in its latest bi-monthly monetary policy review opted to **maintain the [repo rate unchanged](#)** for the 8<sup>th</sup> consecutive time, amid discussions on [inflation targeting](#) and [economic growth](#).

## Why is the RBI not Cutting Interest Rates?

- **Persistent Inflation:** Despite **high repo rates** inflation hasn't hit the **4% mark since early 2021**. The decline has been gradual, with inflation hovering around 5% in the first four months of 2024. The RBI is concerned about "**sticky**" inflation trends.
- **Durable Inflation Control:** The RBI aims for sustained control, not a temporary dip below 4%. RBI Governor emphasises commitment to achieving the 4% target "on a durable basis".
- **Strong GDP Growth:** India's [Gross Domestic Product \(GDP\)](#) growth has been surprisingly strong, exceeding 7% for four consecutive years. The RBI recently revised the current financial year's GDP forecast upwards to 7.2%. In this scenario, repo rates likely aren't hindering economic growth.
- **Upcoming Union Budget:** The RBI might be considering the upcoming [Union budget](#), which could impact inflation dynamics and monetary strategies.



# Monetary Policy Committee



## Monetary Policy

- It is formed and managed by **Reserve Bank of India** to control a nation's overall money supply and achieve economic growth
- It is **different from Fiscal Policy** which is managed by the **Ministry of Finance** that measures the spending and taxation in Indian Economy

## Monetary Policy Committee (MPC):

- **Ex-officio Chairperson:** RBI Governor
- **Objective:** To determine the policy rate required to achieve the inflation target (  $4\pm 2\%$ , Urjit Patel Committee)

- **Legal Framework:** Under Section 45ZB of the amended RBI Act, 1934, the Central Government is empowered to constitute a six-member Monetary Policy Committee (MPC)
  - The MPC is required to meet at least four times in a year. Each member of the MPC has one vote, and in the event of an equality of votes, the Governor has a second or casting vote.
- **Monetary Policy Report:** RBI once in every six months, releases Monetary Policy Report to explain the sources of inflation and the forecast of inflation for 6-18 months ahead



- **About:** RBI's Inflation Targeting is a monetary policy framework implemented to maintain price stability in the economy.
  - The RBI targets a specific inflation rate, **currently set at 4% per year**. This target is a long-term average and not a rigid ceiling or floor.
  - The target is accompanied by a tolerance **band of +/- 2 percentage points**. This means the RBI considers inflation acceptable as long as it falls within the range of 2% to 6%.
- **Goal:** The main aim of inflation targeting is to **achieve and maintain price stability, promoting economic growth**, protecting the **value of the rupee**, and ensuring fair resource allocation in the economy.
- **Mechanism:** The RBI uses monetary policy tools, primarily the **repo rate**, to influence inflation.
  - The repo rate is the interest rate at which the RBI lends money to commercial banks.
  - By raising the repo rate, the **RBI makes borrowing more expensive, which discourages spending and investment**, ultimately slowing down inflation.
  - Conversely, lowering the repo rate encourages borrowing and spending, boosting economic activity but potentially increasing inflationary pressures.
- **Limitations:** Inflation targeting **may not effectively address supply-side shocks** or structural constraints like inadequate infrastructure, thus leading to higher inflation.
  - It can also cause **exchange rate volatility in open economies** and have social and economic impacts on vulnerable populations.
  - Additionally, accurate and timely data on inflation and other macroeconomic variables may not be available in all countries, including India.





# QUANTITATIVE INSTRUMENTS OF MONETARY POLICY



## LIQUIDITY ADJUSTMENT FACILITY (LAF)

- Repo Rate (RR): The rate at which the RBI lends money to commercial banks. Here, RBI purchases securities.
- Reverse Repo Rate: The rate at which the RBI borrows money from commercial banks within the country. Opposite of Repo.
- If RBI wants to signal tight monetary policy, it will increase the repo rate; banks will increase their lending rates.



## BANK RATE

- It is a long-term rate (RR is short-term) at which the central bank lends money to other banks.
- Increase in Bank rate will increase the interest rates on the Loans / Deposits and vice versa.



## STATUTORY LIQUIDITY RATIO (SLR)

- SLR is the minimum percentage of deposits that a commercial bank has to maintain in the form of liquid cash, gold or other securities.
- If RBI wants to tighten the monetary policy, it will raise the SLR.



## CASH RESERVE RATIO (CRR)

- Banks are required to hold a certain proportion of their deposits in the form of cash with RBI.
- With the increase in CRR, banks increase the lending rates.



## OPEN MARKET OPERATIONS (OMOS)

- These include purchase/sale of government securities by the Central Bank for injection/absorption of durable liquidity in the banking system.



Drishti IAS

## What is Sticky Inflation?

- About:** Sticky inflation refers to a persistent economic phenomenon where prices for **goods and services do not adjust quickly to changes in supply and demand dynamics**.
  - Generally, prices for goods or services that don't appear to be coming down anytime soon are considered sticky.
  - This "stickiness" makes it difficult for inflation to return to a desired level, such as the **RBI's target of 4% in India**.
- Features of Sticky Inflation:** Prices remain high despite fluctuations in supply and demand. Certain sectors like medical services, education, and housing are particularly prone to sticky inflation.

