



**TATHASTU**  
Institute of Civil Services

# DAILY CURRENT AFFAIRS



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53/1, Upper Ground Floor, Bada Bazar Road, Old Rajinder Nagar, New Delhi -110060

[www.tathastuics.com](http://www.tathastuics.com)

9560300770, 9560300554

[enquiry@tathastuics.com](mailto:enquiry@tathastuics.com)



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## SUPREME COURT AFFIRMS CITIZENS' RIGHT TO PROTECTION FROM CLIMATE CHANGE IMPACTS

### Background of the Case:

- ❖ The Great Indian Bustard (GIB) and Lesser Florican are critically endangered bird species native to India, facing severe threats due to habitat loss and human activities.
- ❖ GIB, characterized by its large size and unique appearance, has suffered population declines primarily from habitat fragmentation and collisions with power lines.
- ❖ Similarly, the Lesser Florican, a smaller bustard species known for its intricate courtship displays, is threatened by habitat destruction and intensification of agriculture.
- ❖ Both species play vital roles in their ecosystems, contributing to biodiversity maintenance and ecosystem stability.

### Supreme Court's Landmark Ruling:

- ❖ The Supreme Court affirmed citizens' right to be free from the adverse impacts of climate change, recognizing the inseparable link between environmental protection and human welfare.
- ❖ This landmark ruling emphasized the urgent need to address climate change impacts to safeguard vulnerable species like the GIB and Lesser Florican, highlighting the judiciary's role in protecting environmental rights.

### Implications and Significance:

- ❖ The ruling carries significant implications for biodiversity conservation, stressing the necessity of proactive measures to protect endangered species and their habitats from climate change effects.
- ❖ It underscores the critical importance of integrating climate considerations into conservation strategies to enhance the resilience of ecosystems and species dependent on them.

### Paris Agreement:

- ❖ The Paris Agreement, established in 2015 under the United Nations Framework Convention on Climate Change (UNFCCC), aims to mitigate global warming and its impacts.
- ❖ India, a signatory to the Paris Agreement, has committed to reducing its greenhouse gas emissions intensity and increasing the share of renewable energy sources in its energy mix.
- ❖ The agreement serves as a framework for international cooperation to address climate change and its consequences on biodiversity and ecosystems.

### Legal Precedent and International Commitments:

- ❖ The Supreme Court's recognition of citizens' right to protection from climate change aligns with India's commitments under the Paris Agreement, highlighting the nation's dedication to addressing climate change at both national and international levels.



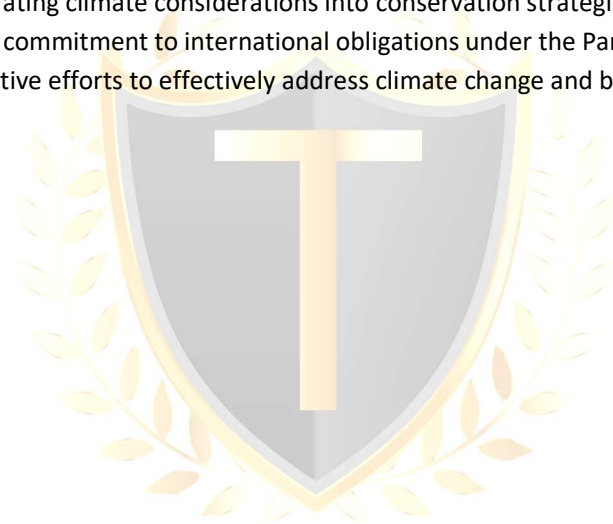
- ❖ This ruling reinforces India's role as a responsible global actor in climate governance, emphasizing the importance of adhering to international commitments to combat climate change and protect vulnerable ecosystems and species.

#### **Future Directions and Policy Imperatives:**

- ❖ The judgment provides a legal basis for future policy initiatives aimed at achieving India's climate goals under the Paris Agreement while safeguarding biodiversity and endangered species like the GIB and Lesser Florican.
- ❖ It emphasizes the need for comprehensive conservation strategies that account for the impacts of climate change on vulnerable species and ecosystems.
- ❖ Collaboration among government agencies, civil society organizations, and local communities is essential to effectively address climate change and biodiversity conservation, as highlighted by the ruling.

