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DAILY NEWS ANALYSIS

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FOREWORD

We, at Team Vedhik is happy to introduce a new initiative - "Daily Current Affairs_The Hindu" compilations to help you with UPSC Civil Services Examination preparation. We believe this initiative - "Daily Current Affairs_The Hindu" would help students, especially beginners save time and streamline their preparations with regard to Current Affairs. A content page and an Appendix has been added segregating and mapping the content to the syllabus.

It is an appreciable efforts by Vedhik IAS Academy helping aspirants of UPSC Civil Services Examinations. I would like to express my sincere gratitude to Dr. Babu Sebastian, former VC - MG University in extending all support to this endeavour. Finally I also extend my thanks to thank Ms. Shilpa Sasidharan and Mr. Shahul Hameed for their assistance in the preparing the compilations.

We welcome your valuable comments so that further improvement may be made in the forthcoming material. We look forward to feedback, comments and suggestions on how to improve and add value for students. Every care has been taken to avoid typing errors and if any reader comes across any such error, the authors shall feel obliged if they are informed at their Email ID.



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Colombo denies reports on Chinese ship

Reports say it will enter Hambantota in August; India says it is monitoring the ship's progress 'carefully'

SUHASINI HAIDAR
MEERA SRINIVASAN
NEW DELHI/COLOMBO

Sri Lanka's Defence Ministry on Thursday denied reports that a Chinese research vessel involved in space and satellite tracking would enter the Hambantota port in August this year, even as India sent a "clear message" that it was monitoring the ship's progress "carefully".

"We have no confirmation of such a vessel calling at the Hambantota port," a Defence Ministry spokesman told *The Hindu* in Colombo, when asked about the reports. The vessel's arrival was highlighted by BRISL (Belt & Road Initiative Sri Lanka), a Colombo-based organisation studying China's ambitious connectivity project.

On its website, the BRISL said "Yuan Wang 5, which set sail from the Chinese port of Jiangyin on July 13, and passed by Taiwan is now in the East China Sea, and was



The Yuan Wang 5 is headed to Hambantota and expected to arrive on August 11, as per the global marine tracking website.

expected to dock in Sri Lanka's Hambantota port from August 11-17 for 'replenishment' while it continues to conduct Space and Satellite control and research activities in the north-western part of the Indian Ocean Region" through August and September.

"The visit of Yuan Wang 5 to Hambantota Port will be excellent opportunity for Sri Lanka and the regional deve-

loping nations to learn and develop their own space programmes," the report published by the "education and consulting platform" BRISL said last week. "It is not a military vessel. The details of the course of the vessel are available online for anyone to see," BRISL Director Yasiru Ranaraja told *The Hindu*.

When asked, the Ministry of External Affairs (MEA)

confirmed it had seen the report, which had appeared in *The Economic Times*. "We are aware of reports of a proposed visit by this vessel combined to the port in August. Let me just say that the government carefully monitors any development having a bearing on India's security and economic interests and takes all necessary measures to safeguard them. I think that should be a clear message," said MEA spokesperson Arindam Bagchi during a weekly media briefing.

According to information on a global marine tracking website (www.marinetraffic.com), the Yuan Wang 5 is currently sailing "at 19.0 knots", and headed to Hambantota, expected to arrive on August 11 at noon. It is unclear whether the Sri Lankan Defence Ministry's statement indicates that the ship was not actually bound for Hambantota, or that India's objections have been taken on board and the ship has

been diverted. *The Hindu* is yet to receive a response from Sri Lanka's Ministry of Defence to its query citing the MEA spokesman's comment.

Stern view

India has traditionally taken a stern view of Chinese military or suspected dual-purpose vessels in the Indian ocean, and the MEA has protested such visits with Sri Lanka in the past. India's concerns have been focused on Hambantota in particular. In 2017, Colombo leased the southern port to China Merchant Port Holdings, after Sri Lanka was unable to keep its loan repayment commitments, fanning fears over potential use of the port for military purposes.

In 2014, Sri Lanka's decision to allow a Chinese nuclear-powered submarine Changzheng 2 in Colombo became a diplomatic flash-point, as New Delhi expressed serious concern.

