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CURRENT AFFAIRS

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LOW URBAN VOTER TURNOUT

THIS ARTICLE COVERS 'DAILY CURRENT AFFAIRS' AND THE TOPIC DETAILS OF **"LOW URBAN VOTER TURNOUT".** THIS TOPIC IS RELEVANT IN THE "**POLITY AND GOVERNANCE**" SECTION OF THE UPSC CSE EXAM.

Why in the News?

After the recently concluded Fifth phase of Lok Sabha elections, The Election Commission (EC) mentioned in a statement that parliamentary constituencies in cities like **Mumbai, Thane, Nashik, and Lucknow** have maintained the pattern of **urban voter indifference** observed in 2019.

WHAT IS "URBAN APATHY"?

- In the context of elections, **"urban apathy**" refers to the disinterest or lack of engagement among city dwellers in the voting process. Low voter turnout in urban areas signals a widespread sense of indifference or disillusionment with the political system and voting.
- This issue is particularly troubling as it can result in the underrepresentation of urban perspectives in the democratic process and affect the legitimacy and effectiveness of elections in urban districts.

REASONS FOR URBAN APATHY

- **Urban Apathy**: Urban voters exhibit a noticeable lack of enthusiasm and engagement, often termed "urban apathy." Many city residents feel disconnected from the political process and doubt the impact of their vote.

- **Depoliticisation and Informality:** The politically disengaged environment in cities and the widespread informal employment sectors hinder individuals from engaging with urban issues and politics, leading to a disinterest in voting.
- **Anonymity and Disconnection:** The prevalent anonymity and disconnection in large cities foster a sense of alienation, reducing individuals' sense of belonging and motivation to participate in elections.
- **Voter List Issues:** Issues like improper deletions, duplicate entries, and incorrect polling booth registrations due to migration and inter-city movement cause confusion and frustration among urban voters.
- **Apathetic Candidates:** Many urban voters, particularly from the middle class and younger generations, struggle to relate to candidates who are often feudal lords, have criminal backgrounds, or are celebrities with limited political knowledge.
- **Prioritising Work:** Daily wage earners and professionals frequently prioritise work over voting, even on polling holidays, due to the financial impact of taking time off.
- **Lack of Awareness**: Insufficient knowledge about the electoral process and the significance of voting also contributes to the low voter turnout in urban areas.
- **Climate change and Heat waves:** Lok Sabha elections generally take place during peak summertime, and excessive heat reduces voter turnout.

IMPACT OF LOWER VOTER TURNOUT

- **Skewed Representation:** When urban voters, who make up a substantial part of the electorate, do not participate in elections, urban issues and concerns become underrepresented in the political process. This can result in policies and decisions that fail to adequately address urban citizens' needs and aspirations.
- **Altered Electoral Dynamics**: Low turnout among urban voters can shift the balance of power between political parties and candidates. In closely contested elections, the absence of urban voters can tip the scales in favour of other demographic groups or regions with higher voter participation, leading to outcomes that may not reflect the true preferences of the entire electorate.
- **Weakened Accountability**: Urban apathy diminishes the pressure on elected officials to address urban issues and fulfil their promises. When urban voters are disengaged, politicians may feel less obligated to prioritise urban development and responsive governance, weakening the accountability mechanism between citizens and their elected leaders.
- **Perpetuation of Urban Neglect:** The lack of political representation and influence from urban voters can lead to ongoing urban neglect, where cities receive disproportionately lower investments in infrastructure, public services, and social welfare compared to rural areas. This exacerbates urban problems and widens the urban-rural divide.
- **Erosion of Democratic Legitimacy**: High levels of urban apathy can cast doubt on the legitimacy and representativeness of elected governments. When a significant portion of the urban population remains disengaged from the electoral process, it undermines the democratic principle of inclusive participation. It can lead to a crisis of confidence in the political system.

INITIATIVES TAKEN BY THE ELECTION COMMISSION TO IMPROVE VOTER TURNOUT

Targeted Outreach and Communication: The ECI has crafted specialised outreach programs tailored to urban constituencies' distinct needs and demographics. Under the Systematic Voters' Education and Electoral Participation (SVEEP) program, innovative voter awareness campaigns are being implemented, including:

- Collaborations with public and private sector organisations on a pro-bono basis.
- Advocacy and partnerships with celebrities to boost voter engagement.

Facilitation at Polling Stations: The ECI is improving queue management at polling stations in urban areas to make voting more convenient. Measures are being taken to facilitate voting in high-rise buildings and congested areas by providing shelter and parking.

