



Cotton Cultivation in India

For Prelims: [Hybrid cotton](#), [Bt cotton](#), [National Food Security Mission \(NFSM\)](#), [Cotton Corporation of India \(CCI\)](#), [Kasturi Cotton](#), [Cott-Ally Mobile App](#), [Committee on Cotton Promotion and Consumption \(COCPC\)](#), [Technology Upgradation Fund Scheme \(TUFS\)](#), [Mega Textile Parks \(MITRA\)](#), [Pink bollworm](#), [Genetically-modified crops](#)

For Mains: [Significance of Cotton for India](#), [Issues and Challenges](#)

[Source: TH](#)

Why in News?

The data recently released by the [Ministry of Textiles](#) shows that [cotton](#) consumption by the textile industry from October 2023 to September 2024 is **one of the highest seen in this decade**.

What are the Key Facts About Cotton Cultivation?

▪ About:

- Cotton is one of the most important [commercial crops](#) cultivated in India and accounts for around 25% of the total global cotton production.
 - Due to its economic importance in India, it is also termed as **“White-Gold”**.
- In India, around **67%** of India’s cotton is grown in **rain-fed areas** and 33% in irrigated areas.

▪ Growing Conditions:

- Cotton cultivation necessitates a **hot, and sunny climate** with a **long frost-free period**. It is most productive in **warm and humid climatic conditions**.
- Cotton can be successfully grown in a range of soil types, including **well-drained deep alluvial soils** in northern regions, variable-depth black clayey soils in the central region, and mixed black and red soils in the southern zone.
 - While cotton exhibits some tolerance to salinity, it is highly **sensitive to waterlogging**, emphasising the importance of well-drained soils in cotton farming.

▪ Hybrid and Bt Cotton:

- **Hybrid Cotton:** Cotton made by crossing two parent strains that have different genetic characteristics. Hybrids are often **spontaneously and randomly created** in nature when open-pollinated plants naturally cross-pollinate with other related varieties.
- **Bt Cotton:** It is a **genetically modified pest-resistant** variety of cotton.

▪ India’s Scenario:

- **Rank in Global Production (November 2023):** Globally, **India is the largest producer of cotton**, while **China is the second-largest producer**, and the **United States is the third-largest producer**.
- **Largest Producing Zone (2022-23):** Central Zone (Gujarat, Maharashtra, Madhya Pradesh).



Drishti IAS

Cotton Cultivation

India got **1st** place in the world in cotton acreage with **130.61** lakh hectares area under cotton cultivation i.e. around **40%** of the world area of **324.16** lakh hectares.

India is the only country which grows all four species of cotton



G. Arboreum and
G. Herbaceum
(Asian cotton)

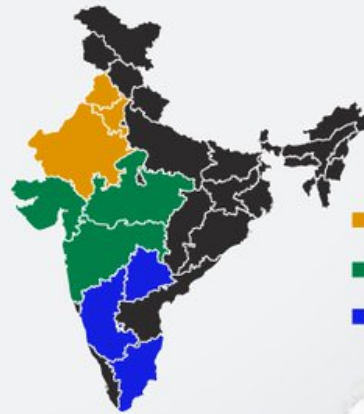


G. Barbadense
(Egyptian cotton)



G. Hirsutum
(American Upland cotton)

Major 9 cotton growing states divided according to Agro-Ecological zones



■ Northern Zone
■ Central Zone
■ Southern Zone



Indian Government Initiatives For Development of the Cotton Sector

- **Cotton Development Programme Under the [National Food Security Mission \(NFSM\)](#):** It aims to enhance cotton production and productivity in major cotton-growing states and is being implemented by the **Department of Agriculture & Farmers Welfare** in 15 major cotton-growing states from 2014-15.
- **Cotton Corporation of India (CCI):** It was **established in 1970** under the administrative control of the **Ministry of Textiles** as a **Public Sector Undertaking** under the [Companies Act 1956](#).
 - Its **role is to stabilise prices by enforcing price support measures** whenever the market prices fall below the government-decided price supports.
- **MSP Formula for Cotton:** Introduced a formula of 1.5 times the cost of production (A2+FL) for [Minimum Support Price \(MSP\)](#) calculation ensuring the economic interest of cotton farmers and availability of cotton to the textile industry.
 - [Cotton Corporation of India \(CCI\)](#): Appointed as a **Central Nodal agency** for MSP

operations when Fair Average Quality grade seed cotton (kapas) fell below the MSP rates.

- **Textile Advisory Group (TAG):** Constituted by the [Ministry of Textiles](#) to facilitate coordination among stakeholders in the cotton value chain to address issues related to productivity, prices, branding, and more.
- **Cott-Ally Mobile App:** Developed to provide farmers with knowledge about MSP Rate, procurement centers through a **user-friendly interface**.
- **Committee on Cotton Promotion and Consumption (COCPC):** To ensure the availability of cotton to the textile industry.

What are the Issues Associated with the Cotton Sector in India?

- **Pest Attack: In past instances,** the primary factor responsible for the decline of cotton production was the emergence of the [pink bollworm](#) (*Pectinophora gossypiella*).
 - When pink bollworm (PBW) larvae invade cotton bolls, it causes cotton plants to produce less cotton and the cotton produced is of lower quality.
 - PBW is **monophagous (that primarily feeds on a single specific type of food)**, feeding mainly on cotton, which contributes to the **development of resistance against Bt proteins**.
 - Continuous cultivation of [Bt hybrids](#) led to PBW populations developing **resistance**, replacing susceptible ones.
 - Several states like Gujarat, Punjab, Haryana, Rajasthan have over the years experienced heavy infestation of the pest.
- **Yield Fluctuations:** Cotton production in India can be quite unpredictable due to **several factors**.
 - Limited access to [irrigation systems](#), declining soil fertility, and [erratic weather patterns](#), including **unexpected droughts** or excessive rainfall, contribute to the uncertainty surrounding cotton yields.
- **Smallholder Dominance:** The majority of cotton farming in India is carried out by small-scale farmers.
 - These farmers often rely on **traditional agricultural practices** and have limited access to modern farming technologies, which in turn affects overall cotton production.
- **Limited Market Access:** A significant number of cotton growers in India face constraints in reaching markets and are compelled to sell their [harvest](#) at reduced rates to intermediaries.

Way Forward

- **Integrated Pest Management:** There is a need to advocate for [integrated pest management \(IPM\)](#) strategies that combine natural controls, trap crops, and beneficial insects to reduce pesticide dependency while effectively managing pests.
 - **Address the Yield Gap:** India leads in cotton acreage but lags in yield compared to major producers. Initiatives like the **Large-Scale Demonstrations Project** under NFSM can promote best practices like **High-Density Planting Systems (HDPS)** and a value chain approach to bridge this gap.
 - **Modernisation and Infrastructure Development:** Leverage schemes like the **Technology Upgradation Fund Scheme (TUFS)** and [Mega Textile Parks \(MITRA\)](#) to modernise ginning, spinning, and weaving facilities, enhancing efficiency and global competitiveness.
 - **Improve MSP Calculation:** The recently revised MSP formula (1.5 times the cost of production) ensures a fair return for farmers. Continued refinement based on [NITI Aayog](#) recommendations can further strengthen farmer income security.
 - **Strengthen Market Linkages:** Initiatives like a robust procurement system, price stabilisation funds, and robust cotton grading and standardisation mechanisms can help farmers get better prices and reduce exploitation by middlemen.
 - **Branding and Traceability:** Initiatives like ["Kasturi Cotton"](#) can create a distinct identity for Indian cotton in the global market, emphasizing quality assurance and traceability. This can attract premium prices and foster trust with international buyers.
-

Drishti Mains Question:

Q. Discuss the key challenges faced by the cotton sector in India. Suggest measures to improve the productivity of the cotton sector in India.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims

Q1. The black cotton soil of India has been formed due to the weathering of (2021)

- (a) brown forest soil
- (b) fissure volcanic rock
- (c) granite and schist
- (d) shale and limestone

Ans: (b)

Q2. A state in India has the following characteristics: (2011)

1. Its northern part is arid and semi-arid.
2. Its central part produces cotton.
3. Cultivation of cash crops is predominant over food crops.