- **Erodes purchasing power and affordability**, especially in essential goods and services.
- Poses difficulties for central banks in controlling inflation without causing adverse economic impacts.
- **Causes of Sticky Inflation:** Prices may not respond immediately to changes in market conditions due to factors like rigid pricing mechanisms.
  - Rising wages can lead to higher costs for businesses, contributing to inflation stickiness.
  - Unique characteristics of sectors such as healthcare and housing contribute to persistent inflationary pressures.
- **Managing Sticky Inflation:** Central banks often raise interest rates to curb inflation, though balancing rate adjustments is critical to avoiding economic downturns.
  - Targeted policies addressing specific sectors experiencing inflation stickiness can help mitigate its impact.
  - Regular assessment and adjustment of economic forecasts and policies are crucial to managing sticky inflation effectively.

**Read more:** [Global Economic Prospects Report 2024](#)

**Drishti Mains Question:**

**Q.** Analyse sticky inflation trends in India and elaborate on its impact on economic stability and policy management in India.

## UPSC Civil Services Examination, Previous Year Questions (PYQs)

**Prelims:**

**Q1. Concerning the Indian economy, consider the following: (2015)**

1. Bank rate
2. Open market operations
3. Public debt
4. Public revenue

**Which of the above is/are component/ components of Monetary Policy?**

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

**Ans: c**

**Q2. If the RBI decides to adopt an expansionist monetary policy, which of the following would it not do? (2020)**

1. Cut and optimize the Statutory Liquidity Ratio
2. Increase the Marginal Standing Facility Rate
3. Cut the Bank Rate and Repo Rate

**Select the correct answer using the code given below:**

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

**Ans: (b)**

## **Mains:**

**Q.** Do you agree that the Indian economy has recently experienced V-shaped recovery? Give reasons in support of your answer. **(2021)**

## **Global Economic Prospects Report 2024**

**For Prelims:** [Global Economic Prospects Report](#), [World Bank](#), [GDP](#), [South Asian region](#), [global inflation](#), [rules-based multilateral trade system](#), [low-carbon development goals](#).

**For Mains:** Key findings of the Global Economic Prospects Report 2024, Associated risks and key policy challenges highlighted by the report.

**Source:** [BS](#)

### **Why in News?**

According to the recently released [Global Economic Prospects Report](#) by the [World Bank](#), India is predicted to remain the **fastest-growing major economy globally**, with a projected GDP growth rate of 6.6% for FY25.

### **What are the Key Findings of the Report?**

#### ▪ **Global:**

- **Growth Outlook:** According to the report, for the first time in three years, the global economy is showing signs of stabilisation in 2024.
  - Globally, GDP growth is now anticipated to be 2.6 % for 2024-25. For FY26 and FY27, global growth is expected to be 2.7% amid modest growth in [trade and investment](#).
- **Projection for Global Inflation:** The World Bank forecasts a slower moderation of [global inflation](#), averaging 3.5% this year.
  - Central banks in advanced and emerging [market economies](#) are expected to be cautious about [easing monetary policy](#) due to **ongoing inflationary pressures**.
- **Challenges to Global Growth:** The global outlook remains subdued due to factors such as **geopolitical tensions, trade fragmentation, higher interest rates, and [climate-related disasters](#)**, despite some near-term improvements.
  - It also emphasises the **need for global cooperation** to safeguard trade, support green and digital transitions, provide debt relief, and enhance [food security](#).

#### ▪ **South Asian Region (SAR):**

- **Growth Outlook:** In the South Asia region, [GDP growth](#) is projected to decrease from 6.6 % in 2023 to 6.2 % in 2024, largely due to a slowdown in India from its high growth rates in recent years.

- Other economies such as [Bangladesh](#), are expected to maintain robust growth, though at a slower pace.
- [Pakistan and Sri Lanka](#) are expected to see **strengthened economic activities**.
- **Poverty Reduction:** The report noted that [per capita income growth](#) in the South Asian region is expected to decrease from 5.6% in 2023 to 5.1% in 2024-25, then slightly rise to 5.2% in 2026.

- This slower pace is due to weaker-than-expected growth in [private consumption](#) and fiscal adjustments that may reduce household income.

#### ▪ India:

- **India's Economic Trajectory:** India, the **largest economy in South Asia**, has significantly contributed to regional growth.
  - The country's growth rate for FY24 is estimated at 8.2 %, driven by its [industrial and services sectors](#), which have offset a **slowdown in agricultural production** caused by monsoon disruptions.
- **Fiscal and Trade Balances:** In India, the [fiscal deficit relative to GDP](#) is projected to decrease due to increased revenues from a broadened tax base.
  - Trade deficits are narrowing, particularly in India, contributing to overall **economic stability** in the [South Asian region](#).

### India's GDP Forecast by MOSPI and RBI

- According to the **Ministry of Statistics and Programme Implementation (MOSPI)** data, the **GDP growth provisionally stands at 8.2%** for the Financial Year 2023-24, as
- compared to the growth rate of 7.6% in FY23.
- The Reserve Bank of India raised [India's FY25 real GDP forecast to 7.20%](#).