Stakeholder Involvement: The ECI actively engages resident welfare associations (RWAs), local icons, and youth influencers to encourage urban voter participation. Municipal Commissioners and District Election Officers (DEOs) are being urged to develop targeted strategies for urban areas and plan interventions accordingly for different target audiences.

Identifying and addressing Challenges at the local level: The ECI has convened meetings with Municipal Commissioners from major cities to identify urban-specific challenges to increasing voter turnout and to develop strategies for enhancing voter engagement. Booth-wise action plans for greater participation and behaviour change are being prepared in collaboration with Municipal Commissioners and DEOs.

Establishing Polling Stations in Housing Societies: To increase voter turnout, the Election Commission has established over 200 polling stations within housing societies in urban areas of Uttar Pradesh. This initiative focuses on urban areas with historically low voter participation, aiming to make voting more accessible for residents in gated communities and multi-storey housing complexes.

ONLINE VOTING AS AN EFFECTIVE ALTERNATIVE?

- **Convenience and Accessibility**: Online voting enhances convenience and accessibility by allowing individuals to vote from any location with internet access, eliminating barriers such as transportation issues or limited polling station hours.
- **Targeting Young Voters:** Online voting effectively engages younger generations who are more comfortable with digital technologies. Research indicates that it can significantly boost turnout among younger voters.
- **Sense of Belonging:** Personalized messages that emphasise the importance of individual participation can foster a sense of belonging and community, encouraging voter turnout.

Despite these benefits, the overall impact of online voting on turnout is mixed. While it improves convenience and accessibility, it is unlikely to engage those already disinterested in politics significantly. Factors such as the importance of the election, the competitiveness of candidates, and the political climate have a more substantial influence on voter turnout.

MAINS BASED QUESTION

Q1. Discuss the impact of low urban voter turnout on electoral dynamics and the potential consequences for political representation and accountability.

Vikas Agarwal

MOLECULE WHICH CAN SOLVE THE VENUS MYSTERY

THIS ARTICLE COVERS 'DAILY CURRENT AFFAIRS' AND THE TOPIC DETAILS OF "FORMYL CATION HCO+ AND VENUS ATMOSPHERE ". THIS TOPIC IS RELEVANT IN THE "SCIENCE AND TECHNOLOGY" SECTION OF THE UPSC CSE EXAM.

SOURCE: THE HINDU

CONTEXT

Human being's curiosity to know the unknown is the sole reason for which we launch so many space missions to explore outer space. The urge to find habitable conditions outside earth is a fascinating topic of research in astrophysics which drives space research organizations to spend so much time and money.

Recently, a study published in a nature journal in which scientists have found deeper insights about the water loss in the Venus atmosphere. Also there is a molecule which could have led to faster drying of the oceans on the venus.

This study is significant to analyze and understand the atmosphere of other planets of solar systems and exoplanets. This can also provide insights about the evolution of the planets and their atmosphere which can be helpful for the future missions for space exploration.

REASON FOR LOSS OF WATER ON VENUS

The **thermal process**, known as **hydrodynamic escape,** describes how the Sun's heat caused Venus's outer atmosphere to expand, allowing hydrogen gas to escape into space. This phenomenon likely occurred until around 2.5 billion years ago, when the outer atmosphere cooled sufficiently.

On the other hand, **non-thermal processes** may have also played a role in water loss from Venus. These processes involve the interaction of water molecules with ultraviolet radiation from the Sun in Venus's ionosphere. This radiation can split water molecules into their constituent hydrogen and oxygen atoms, with the hydrogen escaping into space due to its low mass.

The exact rates at which these processes occurred, and their relative contributions to Venus's water loss, remain areas of active research and debate among scientists. Understanding the interplay between thermal and non-thermal processes is crucial for

unraveling the history of Venus's water loss and its implications for the planet's evolution over time.

FINDINGS OF THE STUDY

Dr. Cangi's research on the **formyl cation (HCO+)** sheds light on the mechanisms driving hydrogen escape in the atmospheres of both Mars and Venus.

On Mars, scientists have long recognized the role of HCO+ molecules in facilitating hydrogen escape from the upper atmosphere. This positively charged molecule participates in a reaction known as the **dissociative recombination (DR) reaction,** where HCO+ absorbs an electron and breaks down into carbon monoxide (CO) and a hydrogen atom (H). The energetic hydrogen atoms subsequently escape into space, contributing to the overall loss of hydrogen from the Martian atmosphere.

Given the similarities between the upper atmospheres of Mars and Venus, Dr. Cangi and her colleagues extended their research to model the same underlying reactions in Venus' ionosphere. They found that the HCO+ dissociative recombination reaction occurs at an altitude of approximately 125 kilometers above Venus, above the clouds composed of sulfuric acid.