Which one of the following states has all of the above characteristics?

- (a) Andhra Pradesh
- (b) Gujarat
- (c) Karnataka
- (d) Tamil Nadu

Ans: (b)

Mains

Q. Analyse the factors for highly decentralized cotton textile industry in India. (2013)

Low Snow Persistence in Hindu Kush Himalayas

For Prelims: [International Centre for Integrated Mountain Development \(ICIMOD\)](#), [Ganga, Brahmaputra, and Indus basins](#), [western disturbances](#) Mediterranean, [Caspian, Black Seas](#) , [winter precipitation](#) , [snowfall](#), [Paris Agreement](#), [La Niña and El Niño events](#),

For Mains: Hindu Kush Himalayas region and related issues.

[Source: TH](#)

Why in News?

The recent report from the [International Centre for Integrated Mountain Development \(ICIMOD\)](#) has shown that the snow persistence in the [Ganga, Brahmaputra, and Indus basins](#) of the [Hindu Kush Himalayas \(HKH\)](#) has reached record low levels.

- **ICIMOD** is a regional intergovernmental organisation established in **1983** and working **towards a greener, more inclusive, and climate-resilient** Hindu Kush Himalaya.

What are the Findings of the Report?

- **Global Findings:**
 - The **Amu Darya river basin** in Afghanistan reported its lowest snow persistence, the **Helmand River**, crucial for Iran and Afghanistan's drinking water supply, saw its snow persistence nearly 32% below normal.
 - China's **Yellow River basin** exceeding normal levels by **20.2%**, is influenced by the interaction of **cold air from the east asian winter monsoon** with moist air from the **Pacific Ocean**.
- **India's Context:**
 - The report analysed data from 2003 to 2024, revealing that the Ganga River basin experienced its **lowest snow persistence in 22 years**, and the Brahmaputra basin recorded a **14.6% decrease** in snow persistence compared to normal levels.
- **Reason Behind Low Snow Persistence:**
 - **Impact of Weakened Western Disturbances and Global Warming:**
 - This study reveals that weakened **western disturbances** from warmer seas in the Mediterranean, **Caspian, and Black Seas** have reduced **winter precipitation and snowfall** in the Hindu Kush Himalaya region.
 - Additionally, global warming has intensified **La Niña and El Niño events**, further decreasing the region's snow persistence capacity.
 - The **1.5°C global temperature limit** set under the **Paris Agreement** may not be sufficient for the Hindu Kush Himalayan (HKH) region, as this area is expected to experience higher temperature increases than the global average.
 - **Environmental Degradation:**
 - Environmental degradation in the HKH region, driven by **deforestation, overgrazing, unsustainable land practices**, and infrastructure development, is leading to profound impacts such as **soil erosion, loss of biodiversity, and water pollution** in the region.
 - **The Proliferation of Invasive Species:**
 - The proliferation of invasive species such as **Cirsium arvense (Canada thistle)** and **Trifolium repens (white clover)** poses a significant threat to native Himalayan species, upsetting the delicate balance of the region's ecosystem.
- **Key Recommendations:**
 - **Long-term Strategies:**
 - This study suggests that **reforestation** with native species such as **Cirsium arvense** improves **snow retention** in the HKH region.
 - Enhanced **weather forecasting** and **early warning systems**.
 - Improved **water infrastructure** and enact protective policies for snow-receiving areas.
 - **Community involvement** in decision-making along with promoting regional cooperation will help restore the HKH region.
 - **Climate Change Mitigation:**
 - Reduce emissions to mitigate rising temperatures and focus on **G-20 countries** as they are responsible for 81% of global emissions
 - Shift away from **fossil fuels** towards **cleaner energy sources**.

What is Snow Persistence?

▪ About:

- Snow persistence refers to the **duration that snow remains on the ground**. When this snow melts, it crucially contributes water to both people and ecosystems.

▪ Significance

- In the **Hindu Kush Himalaya (HKH) river basins**, snowmelt represents the largest water source for streams, **contributing 23%** of the annual runoff across the region's 12 major river basins.
 - These river basins provide water to almost one-fourth of the world's population and are a significant freshwater source for **240 million people** in the HKH region.
- In the **Ganga River basin**, the persistence of snow on the ground is particularly significant because its melt **contributes 10.3%** of the Ganga's water, whereas glacier melts contribute only 3.1%.
- Similarly, in the Brahmaputra and Indus river basins, snowmelt provides **13.2% and approximately 40%** of their respective water supplies, in contrast to 1.8% and 5% from glaciers.

What is the Hindu Kush Himalaya Region?

▪ Geographical Spans of HKH:

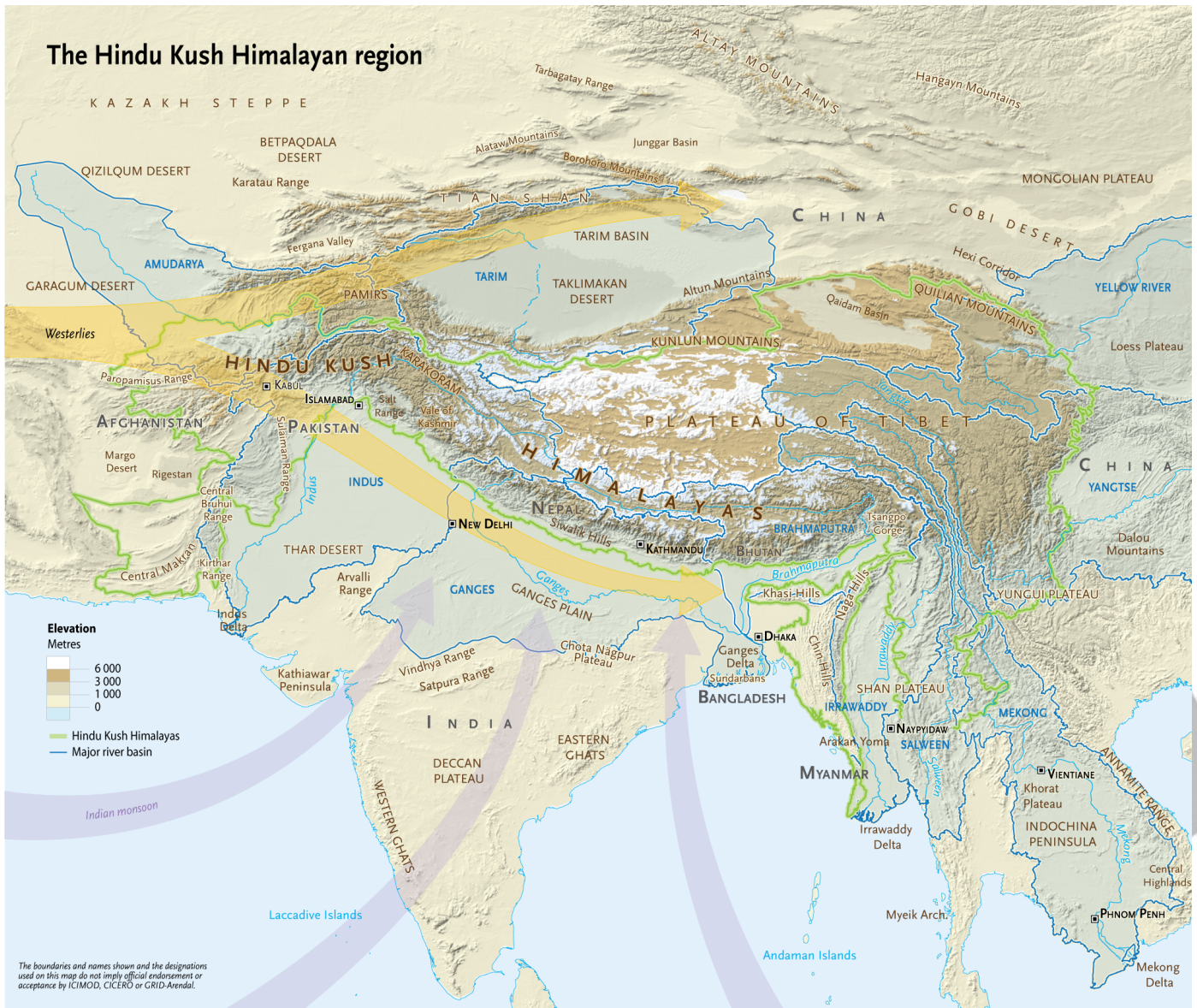
- The Hindu Kush Himalayan (HKH) region spans **Afghanistan, Bangladesh, Bhutan, China, India, Kyrgyzstan, Mongolia, Myanmar, Nepal, Pakistan, Tajikistan, and Uzbekistan**.