EXPLAINER

After the referendum: The challenges of a power grab in Tunisia

What led to the political turmoil in Tunisia? Why did President Kais Saied bring in the new Constitution and what are its prominent features?

STANLY JOHNY

The story so far: Tunisia voters have approved a new Constitution that would turn the country back into a presidential system, institutionalising the one-man reign of President Kais Saied, who suspended the elected Parliament and awarded more powers to himself last year. According to preliminary results, 94.6% voters backed the new Constitution in the referendum, which saw only 30% turnout. Most opposition parties, who called Mr. Saied's power grab a coup, had boycotted the vote. While Mr. Saied has welcomed the result, his critics have warned that the new Constitution would erase whatever democratic gains Tunisia has made since the 2011 Arab Spring (Jasmine) revolution and push the country back into an authoritarian slide.

What happened to the Arab Spring?

Among the countries that saw popular protests bringing down dictatorships in 2011, Tunisia was the only one that witnessed a successful transition to democracy. The Arab Spring protests began in Tunisia in December 2010, leading to the fall of the regime of Zine El Abidine Ben Ali, who had been in power since 1987. Ben Ali had to flee the country in the face of the mass uprising. Quickly, protests spread to other Arab countries such as Egypt, Libya, Bahrain, Yemen and Syria. While protesters brought down the 30-year-long dictatorship of Hosni Mubarak in Egypt, the revolution did not last long in that country.

In 2013, the military seized power toppling the elected government of President Mohammed Morsi, a Muslim Brotherhood leader. In Libya, the protests against Mohammad Gaddafi slipped into a civil war, which saw a military intervention by the North Atlantic Treaty Organisation (NATO). The NATO intervention toppled the Gaddafi regime (the Libyan leader was later assassinated), but the country fell into chaos and anarchy, which continue to haunt it even today.

In Bahrain, the Shia majority country ruled by a Sunni monarchy, neighbouring Saudi Arabia sent troops to crush protests in Manama's Pearl Square. In Yemen, President Ali Abdullah Saleh had to relinquish power, but the country fell into a civil war, leading to the rise of the Shia Houthi rebels, who now control capital Sanah, and the impoverished country. In Syria, protests turned into a proxy civil war, with President Bashar al-Assad's rivals backing his enemies, and his allies, including Hezbollah, Iran and Russia, backing the regime. President Assad seems to have won the civil war, for now. Tunisia was the only country that saw a peaceful transition to democracy, and with the new Constitution, it is witnessing another transition.

What led to the political crisis in Tunisia?

The 2014 Constitution put in place a mixed parliamentary and presidential system. Both the President and Parliament were directly elected by the voters. The President was to oversee the military and foreign affairs, while the Prime Minister, elected with the support of a majority of lawmakers, was in charge of the day-to-day affairs of governance.

In the democratic elections, the Islamist Ennahda party, which has ideological links to the pan-Islamist Muslim Brotherhood movement, emerged as a main political force in the country, which upset the secular sections. The polity remained fractious. The country had nine governments between 2011 and 2021. Its economy was already in a bad shape, and the COVID-19 crisis made it worse. Tunisia has one of the highest per capita COVID death rates in the world. Amid the mounting economic and healthcare crisis, protests broke out against the government in July last year. Protesters stormed the offices of the Ennahda, the ruling party.

As unrest was spreading, Mr. Saied moved in, sacking the Ennahda-backed Prime

Minister Hichem Mechich and suspending Parliament, plunging the country into a constitutional crisis. Under the 2014 Constitution, such crises should be settled by a constitutional court, but the court had not been formed yet. This allowed the President a free hand to rule the country by decrees. He declared a state of emergency, appointed a Prime Minister to run the government, dissolved the suspended Parliament earlier this year while simultaneously moving to rewrite the Constitution, awarding himself more powers.

What are the key changes in the new Constitution?

In March 2021, less than two years after he won the presidential election, Mr. Saied had expressed concerns over the country's post-revolutionary parliamentary system. According to him, the new Constitution would protect the values of the 2011 revolution – bread, freedom and dignity. While it leaves most of the personal freedoms guaranteed by the 2014 Constitution intact, the new charter seeks to take the country back to the presidential system, undercutting the powers of Parliament. The President will have ultimate authority to form a government, name Ministers (without Parliament's approval), appoint judges and present legislation directly to the legislature. It would also make it practically impossible for the lawmakers to remove the President from office.

