







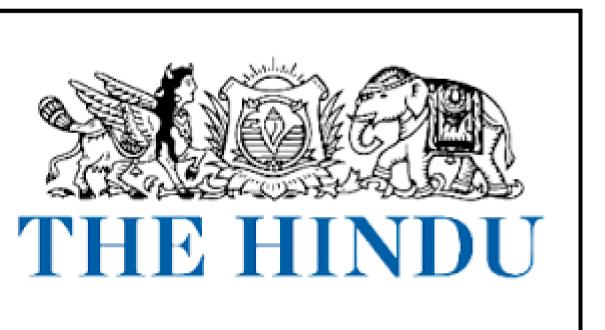
How fast is the universe expanding?

- Cryogenics
- The Ashaninka
- SC ON ECOTOURISM
- doxxing
- Mains

By saurabh pandey sir









Target Mains 2024/25- Essay

Q" Ecotourism is not solution for biodiversity conservation" Examine(150 words)

प्रश्न'' इकोटूरिज्म जैव विविधता संरक्षण का समाधान नहीं है'' परीक्षण करें (150 शब्द)

send your answer - Saurabh pandey upsc telegram channel







Answer review

PRACHT. Human helbitalion in Hinalayan Region ils influenced both human centric and new human centuic Jactords. Diacudd. dus - The sugion of The Himalayads is twown ads The Third Pole cars it consists of about 15,000 glacieros. In termos of wention and alreategic impositance, the Himologues Region gaces the damaying effects of clinute change and global wagining, which its affecting The local community and indigenveres tribes in a regative Human Centric and Non theman Centric factors 1 [Chinese Eucroachments] + The folight of the Champo nomeralic tuibers where are losing reat empances of their land due to chinede incursion in north and industrial projects in south. (2) Environment al SIK Challengeds -(i) generous meeting + Due to suice of temperat glacious are nelting, Disturbing the flow of sineres impact both the local communities. Fit :- Areas that are vulnerable and these living to cliange change substant downs tream.

(iii) Change in weather patternes - suduction in monderou days, no swin gos long feword, no timely surves galls cause nutural discretered like aloud burets and flach flovels. for instance - 90 2013, a cloud burst in Himulayer led the flow flow at kedernath, nuccoine damage of site and peupeuty. (iii) Black Caubern Accumulation - Increase in Black coubou in Histoleyeds, Due to iscumplete combrection of fossil fuel, sio fuel and bio needes burning, contaibute to genericus melting. 3 Infunctione and Developments - Construction in Himpleyon Region vear bouder and atsentegic areas included construction, bridgess, tunels covered harm the prengile to of midening of reads ecosystem of Himeleyan Region and, local communities cause water aboutage, job loss, land was and so on. @ Deforestation and Tourism :-+ Deforectation impacts the topogouphy of the region by counting duil to become lote and envolved easily, redulting land sticleds. -> que minelless construction to sust tourism. overenplaitation of recourses also affect the efe of local communities who depend on farming and aniand maning for their band hered.



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Steps Required O The National Mission for Susteining the Hinwleyour Ewsystem (NMSHE) :- focus ou gows types of nutional expecities - (i) -Hamen and knowledge Capacities (iii) Inatitutional cupacities (iii) Brichence baded falig duitchig and governence. (iv) Balancig 6/10 rature and membernel. (2) Local Community periticipation --> Need for community involvement in Decision nuking PPPPPPPPPPPPPPPPPP for austainable development practice in Himblyon Region. 3 global Pouticipation - Hinneleyen Region is a hypersenditive region, and the situation demands global pouricipation, dialogue and negotiation to nitigente climme change-melented disenterds. Day forroure - The Himmleyers its a sugion of street egic importance and cultured significance. But in The name of clevelopment, are can not offored to upset the prayile ecosystem and its biveliversity. There is a need for generter attention and action the ensure a susperineble and prosperous future of Himeleyeus Region

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How fast is the universe expanding? New data keeps the mystery open

Two equally valid ways to measure how fast the universe is expanding have yielded two different estimates, and no amount of double-checking has eliminated this tension. In a paper published recently, researchers have disproved a suspected flaw in one of the two ways, meaning the tension is real and not a flaw in the data

Qudsia Gani

big open problem in cosmology is the Hubble tension. There are two equally valid ways to measure how fast the universe is expanding, but they have yielded two very different estimates. No amount of rechecking and refining calculations has made this tension go away.