### World Bank

#### ▪ About:

- It was created in 1944, as the **International Bank for Reconstruction and Development (IBRD)** along with the IMF. The IBRD later became the World Bank.
- The World Bank Group is a unique **global partnership of five institutions** working for sustainable solutions that **reduce poverty and build shared prosperity** in developing countries.
- The World Bank is one of the [United Nations's](#) specialised agencies.

#### ▪ Members:

- It has **189 member** countries. India is also a member country.

#### ▪ Major Reports:

- [Human Capital Index](#).
- [World Development Report](#).
- [Global Economic Prospects Report](#) (usually published twice a year)

#### ▪ Its Five Development Institutions:

- International Bank for Reconstruction and Development (IBRD)
- International Development Association (IDA)
- International Finance Corporation (IFC).
- Multilateral Guarantee Agency (MIGA)

- International Centre for the Settlement of Investment Disputes (ICSID)
  - India is not a member of ICSID.

## What are the Associated Risks to the Global Economy Highlighted by the Report?

- **Proliferation of Armed Conflicts and Geopolitical Tensions:** The report highlights an increase in the number of [armed conflicts](#) and heightened tensions between countries.
  - These can lead to loss of life, destruction of infrastructure, and economic instability. Also, ongoing [conflicts in the Middle East](#) could disrupt oil supply and push up prices.
- **Further Trade Fragmentation and Trade Policy Uncertainty:** The report highlighted a situation where countries become more isolated economically, imposing [trade barriers](#) like tariffs and quotas on each other.
  - The trade war between the **US and China** in recent years has disrupted [supply chains](#) and led to higher prices for consumers in both countries.
- **Higher Interest Rates and Weaker Risk Appetite:** Persistently [high inflation](#) erodes the **purchasing power of consumers** and discourages spending. Higher interest rates, while necessary to control inflation, can lead to slower economic growth and job losses.
  - When investors are **uncertain about the future economic outlook**, they become less willing to take risks. This can lead to a decline in investments and stock market volatility.
- **Weaker-than-expected Growth in China:** China is the **world's second-largest economy**, so a slowdown there has significant global impacts. This could be due to factors like a **real estate market crisis or internal political instability**.
  - A sharp slowdown in China [reduces demand for raw materials](#) and other goods exported by other countries. This can lead to job losses and economic hardship in countries that rely heavily on trade with China.
- **More Frequent Natural Disasters with Worsening Impacts:** [Climate change](#) is increasing the frequency and intensity of natural disasters like **floods, droughts, and hurricanes all across the world**.
  - These disasters cause **widespread damage** to infrastructure, homes, and businesses.
  - They disrupt agricultural production, leading to food shortages and price hikes. Rebuilding after disasters puts a strain on government finances.

## What are the Key Policy Challenges in the Emerging Market and Developing Economy?

- **Elevated Debt:** Many emerging market and developing economy (EMDE) struggle with [high debt burdens](#), **weak growth prospects**, and **downside risks**.
  - **International cooperation** is crucial to address debt crises and prevent economic instability. The G20 Common Framework for debt restructuring is viewed as inadequate and needs improvement.
- **Climate Change:** Current **global climate commitments** fall short of achieving [net-zero emissions](#) by 2050. EMDEs need to invest **1-10% of GDP** annually to achieve [low-carbon development goals](#).
  - Mobilising public resources, carbon pricing, and attracting private investment are crucial for climate action.
- **Digital Divide:** About **one-third of the global population** lacks internet access, concentrated in EMDEs.
  - Governments can play a role by catalysing [private investment](#) in digital infrastructure.
- **Trade Fragmentation:** Trade fragmentation due to rising geopolitical tensions and protectionist measures hurts EMDEs.
  - Restoring the [rules-based multilateral trade system](#) and expanding trade agreements are crucial.

## Conclusion

The World Bank's latest report offers a **cautiously optimistic outlook**. While the global economy is showing signs of stabilising in 2024, **growth remains subdued compared to pre-pandemic levels**. Continued **global cooperation and effective policy measures are crucial** to navigating the current challenges and achieving sustainable economic growth for all.

**Drishti Mains Questions:**

Q. Mention the key findings of the Global Economic Prospects Report 2024. Also, discuss the associated risks and key policy challenges highlighted by the report.

## UPSC Civil Services Examination, Previous Year Questions (PYQs)

### **Prelims**

**Q. With reference to 'IFC Masala Bonds', sometimes seen in the news, which of the statements given below is/ are correct? (2016)**

1. The International Finance Corporation, which offers these bonds, is an arm of the World Bank.
2. They are the rupee-denominated bonds and are a source of debt financing for the public and private sector.