▪ Third Pole:

- Often referred to as the **Third Pole** due to its **vast ice and snow reserves**, it holds immense climatic significance.
- This region hosts the largest concentration of ice and snow outside the **Arctic and Antarctica**.
- The **ice and snow** from the HKH region serve as crucial water sources for **major rivers**, which flow through 16 countries across Asia.

▪ Key River Systems and their Destinations from HKH:

- **South Asia:**
 - Indus, Ganga, Brahmaputra → Arabian Sea and Bay of Bengal
- **Central Asia:**
 - Syr Darya, Amu Darya → former Aral Sea basin
- **East Asia:**
 - Tarim → Taklamakan Desert
 - Yellow River → Gulf of Bohai
 - Yangtze → East China Sea
- **Southeast Asia:**
 - Mekong → South China Sea
 - Chindwin, Salween, Irrawaddy → Andaman Sea



Drishti Mains Questions:

Q. What are the key challenges facing the Hindu Kush Himalaya region, and how can it be protected by following various climate-friendly practices?

UPSC Civil Services Examination, Previous Year Questions (PYQ)

Prelims

Q. When you travel in Himalayas, you will see the following: (2012)

1. Deep gorges
2. U-turn river courses
3. Parallel mountain ranges
4. Steep gradients causing land sliding

Which of the above can be said to be the evidence for Himalayas being young fold mountains?

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

(d) 1, 2, 3 and 4

Ans: (d)

Mains:

Q.1 Briefly mention the alignment of major mountain ranges of the world and explain their impact on local weather conditions, with examples. **(2021)**

Q.2 How will the melting of Himalayan glaciers have a far-reaching impact on the water resources of India? **(2020)**

Poverty and Inequality Measures in India

Prelims: [PM's Economic Advisory Council \(PMEAC\)](#), [Poverty Line](#), [World Bank](#), [VM Dandekar and N Rath](#), [Alagh Committee](#), [Lakdawala Committee](#), [Tendulkar Committee](#), [Rangarajan Committee](#), [Price Index of Industrial Workers \(CPI-IW\)](#), [Consumer Price Index of Agricultural Labour \(CPI-AL\)](#), [National Sample Survey \(NSS\)](#), [GST](#), [Multidimensional poverty Index](#), [Inflation](#), [Gini coefficient](#), [Household Consumption Expenditure Survey](#).

Mains: Issues Related to Poverty Estimation and Status of Inequality in India

[Source: TH](#)

Why in News?

Recently, [PM's Economic Advisory Council \(PMEAC\)](#) chief Bibek Debroy pitched for a review of India's official [poverty line](#) and suggested analysing inequality at the state level.

What is the Status of Poverty in India?

▪ **About:**

- Poverty refers to a condition in which people or communities lack the financial resources and other essentials for a **minimum standard of living**.
- In September 2022, the [World Bank](#) set the International Poverty line at **USD 2.15** using **2017 prices**.
 - It means that anyone living on less than **USD 2.15** a day is considered to be living in **extreme poverty**.

▪ **Poverty Estimation in India:**

- **Study by VM Dandekar and N Rath (1971):** It made the first systematic assessment of poverty in India.
 - It was based on [National Sample Survey \(NSS\)](#) data from 1960-61.
 - They argued that the **poverty line** must be derived from the expenditure that was adequate to provide **2250 calories per day** in both rural and urban areas.
- **Alagh Committee (1979):** It constructed a poverty line for rural and urban areas on the basis of **nutritional requirements**.

- Nutritional requirements and related consumption expenditure based on 1973-74 price levels recommended were **2400 Calories for rural** areas (Rs 49.1 per capita per month) and **2100 Calories for urban** areas (Rs 56.7 per capita per month).
- **Lakdawala Committee (1993): It made the following suggestions:**
 - Consumption expenditure should be calculated based on **calorie consumption** as earlier.
 - **State specific poverty lines** should be constructed and these should be **updated** using the Consumer [Price Index of Industrial Workers \(CPI-IW\)](#) in urban areas and [Consumer Price Index of Agricultural Labour \(CPI-AL\)](#) in rural areas.
- **Tendulkar Committee (2005): It was set up by the [Planning Commission](#) to reassess the methods for estimating poverty and submitted its report in December 2009.**
 - According to the report, the **rural poverty** headcount ratio for **2004-05** was at **41.8%**, **urban** at **25.7%**, and the **pan-India** poverty rate stood at **37.2%**.
- **Rangarajan Committee (2012): It was chaired by former Reserve Bank of India governor C. Rangarajan to review the country's poverty measurement methodology.**
 - It defined poverty as living on **less than Rs 47 per day in urban areas and Rs 32 per day in rural areas.**
 - It estimated that **poverty levels were 19% higher in rural areas and 41% higher in urban areas compared to the Tendulkar Committee's estimates.**

What is the Need of a New Official Poverty Line in India?

- **Outdated Data: India's poverty line estimate based on the Tendulkar Committee (2005) is two decades old.**
 - Estimating poverty on the basis of this data is a futile exercise and this grossly underestimates poverty.
- **Inconsistent with Global Data:**
 - The **World Bank's** 2022 report says, India saw "an increase of **56 million poor** people" in 2020 (at USD 2.15) due to the [pandemic](#).
 - **Pew Research Institute's** March 2021 report said the number of Indian poor increased by **75 million** and added that its middle class shrinking by 32 million.
 - But India **never acknowledged** that poverty increased due to the pandemic or due to **pre-pandemic** economic shocks of [demonetisation](#) of 2016 and [GST](#) of 2017.
- **Less Realistic Data:**
 - The poverty threshold varies from state to state according to people's social and economic conditions but the current poverty estimation is based on rural, urban and pan-India level.
 - This data is **less realistic** due to **inadequate** customised measurement and **inconsistent** data collection methods.
- **Accuracy Issues:**
 - There is a lack of comprehensive **consumption** and [inflation](#) data making it impossible to get an accurate picture.
 - Indian authorities do not provide inflation data segmented by household income.
 - [Multidimensional poverty Index \(MDPI\)](#) evaluates **health, education** and **standard of living** across 12 indicators. It relies more on **survey-based data** rather than **actual consumption** metrics.
- **Institutional Issues:**
 - India's statistical system, **which was applauded globally in the early 1950s**, had been criticised by people outside as well as inside the government system in recent times.
 - The [Ministry of Statistics and Programme Implementation](#) has **failed** to provide **empirical data** and struggled to **effectively communicate its actions** to the relevant stakeholders.