Over the past year, President Saied has sacked many judges, tightening his control over the judiciary, and taken over the country's election body, the Supreme Independent Elections Commission (ISIE). Previously, the nine members of the ISIE were appointed by Parliament. Now, the President can directly appoint the members. He has left no doubt on how he is planning to rule the country.

The International Commission of Jurists, a Geneva-based advocacy, has said the new Constitution lacks essential checks on



presidential powers and “would return Tunisia to an autocratic constitutional order.”

Has the revolution been undone?

If in Egypt the ruling Muslim Brotherhood's sudden move to Islamise the country created a momentum for the counter-revolution, which the military seized to grab power, in Tunisia, the Parliamentary system's failure to address the country's enormous problems set the stage for the presidential power grab.

The referendum is clearly a victory for Mr. Saied who could now claim legitimacy for his one-man rule. But the low turnout despite the regime's high decibel propaganda and the boycott of the vote by most political parties that have substantial influence among the public show that Mr. Saied is still on a slippery slope. In comparison with other countries hit by Arab Spring protests, Tunisia managed well in its transition. But the continued political turmoil suggests that the country is yet to recover from the post-revolutionary chaos. With a battered economy and a fractured polity, Mr. Saied could find it difficult to mobilise power even with a new Constitution.

Street March: Demonstrators hold flags during a protest in opposition to a referendum on the new Constitution called by President Kais Saied. •REUTERS

THE GIST

■ The Arab Spring protests began in Tunisia in December 2010, leading to the fall of the regime of Zine El Abidine Ben Ali, who had been in power since 1987. Ben Ali had to flee the country in the face of the mass uprising.

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■ As unrest was spreading, President Kais Saied moved in, sacking the Ennahda-backed Prime Minister Hichem Mechich and suspending Parliament, plunging the country into a Constitutional crisis.

China warns against Pelosi's visit to Taiwan

Beijing 'will not sit back': spokesperson

ANANTH KRISHNAN
BEIJING

Amid rising tensions, U.S. President Joe Biden and China's President Xi Jinping on Thursday held a phone meeting on a range of issues, including the possible upcoming visit of U.S. House Speaker Nancy Pelosi to Taiwan.

China's Foreign Ministry and military issued separate warnings on the possible visit. A spokesperson for the Ministry of Defence said China "will not sit back". "China demands that the United States honour its promise that it would not support 'Taiwan independence'," PLA Senior Colonel Tan Kefei said, adding, "if the U.S. side insists on making the visit, the Chinese military will take strong actions to thwart any external interference or 'Taiwan independence' separatist scheme."

'Violate principle'

A visit by Ms. Pelosi, whom he referred to as the third most important U.S. political figure after the President and the Vice-President, would "seriously violate the one-China principle and the stipulations in the three China-U.S. joint communiques, seriously harm China's sovereignty and territorial integrity, and seriously damage



Nancy Pelosi

the political foundation of China-U.S. relations."

"Over the past few days, the Chinese side has repeatedly made clear to the U.S. side its firm opposition to the potential visit of Speaker Pelosi to Taiwan," added Foreign Ministry spokesperson Zhao Lijian.

Observers have suggested China could take several military measures to coincide with Ms. Pelosi's visit should it go ahead, ranging from military drills, which have in the past been timed along with visits that China has opposed, to closing off the airspace or a temporary naval blockade.

Mr. Xi will face a balancing act between showing strength at home, ahead of a key leadership congress set for October that will mark the start of his third term, and avoiding an escalation that could spiral out of control.

Rajya Sabha suspends three more members

First time a provision in the rule book was used to suspend MPs for holding placards, say sources

SPECIAL CORRESPONDENT
NEW DELHI

Rajya Sabha suspended three more MPs on Thursday for a week taking the total number of suspended members to 23. Experienced politicians point out that suspending such a large number of members is unheard in the history of parliamentary democracy.

On Monday, Aam Aadmi Party MPs Sushil Kumar Gupta and Sandeep Kumar Pathak and independent MP from Assam Ajit Kumar Bhuyan were suspended for holding placards.