#### **Conclusion:**

- ❖ Supreme Court's landmark ruling affirms citizens' right to protection from climate change impacts.
- ❖ Recognizes the urgent need to address climate change to safeguard vulnerable species and ecosystems.
- ❖ Emphasizes integrating climate considerations into conservation strategies.
- ❖ Reinforces India's commitment to international obligations under the Paris Agreement.
- ❖ Calls for collaborative efforts to effectively address climate change and biodiversity conservation.





## ENHANCING ELECTORAL TRANSPARENCY: THE CASE OF VVPAT MACHINES IN INDIA

### Background of the VVPAT Issue:

- ❖ The Voter Verified Paper Audit Trail (VVPAT) system has emerged as a critical aspect of India's electoral framework, addressing concerns about the verifiability and transparency of electronic voting machines (EVMs).
- ❖ In March 2023, the Association for Democratic Reforms (ADR) petitioned the Supreme Court, advocating for enhanced verification of EVMs through cross-verification with VVPATs to safeguard the integrity of elections.
- ❖ The demand for heightened verification procedures reflects a broader discourse on electoral transparency and the need to bolster public confidence in the democratic process.

### Introduction of VVPAT Machines:

- ❖ VVPAT machines serve as adjuncts to EVMs, offering voters visual confirmation of their choices by printing paper slips containing candidate details.
- ❖ Equipped with a glass window, VVPAT machines display voter selections for seven seconds before the slips are deposited into a compartment, allowing voters to verify their choices.
- ❖ The primary objective of VVPAT machines is to provide a tangible and auditable record of votes cast electronically, reinforcing trust and accountability in the electoral process.

### Rationale Behind the Introduction of VVPATs:

- ❖ Discussions on VVPAT implementation commenced in 2010 following consultations between the Election Commission of India (EC) and political stakeholders, aiming to enhance electoral transparency.
- ❖ After rigorous field trials and stakeholder feedback, the EC approved the design of VVPAT machines in 2013, initiating phased deployment across polling stations nationwide by 2017.
- ❖ The adoption of VVPATs aligns with international best practices for electoral integrity, ensuring that India's electoral processes adhere to global standards of transparency and accountability.

### Legal and Operational Challenges:

- ❖ Legal disputes surrounding VVPATs have arisen, with calls for increased random verification of VVPAT slips to fortify electoral transparency and credibility.
- ❖ The Supreme Court has adjudicated several cases related to VVPATs, emphasizing the imperative of balancing verification requirements with operational constraints to prevent delays in announcing election results.
- ❖ Operational hurdles, including manpower shortages and infrastructural limitations, have complicated efforts to expand the verification process, prompting resistance from the Election Commission to extensive verification demands.

### Political Debate and Future Directions:

- ❖ Political parties, particularly the opposition, have championed broader verification of VVPAT slips to enhance confidence in electoral outcomes and mitigate concerns about tampering or manipulation.
- ❖ Ongoing debates center on determining the optimal percentage of VVPAT slips to verify, with some parties advocating for comprehensive verification to uphold the sanctity of elections.



- ❖ The evolving discourse underscores the evolving nature of electoral governance in India, emphasizing the importance of balancing technological advancements with democratic principles to uphold the integrity of the electoral process.

#### Conclusion:

- ❖ The VVPAT issue represents a pivotal facet of India's electoral landscape, reflecting the country's commitment to fostering transparency and accountability in democratic practices.
- ❖ While the introduction of VVPATs signifies a significant stride toward bolstering electoral integrity, navigating legal, operational, and political challenges remains imperative to sustain public trust in the electoral process.
- ❖ As policymakers and electoral authorities navigate these challenges, they must prioritize upholding constitutional imperatives of transparency and fairness to safeguard the foundational principles of Indian democracy.





## UNRAVELING SOLAR SECRETS: INDIA'S ENDEAVOR DURING THE TOTAL SOLAR ECLIPSE

### Background and Importance:

- ❖ Indian solar physicists from the prestigious Aryabhata Research Institute of Observational Sciences (ARIES) are gearing up for a groundbreaking mission to explore the Sun's mysteries during the upcoming total solar eclipse on April 8, 2024.
- ❖ Solar eclipses offer rare celestial spectacles, presenting scientists with unique opportunities to delve into the enigmatic realm of the Sun's inner corona, unlocking crucial insights into its dynamic behavior and complex atmospheric phenomena.