In a study published recently in Monthly Notices of The Royal Astronomical Society (MNRAS), scientists from Germany and the U.K. led with a radical explanation for the tension: our model used to understand the universe is wrong.

This model is called λ cold dark matter, or "lambda CDM". It's currently the simplest model that explains various features of the universe, including radiation leftover from the Big Bang, the arrangement of galaxies in the universe, and the fact that the universe is expanding.

But cosmologists are also looking for a new, better model that can explain some things the λ CDM model can't, such as the Hubble tension. Repeated measurements and computations have ascertained the Hubble tension exists and that it's not some aberration in the data.

In a paper published after the MNRAS one in *The Astrophysical Journal Letters*, a different group disproved a flaw some scientists had suspected in one of the two ways to measure the universe's expansion - meaning the tension is real.

For now, the model does seem to be the problem.

Open, closed or flat?

Our universe started to expand after the Big Bang event around 14 billion years ago. It may continue to expand unabated forever. If it does, it will be an *open* universe. But if at some point the expansion stops, because of the gravitational forces exerted by the galaxies, say, the universe could collapse and become closed. A closed universe is said to have a

A closed universe is said to have a positive curvature of space – like a sphere. Such a universe will be finite even if it has no bounds. That is, in this universe, we can travel forever without falling off an 'edge'.

In an open universe, space will warp in the opposite direction. That is, it will have a negative curvature, resembling a saddle. There is another possibility between these assumptions: that the universe will continue to expand forever, but the rate of expansion, which is currently increasing, will eventually start decreasing thanks to the gravitational forces. The rate will take an infinite



The Cepheid variable star RS Puppis as imaged by the Hubble space telescope in 2010. NASA

amount of time to drop to zero, so the universe will keep expanding, just slower and slower.

This special approximation leads to a flat universe. And according to many cosmologists, this is the state of our universe at this time.

That the universe is flat doesn't mean it's like a 2D sheet of paper. Instead, flatness means if you start to draw two parallel lines in space and you keep drawing them, they will remain parallel no matter how far you go. (In a spherical or a saddle-like space, the lines will intersect somewhere.)

The Big Bang's afterglow

Cosmologists deduced this based on studying the cosmic microwave background (CMB). This is a sea of photons, the particles of light, present throughout the universe. They are leftover from the Big Bang, its afterglow. Scientists have measured temperature changes in the CMB and studied its large-scale properties using complicated trigonometry. And they found that it has nearly zero curvature.

The Wilkinson Microwave Anisotropy Probe (WMAP), BOOMERanG, and 'Planck' are three telescopes in space. They study the CMB and their data is clear: the observable universe is flat with a 0.4% margin of error. In 2021, researchers with the Atacama Cosmology Telescope reported based on astronomical data that they could find no Our universe started to expand after the Big Bang event around 14 billion years ago. It may continue to expand unabated forever

evidence that the space of our universe is non-flat.

Based on these studies, cosmologists have estimated space to be expanding at around 68 kilometres per second per megaparsec ((km/s)/Mpc). That is, an object one megaparsec (3.26 million lightyears) away is moving away at 68 km/s.

The cosmic distance ladder The CMB is one way to study the universe's expansion.

The other is called the cosmic distance ladder – a set of techniques used to measure the distance to objects that are close, further away, and very far away from the earth. One object in particular is the Cepheid variable star.

The Cepheid variables have a unique feature: their brightness varies in a predictable way over time. Based on how bright a Cepheid variable is, scientists can estimate how far away it is. Using this, cosmologists have estimated

based on various Cepheid variables the expansion of the universe is (and other such objects) 73 (km/s)/Mpc.

THE GIST

A closed universe is said to have a positive curvature of space – like a sphere. Such a universe will be finite even if it has no bounds. That is, in this universe, we can travel forever without falling off an 'edge'

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Another possibility is that the universe will continue to expand forever, but the rate will decrease. The rate will take an infinite amount of time to drop to zero, so the universe will keep expanding, just slower. This leads to a flat universe. According to many, this is the state of our universe at this time

Based on studying the cosmic microwave background, cosmologists have estimated space to be expanding at around 68 kilometres per second per megaparsec. Using the cosmic distance ladder method they arrived at a figure of 73 (km/s)/Mpc

Hubble versus JWST

The best way to follow these stars is using the near-infrared radiation they emit. Unlike visible light, such radiation can pass through intervening dust clouds and reach us. Cepheid variable stars may also be crowded in some places.