**Select the correct answer using the code given below:**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans: (c)**

**Q. India's ranking in the 'Ease of Doing Business Index' is sometimes seen in the news. Which of the following has declared that ranking? (2016)**

- (a) Organization for Economic Cooperation and Development (OECD)
- (b) World Economic Forum
- (c) World Bank
- (d) World Trade Organization (WTO)

**Ans: (c)**

---

## Indian Expatriate Community in Gulf Region

**For Prelims:** Types of Trade Agreements, India & Gulf Countries

[Source: IE](#)

## Why in News?

Recently, a devastating fire broke out in an apartment building near Kuwait City, resulting in the tragic loss of at least 49 lives, with around 40 of the victims being Indian nationals.

- The apartment building housed over 195 workers, the majority of whom were Indian nationals hailing from the states of Kerala, Tamil Nadu, and various parts of northern India.

## Expatriate

- It is an individual **living and/or working in a country other than their country of citizenship**.
- The arrangement is often **temporary and for work reasons**.
- An expatriate can also be an **individual who has relinquished citizenship** in their home country to **become a citizen of another**.

## What is the Current State of Workers in the Gulf Region?

- **Evolution of Indian community in Kuwait:**
  - The **1990-1991 Gulf War** has led to a mass exodus of the Indian community from Kuwait. After Kuwait's liberation, most members of the Indian community gradually returned and became the largest expatriate community in Kuwait.
  - Prior to the liberation war, the Palestinians constituted the largest expatriate community in Kuwait.
    - **"Kuwait's liberation"** refers to the **military operations in 1991 that resulted in the expulsion of Iraqi forces from Kuwait**. This event marked the end of the Gulf War, when a coalition led by the United States launched a military campaign to free Kuwait from Iraqi occupation. The successful liberation of Kuwait restored the country's sovereignty and independence.
- **Indians in Gulf Countries:**
  - According to data from the Government of India, as of 2021, there were approximately **8.9 million Indian migrants** residing in the Gulf countries.
  - **25% of overseas Indians** and **56% of NRI** reside in 6 Gulf countries (UAE, Saudi Arabia, Kuwait, Qatar, Oman and Bahrain).
    - **NRIs (Non-Resident Indians)** are individuals who hold Indian citizenship but live outside of India.
    - **Overseas Indians or Overseas Citizens of India (OCIs)** are individuals from foreign countries with **ancestral ties to India**. They are **not considered Indian citizens** but are granted specific privileges akin to those of permanent residents in India.
- **Inward Remittances:**
  - Of the total foreign inward remittances, **28.6%** originated from the **Gulf countries**, with **Kuwait** alone accounting for **2.4%** of these remittances.
- **Trade Relations:**
  - The gulf region contributes to about **one-sixth** of India's total trade.
  - In FY 2022-23, India's trade with GCC countries stood at around **USD 184 billion**, marking a **20% increase** as compared to FY 2021-22.
- **Partnership in Energy Cooperation:**

- The Government of India has announced plans to develop a comprehensive relationship with the GCC countries in the area of **energy cooperation**.
- This will involve encouraging **participation in India's strategic petroleum reserves, negotiating long-term gas supply agreements, seeking concessions in oilfields, and collaborating on renewable energy projects.**

## Gulf Cooperation Council (GCC)

- **GCC is a regional organisation comprising 6 nations:** Saudi Arabia, the United Arab Emirates, Oman, Kuwait, Qatar, and Bahrain. The GCC was established in **1981**, with the **aim of promoting cooperation, integration, and interconnectivity** among its member states, based on their regional and cultural proximity.
- Presently, the **primary source of revenue for the GCC countries** is derived from the **export of oil**.
- The GCC member states have been **heavily reliant on their oil resources**, which have been the backbone of their economies for decades.

## What are the Challenges Faced by Indian Diaspora and Migrants in Gulf Countries?

- **Kafala System:** It is a practice of **tying a migrant worker's visa to their employer (sponsor)**. It is prevalent in many Gulf countries. This creates a **power imbalance and misery to workers who face issues like confiscation of passports, difficulty changing jobs and exploitation and abuse by their employer. This has led to forced labour situations.**
- **Security Concerns:** In 2014, during the insurgency in Iraq, 40 Indian construction workers were abducted and killed by the [Islamic State of Iraq and Syria \(ISIS\)](#) which highlights the potential security risks faced by Indian workers in volatile regions.
- **Unsafe Working Conditions and Labor Exploitation:** Migrant workers, particularly in construction and manual labour sectors, often face **unsafe working environments with inadequate safety gear** and protocols. This can lead to accidents, injuries, and even fatalities.
  - In 2019, several Indian workers died due to **heatstroke** in the UAE, highlighting the dangers of working in extreme heat without proper precautions.
  - They also **face issues regarding non-payment of salaries, denial of overtime pay, and longer working hours.**
- **Limited Rights and Abuse:** Indian expatriates are not granted citizenship or permanent residency in most Gulf countries which restricts their ability to own property, access social security benefits, and participate in political processes.
  - Domestic workers are vulnerable to **physical and psychological abuse** by employers.