- **Example:** The findings of the [Consumption Expenditure Survey 2017-18](#) were so abysmal that they were withdrawn by the government.

Government Initiatives to Alleviate Poverty

- [Prime Minister Street Vendor's AtmaNirbhar Nidhi - PM SVanidhi](#)
- [Pradhan Mantri Shram Yogi Maan-Dhan \(PM-SYM\)](#)
- [National Nutrition Mission \(NNM\)](#)
- [Pradhan Mantri Garib Kalyan Yojana \(PMGKY\)](#)
- [Pradhan Mantri Suraksha Bima Yojana](#)

What is the Status of Inequality in India?

- **About:**
 - In the economy, inequality is the **unequal distribution of income and opportunity** between different groups in society.
 - Income Inequality refers to the **extent to which income is evenly distributed** within a population.
- **Inequality Estimation in India:**
 - **Ways to measure inequality:**
 - The [Gini coefficient](#) (Gini index or Gini ratio) is a measure of income inequality, wealth inequality, or consumption inequality within a nation or a social group.
 - A Gini index of **0 represents perfect equality, while an index of 1 implies perfect inequality.**
 - **Inequality in India:**
 - As per the [Household Consumption Expenditure Survey 2022-23](#), the value of the Gini coefficient for consumption expenditure decreased from 0.283 in 2011-12 to 0.266 for rural areas, and from 0.363 to 0.314 for urban areas in 2022-23.

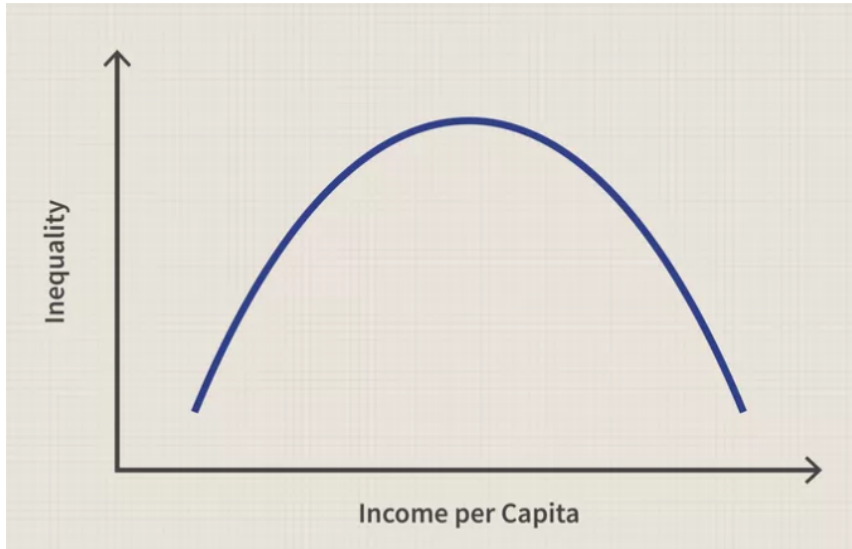
Is a low Gini coefficient Good?

- Generally, **developed countries** tend to have **lower Gini coefficients** (e.g., below 0.30), indicating relatively **lower income or wealth inequality**.
- The Gini Coefficient of **developing countries** like India tends to be higher. As **economies grow and prosper, inequalities widen a bit.**

Kuznets curve

- The **Kuznets curve** is a **graphical representation** of the relationship between **economic development** and **income inequality**.
- It suggests that as an economy develops from a **low-income** agrarian society to a **higher-income** industrial and then **post-industrial** society, income inequality follows a **specific pattern**.
- The Kuznets curve is often depicted as an **inverted U-shaped curve**.
- **Specific pattern of income inequality:**
 - **Low-Income Stage (Agrarian Economy):** At the initial stage of economic development,

- when a society is **primarily agrarian, income inequality tends to be relatively low.**
- **High-Income Stage (Industrialization):** As the economy develops and transitions into an industrial phase, income inequality rises during this phase.
 - **High-Income Stage (Post-Industrial):** In post-industrial societies, there is more emphasis on service industries, education, and technology where income inequality is expected to decline.



Way Forward

- **Institutional Reforms:**
 - **Develop a Communication Strategy:** Create a comprehensive communication plan to regularly update stakeholders and the public about MoSPI's activities, methodologies, and data.
 - **Relevant Data: Conduct periodic reviews of data collection** methods to ensure they are up-to-date and relevant to current needs.
 - **Emerging Issues:** Expand data collection to **cover emerging issues such as digital economy metrics, environmental statistics,** and social welfare indicators.
- **Align with Global Practices:**
 - **Consultative Committees:** Form consultative committees with representatives from academia, industry, and civil society to provide feedback and guidance on statistical methods and data dissemination.
 - **Public Feedback Mechanisms:** Implement mechanisms for **public feedback on MoSPI's publications and activities to ensure continuous improvement.**

Conclusion

Poverty and inequality are deeply **interconnected** issues that affect societies worldwide, hindering social and economic progress. Addressing these challenges requires a **multifaceted approach** that includes **equitable** economic policies, access to quality education, healthcare, and social protection. India needs to address data uncertainties by establishing a more accurate and reliable measure of the poverty line and the number of people living in poverty. A revamping of poverty data for equitable distribution of income will be a step in the right direction.

Q. Drishti Mains Question:

What are the issues involved in estimation of poverty in India? What need to be done for wider acceptance of Indian statistical data?

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims

Q. Increase in absolute and per capita real GNP do not connote a higher level of economic development, if (2018)

- (a) industrial output fails to keep pace with agricultural output.
- (b) agricultural output fails to keep pace with industrial output.
- (c) poverty and unemployment increase.
- (d) imports grow faster than exports.

Ans (c)

Q. In a given year in India, official poverty lines are higher in some States than in others because (2019)

- (a) poverty rates vary from State to State
- (b) price levels vary from State to State
- (c) Gross State Product varies from State to State
- (d) quality of public distribution varies from State to State

Ans (b)

Q. The Multi-dimensional Poverty Index developed by Oxford Poverty and Human Development Initiative with UNDP support covers which of the following?(2012)

1. Deprivation of education, health, assets and services at household level
2. Purchasing power parity at national level
3. Extent of budget deficit and GDP growth rate at national level

Select the correct answer using the codes given below:

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

Ans (a)

Mains

Q. Though there have been several different estimates of poverty in India, all indicate reduction in poverty levels over time. Do you agree? Critically examine with reference to urban and rural poverty indicators (2015)

Ethanol Production

For Prelims: [Curb on Sugar Diversion for Ethanol](#), [Ethanol Blended Petrol \(EBP\)](#), [Biofuels](#), [Feedstocks](#), [Crude Oil Import](#), [Food Security](#), [Global Biofuel Alliance](#)

For Mains: [Ethanol Production](#), Indian Economy, and issues relating to planning, mobilization of resources, growth, development, and employment.