Fortunately, NASA's James Webb Space

Telescope (JWST) can track both

sky.In the study published in The

by NASA's previously best space

instruments good enough to distinguis

etween radiation from two Cepheid

variable stars close to each other in the

Astrophysical Journal Letters, researchers

checked a concern that the data collected

telescope, the Hubble, had some flaws in

its readings that gave rise to the Hubble

thousand sharp observations of Cepheid variables recorded by JWST. "The

tension.They analysed more than a

superior resolution of JWST negates

telescope," they wrote.

crowding noise, the largest source of

difference" in estimates of the stars'

crowding" and "choice of filters".

its origins remain a mystery.

distance based on Hubble telescope and

JWST data, even after correcting for "local

In sum, the Hubble tension is real and

(Oudsia Gani is an assistant professor in

the Department of Physics, Government

egree College Pattan, Baramulla.)

variance in the near-infrared [brightness]

relations measured with the Hubble space

In the end, they found "no significant

near-infrared radiation and has

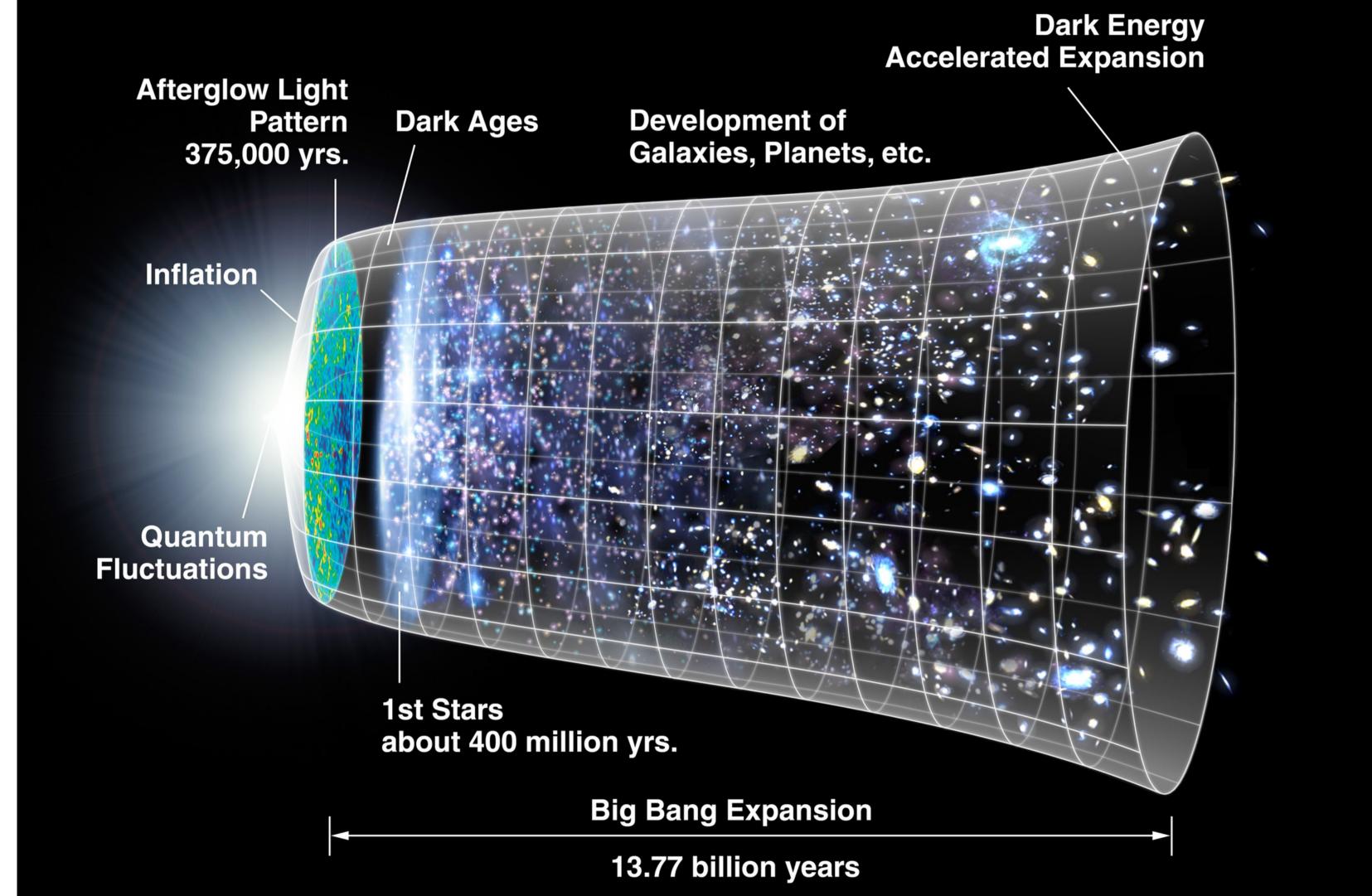


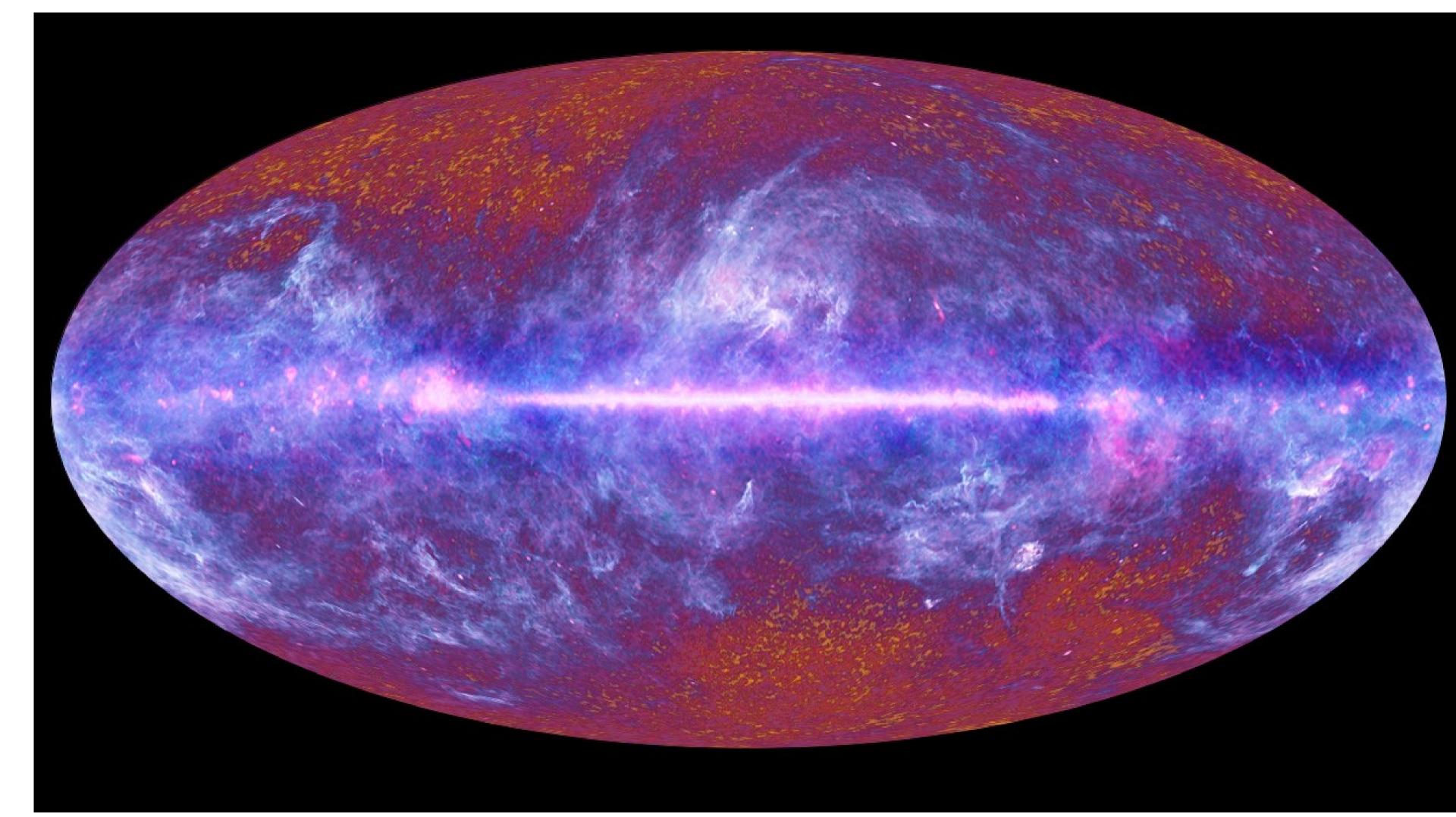


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WHAT IS IT?