## What are the Measures taken by the Indian Government to Protect its Migrant Workers Abroad?

- **Bilateral Labour Agreements (BLAs):** The government has signed BLAs with several countries **to ensure the protection and welfare of Indian migrant workers**. These agreements **cover aspects like minimum wages, working conditions, repatriation, and dispute resolution.**
- **Pravasi Bharatiya Bima Yojana (PBBY):** This is a **mandatory insurance scheme** that provides life and disability cover to all **Emigration Check Required (ECR)** category Indian migrant workers going abroad for employment.
  - It provides coverage of up to **Rs. 10 lakh in case of accidental death or permanent**



**disability** of Indian migrant workers abroad.

▪ **Minimum Referral Wages (MRW):**

- MRW has been set by the Indian Government for Indian migrant workers abroad in nations that **do not have minimum wage laws**.
- It ranges around USD 300 to 600.
  - It is the **lowest acceptable salary** set by the Indian government for its migrant workers (especially unskilled) going to specific countries.
  - It ensures migrant workers from India receive a minimum salary in certain countries.
    - This **prevents them from being exploited** by employers offering much lower wages than the norm.
  - The MRW rates are **advised by Indian missions in the destination countries**, considering the prevailing cost of living and wage rates prescribed by the relevant ministries. During the **Covid-19** pandemic, it was briefly lowered to protect Indian worker's jobs in the Gulf.

- **eMigrate System:** This is an online platform that **streamlines the emigration process**. It provides **pre-departure orientation, registers job contracts**, and tracks the status of migrant workers.
- **Migrant Resource Centers:** Set up in several states to provide information, counselling, and support services to prospective and returning migrant workers.
- **Grievance Redressal Mechanisms:** Platforms like the eMigrate system and the Overseas Workers Resource Centre allow migrant workers to file complaints and seek assistance from the government.
- **Repatriation Assistance:** In cases of distress or conflict, the **Indian government provides repatriation assistance to Indian workers abroad**, facilitating their safe return to India.
- **Restrictions on Women's Emigration:** **Women below the age of 30 years are not granted emigrant clearance for employment as housemaid, domestic worker, hairdresser, beautician, dancer, stage artist, labourers, or general workers.**

## Gulf Region

- The lands around the Persian Gulf are shared by 8 countries namely, **Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia** and the **United Arab Emirates (UAE)**.
- These all eight countries are members of the **United Nations**.
  - UAE, Bahrain, Saudi Arabia, Oman, Qatar, Kuwait are members of the **Gulf Cooperation Council (GCC)**.
  - Out of the Persian Gulf countries, Iran, Iraq, Kuwait, UAE and Saudi Arabia are members of the **Organization of the Petroleum Exporting Countries (OPEC)**.
- **Strategic Importance:** The Persian Gulf is one of the most strategically important regions globally. This is due to two main reasons.
  - **Oil and Gas Reserves:** The Persian Gulf region holds the **world's largest proven reserves of oil and natural gas**. This has made the region a vital source of energy for many countries worldwide.
  - **Strategic Location:** The Persian Gulf is a **crucial shipping lane for oil exports** from the region to other parts of the world. The **Strait of Hormuz**, a narrow waterway between **Iran and Oman**, is a chokepoint through which a significant portion of the world's oil travels.



**Drishti Mains Question:**

Discuss the challenges faced by Indian workers employed in other countries, and analyse the measures taken by the Government of India to address their issues and protect their interests.

**UPSC Civil Services Examination, Previous Year Question**

**Q. Which of the following is not a member of 'Gulf Cooperation Council'? (2016)**

- (a) Iran
- (c) Oman
- (b) Saudi Arabia
- (d) Kuwait

**Ans: (a)**

**Disbursal of Duty Drawback by PFMS**

**Source: PIB**

Recently, the **Central Board of Indirect Taxes and Customs (CBIC)** has decided to **electronically** transfer **duty drawback funds** via the **Public Finance Management System**

(PFMS), directly to exporters' bank accounts to ensure transparency and efficiency.

## What is Duty Drawback ?

- Duty drawback under **section 75 of the Customs Act, 1962** rebates customs duty chargeable on **any imported materials** or excisable materials used in the manufacture of **export goods**.
- This system **helps exporters mitigate some of the costs incurred during the export** process, particularly within the supply or value chain.

## Public Financial Management System (PFMS)

- **About:**
  - It is a **web-based online software** application developed and implemented by the **Office of the Controller General of Accounts (CGA), Ministry of Finance**. Initially launched in **2009** as a **Central Sector Scheme** by the **Planning Commission (NITI Aayog)**.
- **The objective of PFMS:**
  - The overarching goal of PFMS is to facilitate a robust Public Financial Management System by establishing **an efficient fund flow system and a payment-cum-accounting network**.
  - Currently, the PFMS covers **Central Sector and Centrally Sponsored Schemes**, as well as other expenditures, including **Finance Commission** grants.
  - PFMS provides stakeholders with a **real-time, reliable, and meaningful management information** system and an effective decision support system, aligning with the **Digital India initiative**.
  - The system is integrated with the **core banking system in the country**, enabling seamless financial transactions and facilitating transparency and accountability in the management of public funds.