The formation of HCO+ on Venus involves a carbon monoxide molecule (CO) losing an electron while absorbing a hydrogen atom, leading to the creation of the HCO+ molecule. Subsequently, the DR reaction occurs, where HCO+ absorbs an electron and dissociates into CO and a hydrogen atom, which then escape into space.

The researchers found **HCO+ DR could have doubled the rate at which Venus lost water** by hydrogen escape. This means that the oceans on the Veenus could have lasted longer.

SIGNIFICANCE OF THIS STUDY

The study on the role of the formyl cation (HCO+) in driving hydrogen escape in the atmospheres of Mars and Venus carries several significant implications:

1. **Understanding Atmospheric Evolution:** By elucidating the mechanisms responsible for hydrogen escape in the atmospheres of Mars and Venus, this study contributes to our understanding of the long-term evolution of terrestrial planets. Hydrogen escape plays a crucial role in shaping the composition and dynamics of planetary atmospheres and water availability over geological timescales.
2. **Comparative Planetary Science:** It provides valuable insights into the factors that govern atmospheric escape across different planetary environments. Identifying

similarities and differences between these two planets enhances our understanding of the diverse outcomes of atmospheric evolution within our solar system.

3. **Implications for Exoplanetary Research:** Serve as analogs for understanding similar processes occurring on exoplanets. The findings from this research can inform future studies of exoplanetary atmospheres and the potential habitability of distant worlds.
4. **Planetary Habitability:** Hydrogen escape is one of the factors influencing the long-term habitability of terrestrial planets. Understanding the rates and mechanisms of hydrogen escape on Mars and Venus provides insights into the conditions that may support or inhibit the development and maintenance of life on Earth-like planets.
5. **Applied Space Science:** Insights gained from this study can inform the design and interpretation of observations from spacecraft missions exploring Mars, Venus, and other planetary bodies within our solar system. Understanding atmospheric escape processes is crucial for planning and executing future missions to study planetary atmospheres.

SIGNIFICANCE OF RESEARCH ON VENUS

Venus is indeed an intriguing subject of research for several reasons:

1. **Understanding Planetary Evolution:** Venus is often referred to as Earth's sister planet due to its similar size, mass, and composition. However, it underwent a vastly different evolutionary path. Studying Venus helps scientists understand how terrestrial planets evolve under different conditions, such as atmospheric composition, greenhouse effects, and geological processes.
2. **Greenhouse Effect and Climate Change:** Venus has a thick atmosphere composed mainly of carbon dioxide, which has led to a runaway greenhouse effect, resulting in surface temperatures exceeding 450°C (842°F). Studying Venus' extreme greenhouse effect helps scientists better understand the mechanisms behind climate change on Earth and other planets.
3. **Atmospheric Dynamics:** Venus has a dense atmosphere with strong winds and complex cloud formations. Investigating the atmospheric dynamics of Venus provides insights into atmospheric circulation patterns, weather systems, and the behavior of greenhouse gasses in extreme conditions.
4. **Volcanism and Tectonics:** Venus is geologically active, with evidence of past and possibly present volcanic activity and tectonic movements. By studying Venus' geology, scientists can gain insights into the processes shaping terrestrial planets and the factors influencing volcanic eruptions, crustal deformation, and planetary resurfacing.

5. **Planetary Habitability:** Despite its inhospitable surface conditions, Venus may have had a more temperate climate in its past. Understanding the factors that led to Venus' transformation from a potentially habitable world to its current state provides valuable insights into the factors influencing planetary habitability and the search for life beyond Earth.
6. **Comparative Planetology:** Comparative studies of Venus, Earth, and Mars help scientists understand the diversity of terrestrial planets within our solar system and the range of processes shaping their evolution. By comparing Venus to Earth and Mars, researchers can identify commonalities and differences that shed light on the fundamental principles governing planetary dynamics.
7. **Space Exploration:** Venus presents unique challenges for space exploration due to its hostile surface conditions, including high temperatures, atmospheric pressure, and corrosive atmosphere. Developing technologies and mission strategies to explore Venus contributes to advancements in planetary exploration capabilities that can be applied to missions to other planets and moons in our solar system and beyond.

Understanding the dynamics of these reactions and the role of HCO^+ in driving hydrogen escape in Venus' atmosphere provides valuable insights into the processes shaping the evolution of Venus and its atmospheric composition over time. This research contributes to our broader understanding of planetary atmospheres and the factors influencing their dynamics and evolution.

Ankit Kumar