Sources in the Rajya Sabha secretariat said it was for the first time that a provision in the rule book was used to suspend members for hold-



Speaking out: Members protesting in the Rajya Sabha during the Monsoon Session, in New Delhi on Thursday. ■PTI

ing placards.

The House adopted a motion moved by Minister of State for Parliamentary Affairs V. Muraleedharan to suspend the three members. Earlier, Rajya Sabha Deputy Chairman Harivansh named

the three members for holding placards. The motion was then passed by a voice vote. When some Opposition members demanded division on the motion, Mr. Harivansh denied and said a division will be allowed only if

the protesting members go back to their seats from the Well of the House.

The Treasury Benches erupted in protests over Congress leader in Lok Sabha Adhir Ranjan Chowdhury alleged remarks against President Droupadi Murmu.

Two adjournments

Rajya Sabha witnessed two adjournments in the second half before it was finally adjourned for the day a little after 4 pm, following protest by the Treasury Benches as well as the Opposition members. Tiruchi Siva, the vice chairman, requested the three suspended members to withdraw from the House before the proceedings could begin.

The members who were suspended in the first half continued to be present in the House and joined the other members in raising slogans against price rise, Gujarat hooch tragedy and GST.

A source in the Rajya Sabha secretariat said as per the Parliamentary Customs and Conventions as codified in the 'Handbook for the Members of Rajya Sabha', "Production of exhibits on the Floor of the House is not in order" and the members are required to note and observe these customs and conventions. Mr. Naidu has been objecting to members holding placards during the proceedings of the House whenever it happened and urged them to stop.

Narrow view

SC verdict on PMLA fails to protect personal liberty from draconian provisions

The Supreme Court's verdict upholding all the controversial provisions of the Prevention of Money Laundering Act (PMLA) falls short of judicial standards of reviewing legislative action. Undergirding every aspect of its analysis is a belief that India's commitment to the international community on strengthening the domestic legal framework for combating money-laundering is so inviolable that possible violation of fundamental rights can be downplayed. The judgment repeatedly invokes the "international commitment" behind Parliament's enactment of the law to curb the menace of laundering of proceeds of crime which, it underscores, has transnational consequences such as adversely impacting financial systems and even the sovereignty of countries. There is, no doubt, widespread international concern over the malefic effects of organised crime fuelling international narcotics trade and terrorism. Much of these activities are funded by illicit money generated from crime, laundered to look legitimate and funnelled into the financial bloodstream of global and domestic economies. A stringent framework, with apposite departures from the routine standards of criminal procedure, may be justified in some circumstances. However, experience suggests that money-laundering in the Indian context is linked or is seen as a byproduct of a host of both grave and routine offences that are appended to the Act as a schedule. These 'scheduled' or 'predicate' offences ought to be ideally limited to grave offences such as terrorism, narcotics smuggling, corruption and serious forms of evasion of taxes and duties. However, in practice, the list contains offences such as fraud, forgery, cheating, kidnapping and even copyright and trademark infringements. The Enforcement Directorate has also been manifestly selective in opening money-laundering probes, rendering any citizen vulnerable to search, seizure, and arrest at the whim of the executive.

It is disappointing that the Court did not find the provision for forcing one summoned by the ED to disclose and submit documents, and then sign it under pain of prosecution, as violating the constitutional bar on testimonial compulsion. Nor was it impressed by the argument that the search and seizure provisions lack judicial oversight and are exclusively driven by ED officers. Provisions that allow prosecution for money-laundering even without the scheduled offence being established and amendments deleting safeguards have passed muster with the Bench, solely on the ground that these were for removing lacunae pointed out by international evaluators of the efficacy of the law. Save for an odd comment that the Special Court could examine the documents to decide on continuing detention, there is nothing in the judgment that will attenuate the law's rigours. It rejects the plea to treat ED officers who record statements as police officers, thus protecting their evidentiary admissibility. At a time when the ED is selectively targeting regime opponents, the verdict is bound to be remembered for its failure to protect personal liberty from executive excess.

Is the Environmental Performance Index really faulty?