Source: [LM](#)

Why in News?

Recently, India has achieved [higher ethanol production](#) from grains, particularly [maize](#), surpassing that from **sugar-based feedstock**.

What is Ethanol?

▪ About:

- Ethanol, also known as ethyl alcohol, is a [biofuel](#) produced from various sources such as [sugarcane](#), corn, rice, wheat, and biomass.
- **Molasses, a byproduct of sugar manufacture, are** generally the main source of production of ethanol (anhydrous alcohol) and rectified spirit. Molasses can be categorised into following:
 - **A Molasses (First Molasses):** An intermediate **by-product** from initial sugar crystal extraction, containing 80-85% dry matter (DM).
 - **B Molasses (Second Molasses):** Similar DM content as A molasses but with less sugar and no spontaneous crystallization.
 - **C Molasses (Final Molasses, Blackstrap Molasses, Treacle):** The **end by-product of sugar processing**, containing significant amounts of sucrose (about 32 to 42%). It does not crystallize and is used as a commercial feed ingredient in liquid or dried form.
- The production process involves the **fermentation of sugars** by yeasts or via petrochemical processes such as ethylene hydration.
- Ethanol is **99.9% pure alcohol** that can be blended with petrol to **create a cleaner fuel alternative**.

▪ Properties of Ethanol:

- Ethanol is a **clear, colorless liquid** with a characteristic wine-like odor and pungent taste.
- It is **fully soluble in water** and most organic solvents.
- In its pure form, it has a boiling point of 78.37 degrees Celsius and a melting point of -114.14 degrees Celsius.
- Ethanol is a **combustible material** and has a lower combustion temperature than gasoline, making it a cleaner-burning alternative.

▪ Applications of Ethanol:

- **Beverages:** Ethanol is the type of alcohol found in alcoholic beverages. It is consumed socially in various forms, such as **beer, wine, and spirits**.
- **Industrial Solvent:** Due to its ability to dissolve a wide range of substances, ethanol is used as a **solvent in the manufacturing** of pharmaceuticals, perfumes, and other products.
- **Medical and Laboratory Uses:** Ethanol is used as an **antiseptic, disinfectant**, and

preservative in medical and laboratory settings.

- **Chemical Feedstock:** It serves as a **feedstock for the production** of various chemicals.
- **Fuel:** It is used as a biofuel and is often mixed with gasoline to produce ethanol-blended fuels.

ETHANOL AS A FUEL

About Ethanol

- One of the principal biofuels
- Also called ethyl alcohol (C₂H₅OH)

Produced

- Naturally by fermentation of sugar (or corn, rice etc)
- By petrochemical processes (ethylene hydration)

World Biofuel Day is celebrated on 10 August to raise awareness about the importance of non-fossil fuels.

Sugar, Starch, Cellulose → Plant → Gas Station → Car

Ethanol Blending

Blending ethanol with petrol to burn less fossil fuel while running vehicles.

Blending Target

- 20% ethanol blending in petrol (E20) by 2025
- **Currently, ethanol makes up 10% of the petrol used in vehicles.**

Challenges in Success

- **High land requirement** for sugarcane (+ consequent food prices issue)
- **High water requirement** of biofuel crops

Significance

- Reduce oil imports
- Equivalent efficiency at a lower cost than petrol
- Burns completely and cleaner than petrol
- Ethanol produced from farm residue to boost farmers' income

Related Initiatives

- Roadmap for Ethanol Blending in India (Report by NITI Aayog) (2021)
- E100 Pilot Project (Network for production and distribution of ethanol) (2021)
- Pradhan Mantri JI-VAN Yojana (to boost 2G ethanol projects) (2019)
- The National Policy on Biofuels (2018)

What are the Measures to Promote Ethanol Production?

- **Feedstock Diversification:** Ethanol production in India was mainly based on 'C-heavy' molasses, with a sugar content of 40-45%, yielding 220-225 litres of ethanol per tonne.
 - Earlier, India explored direct sugarcane juice for ethanol production, increasing yield and efficiency.
 - However, India is using other methods also for increasing production. The country has diversified its feedstocks by including **rice**, damaged grains, **maize**, jowar, bajra, and **millet**s.
 - It has been seen that Ethanol **yields from grains are higher** compared to molasses, with rice producing 450-480 liters and other grains 380-460 liters per tonne.
 - By 9 June 2024, India produced 3.57 billion litres of ethanol.
 - Out of this, 1.75 billion litres were from **sugar-based feedstock** (sugarcane juice, B-heavy molasses, C-heavy molasses) and 1.81 billion litres were from grain-based feedstock with maize alone contributing 1.10 billion litres.
 - **Grain-based ethanol** now constitutes nearly 51% of the total ethanol

production for the current ethanol-supply year (November 2023-October 2024).

- The [National Agricultural Cooperative Marketing Federation of India Ltd \(NAFED\)](#) and the [National Cooperative Consumers' Federation of India Ltd \(NCCF\)](#) are procuring maize to promote its use in ethanol production.
- Moreover, Leading sugar companies have installed distilleries that can operate on multiple feedstocks such as rice, damaged grains, maize, and millets throughout the year for continuous production.
- **Government's Differential Pricing Policy:** The government has fixed different prices for ethanol derived from C heavy molasses, B heavy molasses, sugarcane juice/sugar/sugar syrup, and damaged food grains or rice.
 - For example, from 2018-19, the Indian government began fixing **higher prices for ethanol produced from B-heavy molasses** and whole sugarcane juice/syrup.
 - This policy has helped increase the supply of ethanol for the Ethanol Blended Petrol (EBP).
 - **E20** fuel is a blend of 20% ethanol and 80% petrol. The E20 was launched by the Prime Minister of India in February 2023 in Bengaluru.
 - This pilot covers at least 15 cities and will be rolled out across the country in a phased manner.
- **Setting up Ambitious Targets:**
 - India has set up a very ambitious target to increase Ethanol production in the country. For Instance, India plans to start using 20% ethanol blended petrol (E20) from 2025.
 - As of 9 June 2024, India achieved a 12.7% ethanol blend with petrol, targeting 15% for the current year.
 - Achieving the **E20 target** by 2025-26 will require 10.16 billion litres of ethanol, according to NITI Aayog estimates.
- **International Commitments:**
 - At the 64th [International Sugar Organization](#) meeting, India reaffirmed the commitment to achieving 20% ethanol blending by 2025-26, predicting that grain-based ethanol production will exceed sugar-based ethanol in the 2023-24 supply year.
 - In September 2023, India, the US, the UAE, and Brazil launched the [Global Biofuel Alliance](#). The countries agreed to provide financial and technical support to national programmes to promote the sustainable production and use of biofuels.
- **Other Policies:**
 - [National Policy on Biofuels 2018](#)
 - [E100 Pilot project](#)
 - [Pradhan Mantri JI-VAN Yojana 2019](#)
 - [Repurpose Used Cooking Oil \(RUCO\)](#)

What are the Benefits and Challenges of Ethanol Production?

- **Benefits:**
 - **Reduced Dependence on Oil Imports:** India **imports a significant portion** of its [crude oil](#) needs. A [NITI Aayog](#) report estimates that a successful ethanol blending program can save the country billions of dollars annually by reducing this reliance.
 - **Boost to Agricultural Income:** Increased ethanol production **creates demand for crops** like sugarcane and grains used in [fermentation](#). This can lead to higher income for farmers according to a report by the International Renewable Energy Agency (IRENA).
 - **Greenhouse Gas Reduction:** Ethanol **absorbs carbon dioxide** during its production, **offsetting combustion emissions** and supporting India's carbon footprint reduction goals.
 - **Job Creation:** The ethanol blending program has the **potential to generate millions of jobs** in rural areas. New distilleries, expanded sugarcane cultivation, and associated logistics will require a significant workforce, boosting the rural economy.