Cryogenics: keep it chill

Vasudevan Mukunth

Cryogenics is the science of materials at temperatures below negative 153 degrees C. The technologies by which materials are cooled up to this temperature are collected under the term refrigeration. Instead, cryogenics deals with thermal conditions in which even the substances that we encounter in our daily lives as gases — such as hydrogen, nitrogen and, of course, the air in our atmosphere — are liquid.

This field typically uses helium and nitrogen as the cryogenic fluid, the thing that cools a substance. Nitrogen has a boiling point of negative 196 degrees C, and helium, negative 269 degrees C. So below these temperatures, they are liquid. Such fluids need to be stored in vacuum flasks or they could leak and damage their surroundings.

Many cryogenic materials have desirable properties. For example, hydrogen is one of the best rocket fuels but it can only be used as a liquid, so it needs to be cryogenically cooled. (Cryogenic hydrogen and cryogenic oxygen power the third stage of ISRO's LVM-3 rocket.) In the process of cryogenic hardening, a material steel in particular — can be made harder and stronger. This is because as it is cooled to around



Models of the Cryogenic engine, and other components used by ISRO in its GSLV mission at the ISRO Museum at Satish Dhawan Space Centre (SDSC) at Sriharikota. VELANKANNI RAJ

negative 185 degrees C, more of the steel's crystal structure acquires the martensite configuration. Magnetic resonance imaging (MRI) devices used in medical diagnostics use cryogenic fluids to cool their magnets.

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Cryogenics

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- stage of ISRO's LVM-3 rocket.)
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BIG SHOT



Justice at last: An Indigenous man celebrates the sentences of five men who were being retried for the murders of four Indigenous Amazon land defenders, of the Ashaninka people, who had crossed swords with illegal loggers, outside the high court of justice in the district of Callería, Peru, on THursday. A court imposed near three-decade sentences on the five men for the 2014 murders. AFP





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The Ashaninka

- The Ashaninka are one of South America's largest tribes.
- Their homeland covers a vast region, from the Upper Juruá river in Brazil to the watersheds of the Peruvian Andes.
- For over a century,colonists, rubber tappers, loggers, oil companies and Maoist guerillas have invaded their lands

The Hindu analysis by saurabh pandey sir .



rica's largest tribes. from the Upper Juruá e Peruvian Andes. appers, loggers, oil invaded their lands



Decoding the judgment on Jim Corbett

the precautionary principle is

environmental problems. The

for policymakers tackling

becoming an established principle

n its ruling in March, the Supreme Court brought to light the unholy nexus of politicians, forest officials, and local contractors responsible for the felling of 6,000 trees in the lim Corbett National Park in Uttarakhand. This state of affairs underlines one fact clearly: despite conservation goals receiving priority through policies and laws including the Wildlife Protection Act, 1972, Project Tiger, and the Forest (Conservation) Act, 1980, the state's main interest remains increasing revenue. The illegal destruction of trees in Jim Corbett can be seen in contravention of the 1983 Supreme Court judgment in Rural Litigation and Entitlement Kendra vs. State of Uttar Pradesh, which said that "economic growth cannot be achieved at the cost of environmental destruction and people's right to healthy environment."

The judgment

National and State forest authorities have leaned on ecotourism to simultaneously attain conservation goals, enhance revenue, and improve the livelihoods of local people. In its recent judgment, instead of treating eco-tourism as a panacea for conservation and revenue generation, the Supreme Court said that the approach must be of eco-centrism and not anthropocentrism. The court directed the banning of tiger safaris in core areas and the constitution of a committee to explore the feasibility of permitting tiger safaris in peripheral areas in not just Jim Corbett, but across India. It also disagreed with the 2019 guidelines of the National Tiger Conservation Authority permitting a tiger safari on the lines of a zoo in a national park. The court stressed that tigers should be sourced from the same landscape as where the safari is being conducted and not outside the tiger reserve. According to British

environmentalist Norman Myers,



Anwar Sadat

teaches international law, with a specialisation in environmental law, at the Indian Society of International Law. Email: sadatshazia@ gmail.com