## What is the Significance of Electronic Disbursal of Duty Drawbacks?

- **Streamlining the Process: Electronically** transfer of **duty drawback funds** has been introduced to streamline the process, reduce processing time, eliminate manual intervention, and enhance transparency in customs operations.
- **Less Paperwork: It eliminates the need for physical documentation and manual processing, reducing the time and effort required to claim the refund.**
- **Promotes Transparency:** The electronic system enhances **transparency** by providing **exporters with real-time visibility** into their claims' status and enabling seamless refund process tracking.
- **Trade Facilitation:** This initiative aligns with CBIC's commitment to paperless customs and trade facilitation, building upon its implementation of the **World Trade Organization's, Trade Facilitation Agreement (TFA)**.

## UPSC Civil Services Examination, Previous Year Questions (PYQs)

### Prelims

**Q1. The SEZ Act, 2005 which came into effect in February 2006 has certain objectives. In this context, consider the following: (2010)**

1. Development of infrastructure facilities.
2. Promotion of investment from foreign sources.
3. Promotion of exports of services only.

**Which of the above are the objectives of this Act?**

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

Ans: (a)

Q2. A “closed economy” is an economy in which (2011)

- (a) the money supply is fully controlled
- (b) deficit financing takes place
- (c) only exports take place
- (d) neither exports or imports take place

Ans: (d)

## Chlorella Growth Factor

[Source: TH](#)

### Why in News?

Recently, scientists at [CSIR-Indian Institute of Chemical Technology \(IICT\)](#) have spotlighted the potential of **Chlorella Growth Factor (CGF)**, a protein-rich extract derived from the **microalgae** ‘**Chlorella sorokiniana**’, as an ideal ingredient for a wide range of food and feed applications.

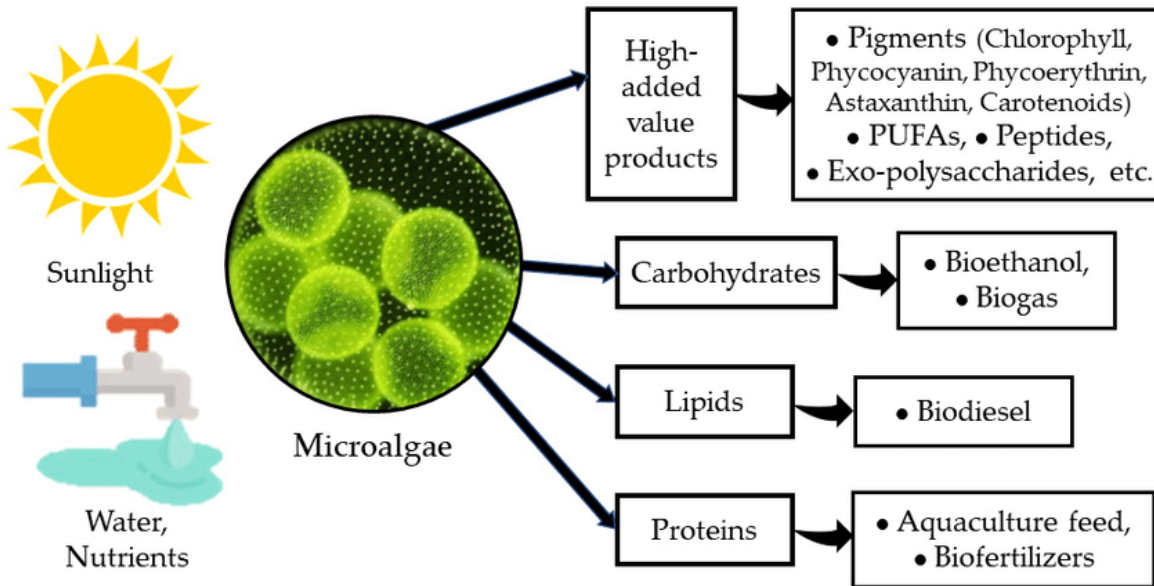
### What are Chlorella Growth Factor (CGF) and Chlorella Sorokiniana?

#### ▪ Chlorella Growth Factor (CGF):

- **Nutritional Benefits:** CGF is rich in [amino acids](#) and proteins of high quality, making it a **promising alternative source** for both human and animal diets.
  - It contains essential **amino acids and nutrients** like peptides, nucleotides, polysaccharides, [vitamins](#), and [minerals](#), than commercial soy meal.
- **Production Method:** The extraction of CGF involves a **non-chemical autolysis process**, preserving the integrity of amino acids and other valuable components.
- **Application:** Adding CGF to chicken feed **improves egg quality**, showing promise as a better protein supplement for animals.
- **Sustainability:** Microalgae like Chlorella sorokiniana are considered "**under-exploited crops**" that **do not compete with traditional food crops** for space and resources, offering a sustainable solution to meet the increasing global demand for high-quality protein sources.

#### ▪ Chlorella Sorokiniana:

- Chlorella Sorokiniana, an **oval-shaped single-celled algae**, is a standout in the microscopic realm, boasting a unique **ability to grow actively**.
  - **Each cell** is a **self-contained organism** with all the essential nutrients needed for life, making it complete and self-sustaining.
- Chlorella Sorokiniana can rapidly reproduce, **growing from one cell to 24 cells in just 24 hours** when exposed to plenty of sunlight and nutrients.