- **Waste Management Solution:** The ethanol production can utilize molasses that often creates **waste disposal challenges**. By converting molasses into ethanol, the program promotes a more sustainable approach to waste management within the sugar sector.
- **Benefitting from the By products of Ethanol Production: Apart from being a fuel additive, ethanol production yields valuable byproducts like Distillers' Dried Grain with Solubles, and Potash from Incineration Boiler Ash that find applications across various industries.**

- **Distillers' Dried Grain with Solubles (DDGS):**

- DDGS is a byproduct of **grain-based ethanol** production.
- It is the residue left after the starch in grains is fermented and ethanol is extracted.
- DDGS is a valuable animal feed with **high protein content** and is used to supplement livestock diets.

- **Potash from Incineration Boiler Ash:**

- The ash remaining after Ethanol Production in the boiler contains up to 28% potash.
- This ash is a rich source of potash and can be utilized as a fertilizer.

- **Challenges:**

- **Food vs. Fuel:** A major challenge is the **competition for feedstocks** between food production and ethanol production. According to the **Environmental Protection Agency (EPA)**, corn-based ethanol production can lead to increased food prices and even contribute to deforestation in countries pressured to cultivate more land for crops.
- **Land and Water Use:** Large-scale ethanol production, particularly from corn, requires **significant amounts of land and water**. This can strain resources and lead to issues like soil erosion and depletion of freshwater supplies.
- **Limited Environmental Benefit:** While touted as a renewable fuel, the lifecycle **greenhouse gas emissions** of corn ethanol can be comparable to gasoline, especially when considering indirect land-use changes.
- **Costly Processing:** The current methods for processing feedstocks, particularly non-food crops like switchgrass, often require **energy-intensive treatments** to convert them into usable sugars for fermentation.
- **Infrastructure Challenges:** Ethanol has a **higher water content than gasoline**, which can lead to corrosion in pipelines and storage tanks.
- **Shortage of Raw Material: Though India has planned to achieve Ethanol Blending by 2025 but it often finds raw material shortage for ethanol production. For Example, due to a lower production of sugarcane, the government in December 2023 banned the use of cane juice and B-heavy molasses for ethanol production.**

Way Forward

- **Promoting Second-Generation (2G) Ethanol Technologies:** The potential of 2G technologies using **agricultural waste like straw and bagasse** for ethanol production can be harnessed to reduce competition for food crops and promote sustainability.
 - **India can leverage Global Fuel Alliance to develop and provide its members with technology that is both technically feasible and economically viable for producing ethanol from agricultural waste.**
- **Developing Alternative Feedstocks and Crop Diversity:** India can **emulate Brazil's ethanol success** by using non-food crops like sorghum and miscanthus to diversify feedstock and enhance food security.
- **Financial Incentives for Biomass Cultivation and Farmer Integration:** The **World Bank** reports emphasize the need for financial incentives, contract farming models, and guaranteed buyback programs to encourage farmers to cultivate dedicated biofuel crops and ensure a steady feedstock supply.
- **Investing in Research and Development for Improved Efficiency:** Focusing on advancements in technologies like **cellulosic ethanol production**, along with increased research

funding and international collaboration, can significantly improve ethanol yields.

- **Strengthening Infrastructure and Streamlining Logistics:** Data from government reports points to the **need for significant investments** in storage facilities and transportation networks for ethanol.
 - Public-private partnerships and **innovative logistics solutions** can ensure efficient distribution and program scalability.

Drishti Mains Question:

Q. Discuss the various measures India has taken to achieve its E20 program. Highlight the challenges associated with this initiative.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims:

Q. According to India's National Policy on Biofuels, which of the following can be used as raw materials for the production of biofuels? (2020)

1. Cassava
2. Damaged wheat grains
3. Groundnut seeds
4. Horse gram
5. Rotten potatoes
6. Sugar beet

Select the correct answer using the code given below:

- (a) 1, 2, 5 and 6 only
(b) 1, 3, 4 and 6 only
(c) 2, 3, 4 and 5 only
(d) 1, 2, 3, 4, 5 and 6

Ans: (a)

Q. Given below are the names of four energy crops. Which one of them can be cultivated for ethanol? (2010)

- (a) Jatropha
(b) Maize
(c) Pongamia
(d) Sunflower

Ans: (b)

Rhisotope Project

Source: TH

Why in News?

Recently, South African scientists injected [radioactive material](#) into live [rhinoceros](#) horns to make them easier to detect at [border posts](#) in a pioneering project aimed at [curbing poaching](#).

What is the Rhisotope Project?

▪ About:

- The Rhisotope Project commenced in 2021 and involves **administering measured quantities** of radioisotopes into the **horns of live rhinos**.
- Under the project "two tiny little radioactive chips" were inserted into the horn of a rhinoceros.
 - The radioisotopes make the horn **"useless" and "poisonous"** for human consumption."
 - The project's final phase includes **aftercare and follow-up blood samples** to ensure the animals are protected, with the radioactive material lasting five years on the horn, proving **more cost-effective** than dehorning every 18 months.
- This project aims to use nuclear science in a **novel way for conservation**.
- This **non-lethal** yet powerful solution aims to radically reduce the demand from end-users and save rhinos from the very real **threat of extinction**.

▪ Impact:

- The procedure, performed on sedated rhinoceroses, is safe for the animals, with a radiation dose low enough not to affect their health or the environment.
- Radioactively treated horns are more likely to be **detected at international borders**, making it more likely that [smuggling syndicates](#) are exposed, prosecuted and convicted under [anti-terrorism laws](#).

▪ Need:

- Rhinoceros horns are **highly valuable on black markets**, with prices comparable to gold and cocaine.
- Previous anti-poaching strategies like **dehorning and poisoning horns** have failed to deter poachers.
- Despite government efforts, **499 rhinoceroses were killed in 2023, an 11% increase from 2022**, primarily in state-run parks.



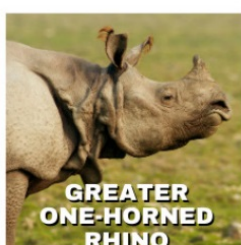
IUCN Estimated Population:

16,803

DECREASING

IUCN Status:

NEAR THREATENED



IUCN Estimated Population:

4,014

INCREASING

IUCN Status:

VULNERABLE



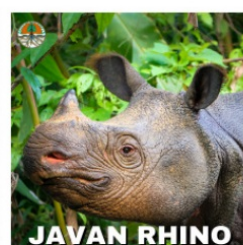
IUCN Estimated Population:

6,487

INCREASING

IUCN Status:

CRITICALLY ENDANGERED



IUCN Estimated Population:

76*

STABLE

IUCN Status:

CRITICALLY ENDANGERED

*Indonesia's Ministry of Environment and Forestry has reported that 12 of these individuals may be missing.