The Court's

decision to

assess the

damage done to

the green cover

of Jim Corbett

so as to identify

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be a mirage in

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principle says "where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent such environmental degradation." On banning safaris in core areas, the Court invoked this principle to ensure that there is least damage to the environment. Myers had said, "In salient respects, the principle applies to biodiversity more than any other environmental problem. This is because the mass extinction gathering force will, if it proceeds unchecked, not only eliminate half or more species but will leave the biosphere impoverished for at least 5 million years." The International Union for Conservation of Nature's Red List of Threatened Species monitors 1.212 animal species in India. In 2021, it found that 12% of them are endangered. According to a report of the Centre for Science and Environment in 2021, India has lost 90% of the area under its four biodiversity hotspots. The precautionary principle therefore applies not only in the case of tigers, but also other species, especially endangered ones.

What the court missed

However, the Court's decision to assess the damage done to the green cover of Jim Corbett so as to identify the cost of restoration and recover the same from the errant individuals and officers appears to be a mirage in the absence of a well-defined methodology. Recovering the cost of restoration does not amount to necessarily recovering the loss of the ability of the environment to provide goods and services. As per the European Liability Directive 2004, conservation status of natural habitat means the "sum of influences acting on a natural habitat and its typical species that may affect its long-term natural

distribution, structure, and functions as well as the long-term survival of its typical species." In India, the framework of valuation which predated the T.N. Godavarman case (1996) was aimed at replacing lost natural forest with compensatory plantations. The two choices which are supported legally and institutionally and serve as the background for the valuation of forest land in India are now compensatory afforestation levy and net present value (NPV). The levy is essentially a form of replacement cost, designed to replace the forest land which was lost as a result of diversion of forest towards non-forestry use. Since the levy is found to be insufficient in terms of making good the loss, the Court introduced the NPV in 2002 as an additional payment obligation. But both these methodologies do not rightly account for the correlation between the removal of trees and the harm caused to other environmental goods and services. In the context of the growing degradation of biodiversity hotspots and the support to revenue-generating eco-tourism, a

valuation method which is based on ecosystem services (food, water, and services regulating the climate and floods, etc.) is a must The system refers to the benefits people obtain from natural ecosystems in contrast with man-made structures. The Court could have set a precedent by saying that ecosystem services are more important and generate more revenue than eco-tourism or raised the need of putting in place a precise law and policy relating to ecosystem services. The reasoning provided by the International Court of Justice (ICJ) in Costa Rica v. Nicaragua (2018) could have been used to understand the methodologies in evaluating damage to the environment. The ICI asserted that damage to the environment, and the consequent loss of the ability of the environment to provide goods and services, is compensable.





SC ON ECOTOURISM

- National and State forest authorities have leaned on ecotourism to simultaneously attain conservation goals, enhance revenue, and improve the livelihoods of local people.
- In its recent judgment, instead of treating eco-tourism as a panacea for conservation and revenue generation, the Supreme Court said that the approach must be of ecocentrism and not anthropocentrism.
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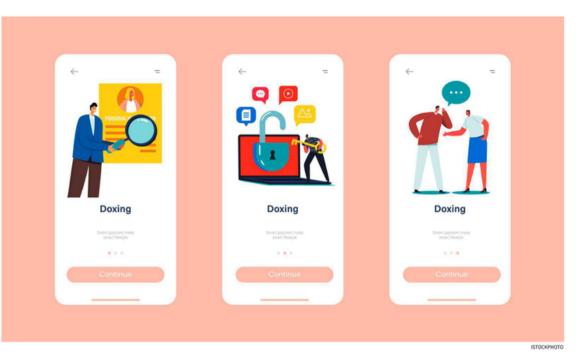
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- The court stressed that tigers should be sourced from the same landscape as where the safari is being conducted and not outside the tiger reserve.







What is doxxing and what measures can you take if it happens to you?