## Microalgae

- **Microalgae** are **photosynthetic microorganisms** that can be found in **diverse natural environments**, such as water, rocks, and soil. They present **higher photosynthetic efficiency than terrestrial plants** and are responsible for a significant fraction of the world's oxygen production.
  - They thrive in various **aquatic environments**, including both freshwater and marine habitats. For **example Chlorella, Diatoms, etc.**
  - Marine microalgae play a pivotal role in the **oceanic food chain** and carbon dioxide absorption.
  - However, as **climate change** continues, **global warming** is causing surface ocean waters to warm, **resulting in reduced nutrient availability** due to less mixing between the surface waters and nutrient-rich deeper waters.

## Macroalgae

- Macroalgae popularly **known as seaweeds** are **multicellular and macroscopic autotrophs** that are taxonomically **categorised into three distinct groups** based on the colour of the thallus namely *Chlorophyta* (green algae), *Rhodophyta* (red algae), and *phaeophyta* (brown algae).
  - **Seaweed** is the **primitive, non-flowering marine algae** without roots, stems and leaves, that play a major role in marine ecosystems.
    - Large seaweeds form dense **underwater forests known as kelp forests**, which act as **underwater nurseries** for fish, snails and sea urchins.
    - Some species of seaweeds include *Gelidiella acerosa*, *Gracilaria edulis*, *Gracilaria crassa*, and *Gracilaria verrucosa*.

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

### Prelims:

**Q. Consider the following statements in respect of probiotics: (2022)**

1. Probiotics are made of both bacteria and yeast.
2. The organisms in probiotics are found in foods we ingest but they do not naturally occur in our gut.
3. Probiotics help in the digestion of milk sugars.

**Which of the statements given above is/are correct?**

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

**Ans: (c)**

### Mains

**Q. What are the research and developmental achievements in applied biotechnology? How will these achievements help to uplift the poorer sections of the society? (2021)**

**Q. How can biotechnology help to improve the living standards of farmers? (2019)**

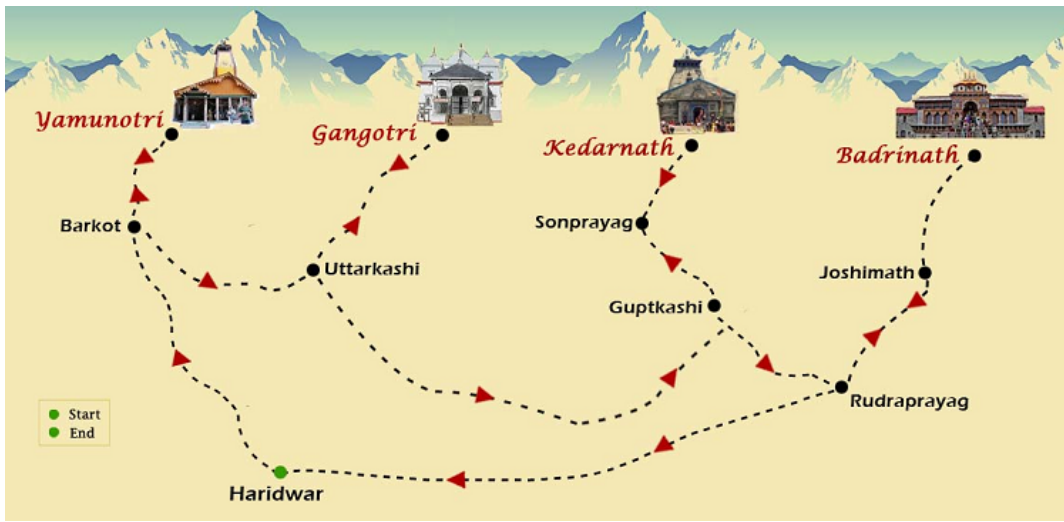
---

## Renaming Joshimath and Kosiyakutoli

**Source: IE**

Recently, the Uttarakhand government has renamed Joshimath tehsil as **Jyotirmath** and Kosiyakutoli tehsil as **Pargana Shri Kainchi Dham**.

- Joshimath is believed to be the site where [Adi Guru Shankaracharya](#) attained enlightenment in the 8th century.
- Kosiyakutoli has been renamed **Pargana Shri Kainchi Dham** in honor of **Baba Neem Karoli Maharaj's ashram** located there.
- Joshimath serves as the gateway to **Badrinath Dham**, one of Hinduism's most significant pilgrimage destinations.
- **Badrinath Dham is** located in Chamoli district and home to the sacred Badrinarayan Temple, dedicated to Lord Vishnu.