### The Solar Eclipse Event:

- ❖ Scheduled to occur on April 8, 2024, the total solar eclipse will be visible from select regions of North America, including parts of the United States, Canada, and Mexico.
- ❖ The eclipse's timeline spans several hours, with the total eclipse phase anticipated to occur at 10:08 pm IST, providing a window of opportunity for intensive scientific observations.

### Scientific Objectives and Methodology:

- ❖ Under the leadership of Director Dipankar Banerjee, the ARIES team is embarking on a multifaceted scientific endeavor aimed at unraveling the intricacies of the solar atmosphere during the eclipse.
- ❖ Ground-based telescopes equipped with specialized filters and spectrographs will be deployed to capture high-resolution images and analyze spectral lines emitted by the Sun, offering unprecedented insights into temperature variations, elemental compositions, and magnetic field configurations.
- ❖ The experimental setup will focus on specific emission lines, such as Fe XIV at 5303 Å, enabling researchers to investigate plasma dynamics, coronal structures, and solar activity phenomena with exceptional precision.

### Role of Aditya L1 Mission:

- ❖ Complementing ground observations, India's Aditya L1 spacecraft, stationed at the Earth-Sun Lagrange Point 1, will play a pivotal role in the eclipse expedition.
- ❖ Equipped with state-of-the-art coronagraphs and remote sensing instruments, Aditya L1 will provide continuous, uninterrupted views of the Sun's corona, facilitating real-time monitoring of coronal mass ejections (CMEs), solar flares, and other transient events.

### Experimental Setup and Instrumentation:

- ❖ The ARIES team will employ advanced imaging and spectroscopic techniques, leveraging narrowband filters and high-cadence observation protocols to capture dynamic solar phenomena.
- ❖ In addition to capturing images in specific emission lines, the team will conduct on-band and off-band observations to elucidate temperature gradients, density fluctuations, and magnetic field configurations across different layers of the solar atmosphere.

### Significance of Solar Eclipse Research:

- ❖ Total solar eclipses serve as invaluable natural laboratories for studying the Sun's outer atmosphere, offering unparalleled opportunities to investigate phenomena such as coronal heating, solar wind acceleration, and magnetic reconnection.



- ❖ Insights gained from eclipse studies not only advance our understanding of fundamental solar processes but also have practical implications for space weather forecasting, satellite communications, and spacecraft operations.

#### Conclusion:

- ❖ India's participation in the solar eclipse expedition underscores its commitment to pioneering solar physics research and expanding humanity's knowledge of the Sun's dynamic nature.
- ❖ By synergizing ground-based observations with space-based missions like Aditya L1, scientists aim to unravel longstanding solar mysteries, paving the way for enhanced space weather prediction capabilities and a deeper appreciation of our Sun's pivotal role in shaping the dynamics of the solar system and beyond.





## "LEGACY OF MANGAL PANDEY: INSPIRING REBELLION AND NATIONAL IDENTITY"

### Introduction of the Revolt of 1857:

- ❖ The Revolt of 1857, also known as the Indian Rebellion of 1857, marked a significant turning point in India's struggle against British colonial rule.
- ❖ It began with the mutiny of Indian soldiers, known as sepoys, in the British East India Company's army, triggered by various social, economic, and political factors.

### Mangal Pandey's Role and Catalyst:

- ❖ Mangal Pandey, a sepoy in the 34th Bengal Native Infantry, played a pivotal role in sparking the rebellion.
- ❖ His refusal to use the Enfield rifle cartridges, rumored to be greased with animal fat, on religious grounds, led to his mutiny against British authorities on March 29, 1857.

### Root Causes and Grievances:

- ❖ The annexation of Awadh in 1856 and the deposition of its Nawab, violating prior agreements, fueled resentment among Indian soldiers and civilians.
- ❖ Economic exploitation through harsh revenue policies, including the Doctrine of Lapse, further alienated the Indian population.
- ❖ Cultural and religious sensitivities were offended by British attempts to undermine traditional practices, such as the use of animal fat in rifle cartridges.

### Spread and Escalation of the Revolt:

- ❖ The mutiny of Mangal Pandey and subsequent rebellions spread rapidly across northern India, involving sepoys, peasants, and local rulers.
- ❖ Significant centers of rebellion included Meerut, Delhi, Kanpur, Lucknow, Jhansi, and Bareilly, where both military and civilian populations rose against British authority.