IUCN Estimated Population:

34-47

DECREASING

IUCN Status:

CRITICALLY ENDANGERED

Legal Frameworks for Wildlife Conservation

▪ Global Wildlife Conservation Efforts to which India is a Party:

- [Convention on International Trade in Endangered Species of Wild Fauna and](#)

Flora (CITES)

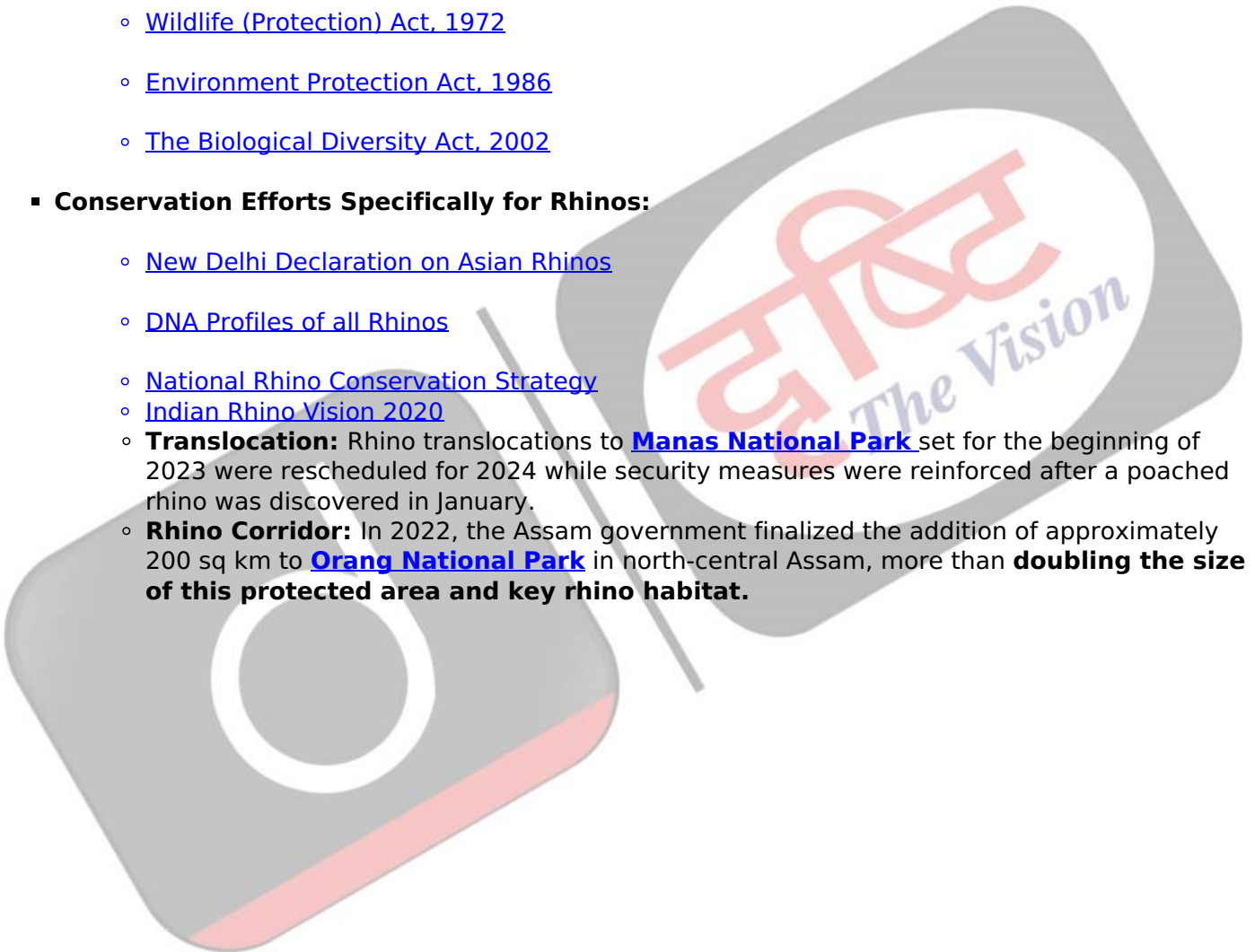
- [Convention on the Conservation of Migratory Species of Wild Animals \(CMS\)](#)
- [Convention on Biological Diversity \(CBD\)](#)
- [The Wildlife Trade Monitoring Network \(TRAFFIC\)](#)
- [United Nations Forum on Forests \(UNFF\)](#)
- [International Union for Conservation of Nature \(IUCN\)](#)
- [Global Tiger Forum \(GTF\)](#)

▪ **Domestic Framework:**

- [Wildlife \(Protection\) Act, 1972](#)
- [Environment Protection Act, 1986](#)
- [The Biological Diversity Act, 2002](#)

▪ **Conservation Efforts Specifically for Rhinos:**

- [New Delhi Declaration on Asian Rhinos](#)
- [DNA Profiles of all Rhinos](#)
- [National Rhino Conservation Strategy](#)
- [Indian Rhino Vision 2020](#)
- **Translocation:** Rhino translocations to [Manas National Park](#) set for the beginning of 2023 were rescheduled for 2024 while security measures were reinforced after a poached rhino was discovered in January.
- **Rhino Corridor:** In 2022, the Assam government finalized the addition of approximately 200 sq km to [Orang National Park](#) in north-central Assam, more than **doubling the size of this protected area and key rhino habitat.**



RHINOCEROS

World Rhino Day - 22nd September (declared by WWF in 2010)

5 Main Species of Rhino			
Species	Found in	IUCN Red List Status	Habitat
African White	Africa	NT	Long/short grass Savannah
African Black	Africa	CE	Semi-Desert Savannah
Greater one-horned	Asia	Vu (CITES - Appendix I, WPA - Schedule I)	Tropical grassland
Javan	Asia	CE	Tropical, subtropical forests
Sumatran	Asia	CE	Same as Javan

Ujung Kulon National Park (a UNESCO WHS) is home to the last remaining wild Javan rhinos on Earth

Greater One-Horned Rhino

Only species found in India (aka Indian Rhino)



CHARACTERISTICS

- Largest of the 5 species
- Identified by a single black horn and a grey-brown hide with skin folds



Threats

- Poaching for horns
- Habitat loss
- Decreasing Genetic diversity



Protected Areas (India)

- **UP**
 - ◆ Dudhwa TR
- **West Bengal**
 - ◆ Jaldapara NP
 - ◆ Gorumara NP
- **Assam**
 - ◆ Pabitora WLS
 - ◆ Orang NP
 - ◆ Kaziranga NP (max no. of Rhinos: ~2400)
 - ◆ Manas NP



Conservation Efforts (India)

- National Rhino Conservation Strategy
- Indian Rhino Vision 2020 (launched in 2005)

New Delhi Declaration on Asian Rhinos 2019

Signed by 5 rhino range nations (India, Bhutan, Nepal, Indonesia and Malaysia)



Drishti IAS

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims:

Q. Consider the following statements in respect of Trade Related Analysis of Fauna and Flora in Commerce (TRAFFIC): (2017)

1. TRAFFIC is a bureau under United Nations Environment Programme (UNEP).
2. The mission of TRAFFIC is to ensure that trade in wild plants and animals is not a threat to the conservation of nature.

Which of the above statements is/are correct?

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

Ans: (b)

Q. Consider the following statements: (2019)

1. Asiatic lion is naturally found in India only.
2. Double-humped camel is naturally found in India only.
3. One-horned rhinoceros is naturally found in India only.

Which of the statements given above is/are correct?

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

Ans: (a)

Enemy Agents Ordinance

[Source: IE](#)

Why in News?

Recently, **Jammu and Kashmir's** Director General of Police (DGP) proposed using the **Enemy Agents Ordinance of 2005**, which includes penalties such as **life imprisonment or the death penalty**, to prosecute militant supporters instead of the [Unlawful Activities Prevention Act \(UAPA\)](#).