PARLEY



Chandra Bhushan is President and CEO of the International Forum for Environment, Sustainability and Technology (IFOREST)



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Anant Sudarshan is South Asia Director of the Energy Policy Institute at the University of Chicago



Scan the QR code to listen to the full interview online

While the methodology has issues, this is an opportunity for India to study where it stands

Last month, India protested against its ranking on the Environmental Performance Index (EPI) of 2022, prepared by researchers at the Yale and Columbia Universities in the U.S. The report measures 40 performance indicators across 11 categories to measure the "state of sustainability around the world." India was ranked last (180) with low scores across a range of indicators. The Indian Government as well as environmental experts have pointed to the faulty methodology of the index that skews the results in favour of the Global North. Chandra Bhushan, Sharad Lele and Anant Sudarshan discuss the report in a conversation moderated by Sonikka Loganathan. Edited excerpts:

What are the issues with the methodology?

Chandra Bhushan: Rating by its very nature is a subjective exercise. But a good rating is one that tries to reduce subjectivity, normalises all indicators, and then develops consensus around the subjective issues. The first step is to remove subjectivity as much as possible. Every rating will end up comparing apples with oranges, if you don't normalise the indicators. So, the second step is to normalise indicators. Third, if there is subjectivity, you get experts to generate consensus around it. All three have not been done.

But this was a peer-reviewed study...

CB: I'm not sure what kind of peer review was done because, if you look at the indicators, even a person with basic knowledge of ratings would tell you that the indicators have not been normalised.

Can you give us an example of where this lack of normalisation has impacted India's rank in a category?

CB: EPI has used tree cover loss as an indicator to rate deforestation in a country. Eritrea is the best country [as per the ranking]. The total dense forest cover in Eritrea is only about 50 hectares, which is similar to forest cover in one part of Lutyens' Delhi. How do you compare

absolute tree cover loss of a country with 50 ha dense forest with, say, India with millions of ha of dense forest and a tree cover loss of 1 lakh ha?

Is a rating the right way to be measuring environmental progress? What do you think of the government's response?

Sharad Lele: There is a difference between an index and a ranking. Indices have very limited value, even if you make them absolute, because they collapse the hugely complex issue of environment into one number. But relative ranking is useless. For example, you could have all countries between seven and nine out of 10. Some country will still end up at 180 because it is at 7.0 whereas others are 7.1 and above. What does that tell you about environment performance? Nothing.

Now the government, instead of responding and quibbling about details, could have used this occasion to call for a meeting of people within the country who follow these issues, to ask questions about where we are, and put out maybe our own performance index in a much more nuanced manner that tells us something about where we are with respect to, say, five or 10 years ago.

Anant Sudarshan: The EPI has a large data set with a huge amount of information on a whole range of indicators. This is more than just an exercise of coming up with one number - it's a data collection exercise on a whole range of indicators. Certainly, it would be nice if something similar were produced by our Government. Nevertheless, if you look at every single one of the indicators you'll find that India does quite badly on most. This shouldn't come as a surprise to most environmentalists. The point of a rating like this is that it puts together a lot of data and it reminds us that things are not going well on a wide range of environmental outcomes in India.

CB: I also want us to understand how this rating was released and what message it gave out. Its message was: if you are big, if you are middle income or a poor country, if you are in Asia or Africa, you are bad environmentally. But if you are



SPECIAL ARRANGEMENT

a rich country, you consume a lot, but your local environment is clean, you are the best in the world. I don't think that's right. If you want to solve environmental problems, consumption is what you attack. While recognising that India has problems, I am not willing to accept that the West is the paragon of environmental performance.

SL: Ideally, in an EPI, you would look at outcomes. But in reality, you have very limited data on actual outcomes, so you start using proxies like actions taken towards those outcomes. The main indicator of climate change performance is whether the atmospheric carbon dioxide concentration is increasing or decreasing. We all know it is increasing. The world is doing terribly on climate change. How do you allocate this global performance index on climate change, or this outcome variable, to different countries? You would see who are the biggest polluters, and, on a per capita basis, it's the Global North. Similarly, if biodiversity is construed to be a global common good and if a country has wiped out its biodiversity, why should it be getting higher marks because it then added one more protected area?

Speaking of biodiversity, how is Brazil ranked much higher than India, despite deforestation in the Amazon rainforest?