The act of digitally publicising a person's private details is called doxxing. It allows abusers and criminals who are thousands of miles away to target victims by putting their private details online for others to exploit

Sahana Venugopal

woman in mid-February reached out to the Mumbai Police through X (formerly Twitter) to report a man who had shared a video of her dancing at an event and compared her performance to sex work. The woman clarified that the video was re-posted without her consent and requested the man multiple times to take down the video, but he refused to do so. Many others began to share the video as well, and joined in to harass the woman, who locked her X account. Though the video was later disabled by X on copyright grounds, the man - a verified X user with a blue tick continued to defend his actions.

The act of digitally publicising a person's private details is called doxxing, or doxing. Doxxers generally publicise highly personal data such as other people's home addresses, phone numbers, private enail IDs, medical conditions, government documents, social security numbers, live locations, insurance information, private employment details, etc. Such information is usually obtained through illegal methods such as hacking or theft. However, publicising private or semi-public content that an individual did not intend to share for public consumption can also result in doxxing and harassment.

The intent behind doxxing

For example, an ordinary person smoking or sipping whiskey at a house party might consent to their video being shared on

their friend's Instagram account, but they may not want that same clip to be publicly re-posted on X or YouTube, with their employers tagged. While the user who circulates an already public image or video may be legally in the clear, their intentions can be malicious and may "We also factor in the intent of the

person sharing the information. For example, if we believe that someone is sharing information with an abusive intent, or to harass or encourage others to harass another person, we will take action," stated X in its 'private information and media policy' page. Doxxing does not end with bringing

the perpetrator to justice. These users often share details that easily allow others worldwide to launch their own attacks against the victim, making it harder for the police to take action against all those who are responsible. Furthermore, doxxing is a direct attack on a person's physical, digital, and emotional security. A person who has been doxxed may have to flee their physical location, remain calm for the sake of young family members, clarify the situation with their employers, secure their leaked finances, file a report with the police, upgrade their internet security, be on the lookout for stalkers, and deal with a barrage of violent threats – all at once. Doxxing can also expose the people who live or work near the victim, increasing the affected erson's chances of being evicted or fired.

What to do when doxxed Mishi Choudhary, a technology lawyer and the founder of SFLC.in, advised incident log containing evidence of what has taken place, including the relevant platforms and all those who were involved in the harassment. This can later be shown to law enforcement authorities. "Report the accounts to all platforms on which you have been doxxed as it's against the policies of most social media platforms and they will be quick to take action," Choudhary advised, adding that users should also change all their passwords and turn on two-factor cation to ensure their security People who have been doxxed in India can report what happened through the National Cyber Crime Reporting Portal, Choudhary said, and stressed that one has a legal right to file an FIR. This is where the incident log becomes useful Platforms such as Meta are aware of the

need to protect users who have been doxxed, as the company's oversight board in February 2022 concluded that Facebook and Instagram should have stricter rules concerning incidents when data such as home addresses are leaked online. "Once this information has been shared, the harms that can result, such as doxing, are difficult to remedy. Harms resulting from doxing disproportionately affect groups such as women, children and LGBTQIA+ people, and can include emotional distress, loss of employment and even physical harm or death," noted Meta's oversight board in its findings. Google also has tools in place to assist people who have been doxxed. The company allows internet users to submit

quickly.

removal requests that it then reviews for further action. Remember that YouTube

people who have been doxxed to keep an 1 is owned by Google, so one can directly report any content posted there as well. X has an in-app reporting mechanism for private information, and a grievance officer whose job is to take action based on such reports. Reddit also provides a complaint forum.

Recently, messaging platform Discord updated its community policies by separating doxing and harassment guidelines. The change is set to go into effect in April. "Previously, doxxing was combined with our harassment guideline. However, we consider these distinct harm types, so we separated them to better reflect how we organise our policies," said the new guidelines on the platform

However, since social media companies operating within the country are bound by India's IT Rules, submitting a cybercrime complaint is one way to make sure the platform is forced to take action

That being said, victims of doxxing do not have to leave social media forever. "I always tell people to be generally careful in what they are sharing so they can avoid such a situation but if you have been doxxed, once you feel mentally ready, you can go back," Choudhary said. At the same time, users also need to make sure that their Personally Identifiable Information (PII) has been removed and that their accounts are secure, she noted. "Have a self care plan. Recruit friends. family and a support structure," Choudhary suggested. "Without support, it gets harder to do it alone. Women are targeted for several reasons and we must not feel weakened or ashamed."