What is the Enemy Agent Ordinance?

- **About:**
 - Introduced in **1917** by the Dogra Maharaja of [Jammu and Kashmir \(J&K\)](#).

- The term 'ordinance' reflects the nomenclature for laws used during the **Dogra era**.
- **Post-Partition Evolution:** The ordinance was **re-enacted** in **1948** as a law by the Maharaja in exercise of his law-making powers conferred by **Section 5 of the Constitution Act of Kashmir, 1939**.
- **Legal Basis:** The Enemy Agent Ordinance was subsequently protected by inclusion in the [Jammu and Kashmir Constitution of 1957](#), particularly under Section 157.
- **Constitutional Changes after Abrogation of Article 370:**
 - Key security legislation like the **Enemy Agents Ordinance** and [Public Safety Act](#) were retained.
 - Some laws, such as the Ranbir Penal Code, were superseded by the [Indian Penal Code](#).
- **Key Provisions of Enemy Ordinance:**
 - Definition of Enemy Agent:
 - Enemy agent ordinance targets **agents or friends of the enemy** rather than the enemy itself. It defines the **enemy in the context of the 1947 tribal invasion of Kashmir**.
 - Anyone who conspires with another person to act intended to aid the enemy is regarded as an enemy agent.
 - **Punishment:**
 - Enemy agents shall be punished with death or rigorous imprisonment for life or with rigorous imprisonment for a term which may **extend to 10 years and shall also be liable to fine**.
 - **Judicial Validation and Trial:**
 - In *Rehman Shagoo vs State of Jammu and Kashmir Case*, 1959, the [Supreme Court](#) upheld the enemy agent ordinance.
 - The trial under the Enemy Agents Ordinance is conducted by a special government-appointed judge in consultation with the High Court.
 - Accused under the ordinance cannot **engage a lawyer unless permitted by the court** and there is **no provision for appeal against the verdict**.

What is the Unlawful Activities Prevention Act (UAPA)?

- The [Unlawful Activities Prevention Act \(UAPA\)](#), enacted in **1967** and initially aimed at addressing **secessionist movements and anti-national activities**.
- It has undergone multiple amendments, most recently in **2019**. These amendments include provisions concerning [terrorist financing, cyber-terrorism, individual designation, and asset seizure](#).
- The UAPA grants authority to the [National Investigation Agency \(NIA\)](#) for nationwide investigation and prosecution under its purview and imposes severe penalties such as the **death penalty and life imprisonment** for terrorist acts.
- It allows for the detention of suspects without charge or trial for up to **180 days and denies bail** unless the **court finds the accused not guilty**.
- Terrorism under the UAPA encompasses acts causing or intending to cause harm to **individuals, property damage, or threats to the unity, security, or economic stability of India or any other nation**.

UPSC Civil Services Examination Previous Years' Questions (PYQs)

Prelims

Q. Which one of the following is the largest (areawise) Lok Sabha constituency? (2008)

- (a) Kangra
- (b) Ladakh
- (c) Kachchh
- (d) Bhilwara

Ans: (b)

64th International Sugar Organization Council Meeting

Source: PIB

India is hosting the 64th [International Sugar Organization \(ISO\)](#) Council Meeting in June 2024 in New Delhi.

- A workshop titled "**Sugar and Biofuels-Emerging Vistas**" was organised in which international delegates, Indian sugar mill executives, industry associations, and technical experts participated.
- It discussed the **future of the global sugar sector, biofuels, sustainability, and the role of farmers.**
- India is the **world's largest consumer of sugar** and the **second-largest producer** after **Brazil.**
- **Sugarcane** is the 2nd major feedstock for **ethanol** production (after corn) in the world.

ISO:

- ISO is a [United Nations \(UN\)](#) affiliated body headquartered in **London.**
- It has about **85 member countries covering 90% of global sugar production and is mandated to bring major sugar-producing, consuming and trading nations together.**
- Many member countries of **ISO** and [Global Biofuel Alliance](#) are common and this can be **another forum to expand the alliance and promotion of biofuels.**

Read more: [Sugarcane Production in India](#), [Sugar Industry](#)

World Drug Day 2024

Source: IE

Every year **International Day Against Drug Abuse and Illicit Trafficking**, popularly known as **World Drug Day**, is observed on **26th June.**

- This day was established in **December 1987** by the [United Nations General Assembly](#), to raise awareness about the global fight against drug abuse and illicit drug trafficking.
- The **theme for 2024** was "**The evidence is clear: invest in prevention**".
- The illicit trafficking of narcotic drugs and their abuse is an international problem and as per the [United Nations Office on Drugs and Crime \(UNODC\)](#), **around 269 million people worldwide used drugs in 2018.**
 - Established in **1997**, **UNODC** acts as the Office for Drug Control and Crime Prevention globally.

- In India, according to the **Ministry of Home Affairs, Uttar Pradesh, Maharashtra, and Punjab** are the top three states with the highest number of FIRs registered under the [NDPS Act](#) in three years between 2019 and 2021.

Read more: [International Day Against Drug Abuse and Illicit Trafficking](#)

Bankim Chandra Chattopadhyay

Recently, the **185th birth anniversary** of **Bankim Chandra Chattopadhyay** was celebrated.

- Born on 27th June 1838, [Bankim Chandra Chattopadhyay](#) was an **exemplary novelist, social satirist, journalist** and the face of the **Bengal Renaissance**.
- He composed **Vande Mataram** in Sanskrit, of which the **first two verses** were adopted as **National song**, and it was a source of inspiration to the people in their freedom struggle.
- One of his and Indian literature's finest texts, **Anandamath (1882)**, which is set in the background of the **Sanyasi Rebellion (1770-1820)**, also contains **Vande Mataram**.
 - **The Sanyasis** rose in rebellion after the great famine of **1770** in **Bengal** which caused acute chaos and misery.
- He also founded a monthly literary magazine, **Bangadarshan**, in 1872, through which Bankim is credited with influencing the emergence of a Bengali identity and nationalism.
- His other notable works include **Durgeshnandini (1865) Kapalkundala (1866), Krishnakanter Will (1878), Devichaudhrani (1884), Bishabriksha (The Poison Tree), Chandrasekhar (1877) and Rajmohan's wife**.
 - He also served as a **lawyer and district judge**.

Read more: [Bankim Chandra Chattopadhyay](#)

Treaty of Versailles

Recently, the anniversary of the **Treaty of Versailles** was observed which was signed on **28th June 1919**, at the **Palace of Versailles**, in Paris, France.

- It was one of the treaties that officially ended **five years** of conflict known as the [World War I \(1914-18\)](#).
- The Treaty mentioned the conditions of peace between **Germany and the victorious Allies**, led by the **United States, France, and the United Kingdom**.
- The **war guilt clause** of the treaty forced **Germany and other Central Powers** (like **Austria-Hungary**) to take all the blame for **World War I**.
- This led to the **loss of territories, reduction in military forces, and reparation payments** to **Allied powers** by **Germany**.
- **Disintegration of the German population** was later used by **Hitler** to justify German aggression and expansion.
- It further posed severe risks to the entire European economy which led to the [Great Depression of 1929](#).
- The treaty caused resentment among Germans who saw it as a **dictated peace** and is considered one of the reasons for [World War II](#).
- Also, the treaty led to the formation of the [League of Nations](#).

Read more: [World War I](#)

PDF Reference URL: <https://www.drishtias.com/current-affairs-news-analysis-editorials/news-analysis/28-06-2024/print>