SL: If you want to measure biodiversity performance, you would see how the biodiversity was last year and whether it has changed this year. Then you would ask whether there are flagship species that you could use as an indicator. Instead, the entire focus of the EPI is on habitat. With some combination of percentage and absolute values, you have the West doing well and South Asia doing badly. There's a problem

Eritrea is the best country [as per the ranking]. The total dense forest cover in Eritrea is only about 50 hectares, which is similar to forest cover in one part of Lutyens' Delhi.

CHANDRA BHUSHAN

because habitat is being measured in terms of what percentage of the country is under protection. Brazil could be doing well because it's a big country with a relatively low population density where a significant percentage is under protected area. But in a densely populated country like India, you are not going to be able to put a high proportion of area under strict protection.

India puts out the State of Forest report. But the definition of a forest is ever-changing, which is why India has seen an increase in forest cover, as per those reports. Can you contextualise this issue?

SL: You used the word forest cover. The EPI uses the word tree cover. Therein lies the story of how India itself is playing around with this issue. We have not asked why we care about forest cover. There are different answers to this, but if you focus on the carbon sequestration benefits of forests, you wouldn't care whether it is palm or eucalyptus or a natural species which is endemic to India, because it's all carbon. On the other hand, if you care about biodiversity, you would want to look at forests as an association of species which are part of this landscape and not just a random species planted for the sake of making the place look green. So, why we care about forest cover determines what we measure. To take another angle, if you are a local person who is dependent on forest for livelihood, you

would prefer an open canopy forest, and may be trimming the trees to get firewood without cutting down the whole tree. In that case, you would see very little tree crown cover, which is what the Forest Survey of India measures through satellites. So, when the EPI looks at tree cover, they are falling into the same trap. Should they look at tree cover or should they look at forest cover, which means natural forests? In the Indian context, this matters because natural forest cover has gone down, while plantations have increased, revealing the fault lines in this issue.

One solution we've seen grow in popularity is tree planting. Is this actually effective?

CB: Planting trees has become like atoning your environmental sin. This is a very dangerous solution to the kind of environmental problems we have, because we are forgetting the role of different ecosystems.

AS: One thing that is dangerous is letting only the government define the metrics it will use to measure success without independent scientific scrutiny. In India we've had this massive increase in what is called forest cover, which is all driven by plantations, while natural forests are dropping. In this indicator, EPI is using tree cover loss from satellite data, so India is doing better on this than it should by some metrics. But at least it's a data point that's being independently collected and that's similar across countries. The criticism of Brazil for tree cover loss and the praise of the Indian government for "forest gain" are really two different things. One is the rainforest disappearing there and one is plantations being added here. That's a place where an independent index helps, because if we can agree on the indicators, we can get an objective basis of measurement.

SL: There is a funny contradiction here. When it came to biodiversity, because you couldn't measure the outcome very well, you put a lot of emphasis on process and said protected areas is the way to go to biodiversity conservation. When it comes to ecosystem services it is also well acknowledged that local community involvement and people's rights is actually a better way to achieve sustainable enhancement of ecosystem services of all

these areas. So how come there is no measure on how much you have decentralised rights over trees or forests, in local communities? If you took that as an indicator, we would be a real laggard in spite of having the Forest Rights Act of 2006.

India ranked 179 in air quality. How do we solve this?

AS: We have failed to control air pollution so far. This is where these indices are useful. It's not useful to compare India with London, but you could compare India with other countries at the same income level and the same population density, and there are many countries that are doing better. Once we notice this, we can ask, why are we doing worse? A large part of it is regulation. Ultimately air pollution is the sort of problem that gets solved through economy-wide regulation.

CB: I agree that there is a regulatory problem with air pollution, but there is also a fundamental problem with the economy. No country has been able to solve air pollution without getting rid of biomass or solid fuel. India combusts around 2.2 billion tonnes of material, of which 1.6 billion tonnes are coal and biomass. Biomass is a problem of poverty and coal is the problem of energy access. The way India will reduce its air pollution is also the way it will solve its climate challenge. The reason why India will not be able to resolve a lot of its air pollution challenge is because of its energy mix. For example, tomorrow, if all the vehicles move to electric vehicles, we will be able to reduce air pollution, cumulatively, by 20%, but 80% of the problem will not be solved.

In preparation for the upcoming COP 27, what should India be doing, especially since we've seen an increased coal production target?