doxxing

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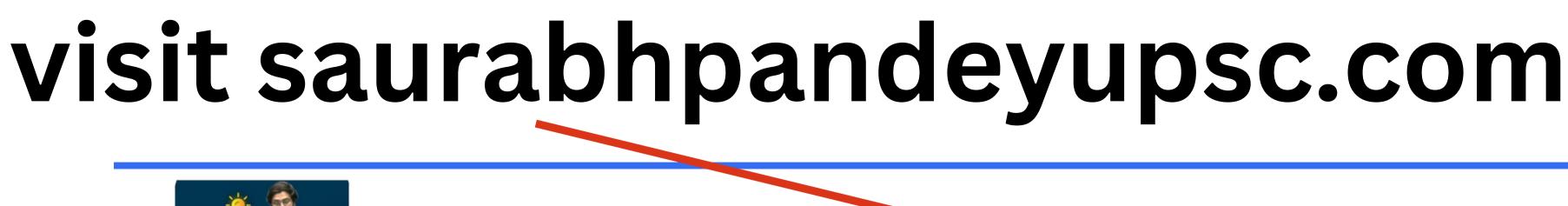
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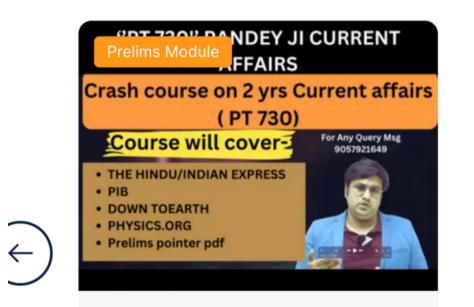
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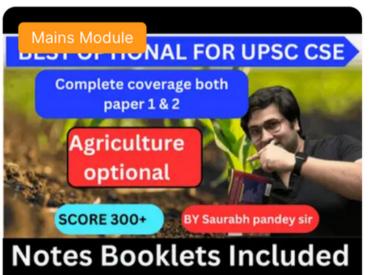
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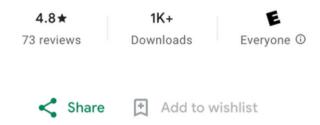
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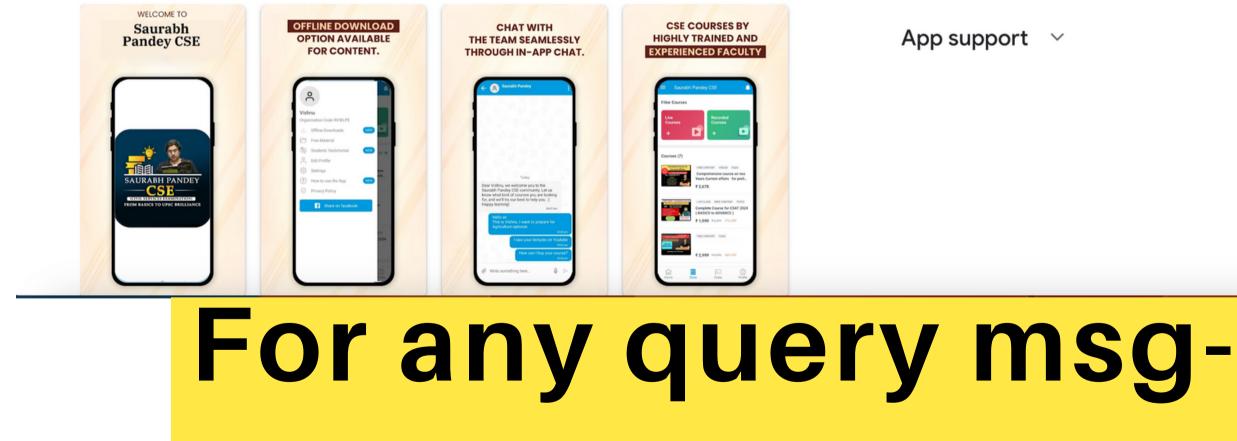


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 - cut off-75 marks For any query message-9057921649

Target Mains 2024/25- Essay

Q" Ecotourism is not solution for biodiversity conservation" Examine(150 words)

प्रश्न'' इकोटूरिज्म जैव विविधता संरक्षण का समाधान नहीं है'' परीक्षण करें (150 शब्द)

send your answer - Saurabh pandey upsc telegram channel