Read more: [Char Dham Yatra](#)

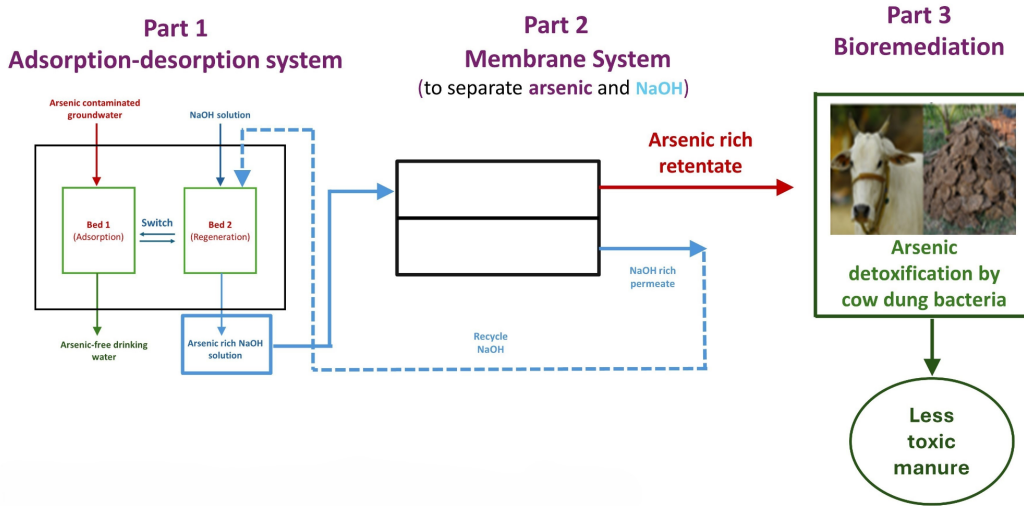
---

## Eco-Friendly Solution for Safe Groundwater

Source: [TH](#)

Recently, researchers at the **Indian Institute of Science (IISc)** have created an **innovative remediation technique** that not only **eliminates heavy metal pollutants** from groundwater but also ensures **safe disposal of removed pollutants** as well.

- It removes **Arsenic** and other harmful metals, making the water safe to drink.
- The process is **eco-friendly** as removed contaminants are **disposed of in an environmentally friendly** and sustainable manner
- **3-Step Working Mechanism:**
  - **Capture:** Contaminated water is passed through a **chitosan-based adsorbent that removes toxic inorganic arsenic**. The adsorbent is regenerated using a recycled alkaline wash.
  - **Concentrate:** The **arsenic-laden alkaline wash is separated** using membranes, recovering sodium hydroxide for reuse, while the concentrated arsenic moves to the next step.
  - **Transform:** **Microbes in cow dung convert inorganic arsenic** to less toxic organic forms. The treated sludge can then be safely disposed of.
- In India, **113 districts** in 21 States in India have **arsenic levels above 0.01 mg per litre** while **223 districts** in 23 States have **fluoride levels above 1.5 mg per litre**, which are beyond the permissible limits set by the [Bureau of Indian Standards \(BIS\)](#) and the [World Health Organization \(WHO\)](#).



Read more: [Groundwater Contamination in India](#), [Purification Processes of Water](#).

## WHO's Framework for Kala Azar

Source: DTE

Due to the growing health threat of [visceral leishmaniasis \(VL\) \(Kala-azar\)](#), the [World Health Organisation \(WHO\)](#) has launched a **new framework** to help **eradicate** the disease in **eastern Africa**.

- The framework outlines **five main strategies** for guiding VL elimination:
  - Early diagnosis and treatment
  - Integrated vector management
  - Effective surveillance
  - Advocacy, social mobilisation and partnership-building
  - Implementation and operational research
- **Visceral leishmaniasis** is a slow-progressing indigenous disease caused by a protozoan parasite of the genus *Leishmania*.
  - It spreads through the bite of **infected female sandflies** and can prove to be deadly if not treated timely.
    - VL leads to fever, weight loss, and enlargement of the spleen and liver.
  - It is **endemic to 80 countries**, however, In 2022, eastern Africa accounted for 73% of global VL caseload, 50% of which occurred in children aged under 15 years.
    - In 2023, **Bangladesh** became the **first country** in the world to eradicate VL.
  - In India, [Leishmania donovani](#) is the **only parasite** causing this disease.
    - Recently, India has also successfully achieved its target to eliminate visceral leishmaniasis (initial target year was 2010, but it was extended until 2023).

[Read more...](#)

## Binsar Wildlife Sanctuary

Source: TOI



In the first incident of frontline forest workers losing their lives in a [wildfire](#) this year, four forest department personnel lost their lives in a firefighting operation in **Binsar Wildlife Sanctuary** in Almora.

- The **Binsar Wildlife Sanctuary** is located in the **Kumaon Himalayas of Uttarakhand**.
  - In 1988, the sanctuary was established to conserve the **rich biodiversity** of the region.
  - It boasts a remarkable **variety of flora** due to its diverse topography and altitudinal variation. The sanctuary is primarily covered with a dense forest of [oak and pine](#).
  - The sanctuary has over **200 species of birds** including **Eurasian jay, koklass pheasant, monal pheasant**, and [Himalayan woodpecker](#).
- Binsar was the erstwhile summer capital of the **Chand Dynasty rulers**, who [ruled Kumaon](#) from the 7th to 18th century AD.
- According to locals, Binsar was named after the **Bineshwar Mahadev temple**, a 16th-century temple dedicated to [Lord Shiva](#).

**Read more:** [Forest Fires](#)

---

PDF Reference URL: <https://www.drishtias.com/current-affairs-news-analysis-editorials/news-analysis/15-06-2024/print>