### Leadership and Resistance:

- ❖ Leaders like Rani Lakshmi Bai of Jhansi, Nana Saheb, Bahadur Shah II, Tatya Tope, and Kunwar Singh emerged as symbols of resistance, rallying diverse groups against British rule.
- ❖ Despite facing overwhelming odds and lacking coordination, rebels mounted fierce resistance, engaging British forces in prolonged battles.

### British Response and Suppression:

- ❖ The British responded with brute force, deploying additional troops and imposing martial law to quell the rebellion.
- ❖ They employed ruthless tactics, including mass executions, reprisals against civilians, and the destruction of rebel strongholds, to crush the uprising.

### Consequences and Legacy:

- ❖ The Revolt of 1857 led to the end of the East India Company's rule in India, with the British Crown assuming direct control through the Government of India Act 1858.
- ❖ It prompted significant policy changes, including the promise of non-interference in religious matters and the incorporation of Indian elites into the colonial administration.
- ❖ The rebellion also inspired subsequent movements for independence, laying the groundwork for the Indian National Congress and the eventual freedom struggle.





**Commemoration and Remembrance:**

- ❖ The sacrifices of those who participated in the revolt, including Mangal Pandey, are commemorated through memorials, monuments, and cultural narratives across India.
- ❖ The legacy of the revolt serves as a reminder of the resilience and determination of the Indian people in their quest for freedom and self-determination.





## "UNLOCKING THE POTENTIAL OF GREEN HYDROGEN: OPPORTUNITIES AND CHALLENGES AHEAD"

### Introduction to Green Hydrogen and Its Potential:

- ❖ The Ministry of New and Renewable Energy (MNRE) has introduced a significant scheme, allocating Rs 496 crore until 2025-26, to support pilot projects aimed at testing the viability of green hydrogen as a vehicle fuel or establishing necessary infrastructure such as refueling stations.
- ❖ Major Indian commercial vehicle manufacturers like Tata Motors, Volvo Eicher, and Ashok Leyland are intensifying efforts to develop hydrogen-powered trucks and buses, emphasizing research, development, and manufacturing capacity expansion.
- ❖ Indian energy companies are also striving to scale up green hydrogen production to make it cost-effective and competitive with conventional fuels, recognizing its potential to revolutionize the transportation sector.

### Advantages and Significance of Green Hydrogen:

- ❖ With the transportation sector poised to embrace hydrogen as a fuel, India, as a substantial market for vehicles and energy, stands to benefit significantly from widespread adoption of green hydrogen.
- ❖ Green hydrogen offers substantial emissions reductions, aiding global efforts to combat climate change, besides offering India advantages like pollution reduction, fulfillment of climate goals, reduced fossil fuel dependency, and potential as a global hub for green hydrogen production and export.

### Differentiating Green Hydrogen from Grey Hydrogen:

- ❖ Green hydrogen, produced through water electrolysis powered by renewable energy, is deemed virtually emission-free, contrasting with grey hydrogen, which is derived from natural gas and emits high levels of carbon during production.
- ❖ While the end product remains hydrogen, the method of production distinguishes green hydrogen as environmentally friendly, aligning with global sustainability objectives.

### MNRE Scheme Objectives and Implementation:

- ❖ The MNRE scheme focuses on validating the technical feasibility and economic viability of green hydrogen as a transportation fuel, along with ensuring safe operation of hydrogen-powered vehicles and refueling stations.
- ❖ Implementation involves the appointment of a scheme implementation agency by the Ministry of Road Transport & Highways, which will select project proposals and oversee their execution, with viability gap funding (VGF) provided based on project merits and feasibility.

### Types of Hydrogen Vehicles and Technology:

- ❖ Hydrogen vehicles include both internal combustion engine (ICE) vehicles and fuel cell electric vehicles (FCEVs), with FCEVs offering higher energy efficiency by converting hydrogen into electricity through electrochemical processes.
- ❖ FCEVs, especially suitable for heavy-duty trucks due to their lightweight nature compared to battery electric vehicles (BEVs), offer potential for increased payload capacity and reduced emissions.

### Challenges and Future Prospects:

- ❖ Challenges to large-scale green hydrogen adoption in transportation include high production costs, storage and transportation issues, and the need for supporting infrastructure like refueling stations.



- ❖ Despite challenges, advancements in technology and scaling-up of production are expected to drive down costs in the coming years, making green hydrogen more competitive.
- ❖ Dialogue with stakeholders and technological innovations, including specialized cylinders for hydrogen storage, are essential for overcoming barriers and realizing the full potential of green hydrogen as a transport fuel.