CB: The Russia-Ukraine crisis could have been an opportunity for all of us to start investing massively in renewable energy. But fossil fuel companies have used this short-term deficit in energy supply as an opportunity to open new fossil fuel establishments. In India, fossil fuel consumption is going to increase in the short term. If we are smart, we will try and peak coal as quickly as possible. That would be our roadmap.

What numbers do not reveal about tiger conservation

India must not lose sight of the fact that there are other factors critical to ensuring the survival of this big cat



UMA RAMAKRISHNAN

Extinguished. This ominous word has one meaning. The death of a species. And it is a word that we seem to hear so often these days, especially in the news. But the opposite is possible. Today (July 29), which is Global Tiger Day (also called International Tiger Day), the world and India can celebrate the recovery of at least one endangered species. India is now reporting increased tiger numbers, and a recent International Union for Conservation of Nature assessment suggests that tiger numbers have increased by 40% since 2005. This is cause for celebration. But is the rise in tiger numbers enough to prevent their extinction?

Genetics and connectivity

Decades of research in ecology and evolution suggest that numbers are critical to avoid extinction. Populations that are smaller than 100 breeding individuals have a high probability of extinction. At the same time, for populations to persist, they should be part of larger landscapes with other such populations that are connected. Small and isolated populations face a high probability of extinction. This is because small populations are subject to chance/random events. These chance events may cause them to lose advantageous genetic variants, while

other, detrimental genetic variants might increase in frequency. This process is called genetic drift. Also, individuals in small populations are more likely to be related, leading to inbreeding. This exposes the many slightly disadvantageous genetic variants that are present in all genomes. When expressed together, these detrimental genetic variants cause inbreeding depression, and reduced survival and reproduction of inbred individuals.

A closer look at the distribution of tigers across their range shows that most tiger 'populations' are smaller than 100. On their own, most tiger populations do not have a high chance of survival. So why are we not seeing extinctions happening more often? Is this because tiger populations are connected to each other? We know that most tiger reserves in India are small and embedded in human-dominated landscapes. So, does the landscape between tiger reserves (agricultural fields, reserve forests, built-up areas and roads) allow tigers to move through them?

Research findings

One way to answer this question is to use movement data sourced from radio-collared tigers, often difficult to come by for a rare and endangered species. Alternatively, tigers can be genetically sampled using their excreta/scat, hair and other biological samples from different tiger reserves and analysed in a laboratory. Genetic variants in tiger DNA can be identified and analysed and compared across tiger reserves. Sets of tiger reserves that show shared genetic variation are well connected – the inference



K.R. DEEPAK

is that the intervening landscapes facilitate connectivity or movement.

On the flip side, sets of tiger reserves that share less genetic variation must have barriers or landscapes that impede movement and connectivity. For example, in our research we analysed tiger genetic samples in the central Indian tiger landscape and investigated genetic sharing between populations. Our results were surprising. Most land-use types were not too bad for tiger connectivity, including agricultural fields. However, the presence of built-up areas and high traffic roads greatly impeded tiger movement. Using this understanding of connectivity, we were able to simulate scenarios for the future where we asked (given specific land-use change in the next 100 years), how our tiger populations might be affected? Would there be more extinction in the future? Or would they stay connected?

Our results showed that extinction could be avoided if corridors were safeguarded. What was striking was that fencing tiger reserves and isolating them resulted in high extinction. We used these models to also predict the impact of im-

pending development projects in central India – widening of certain highways, for instance, would make them barriers, thereby increasing extinction substantially. These results along with other studies were used in court to petition for (and win a mitigation measure) – having an underpass to allow wildlife movement and connectivity. In summary, as long as we manage landscapes outside tiger reserves to allow tiger movement, and protect prey and tigers inside tiger reserves, tigers are sure to survive in landscapes such as central India.

In Similipal and Rajasthan

But what about tiger populations that are already isolated? People have always wondered why black tigers were found only in the Similipal tiger reserve in Odisha. Our recent work on pseudo-melanistic or black tigers found in Odisha has demonstrated the genetic effects of isolation. Genome sequences of a litter of zoo tigers that included pseudo-melanistic cubs revealed that a single spelling mistake (or mutation) in a specific gene causes these tigers to look this way.

After we found the causal genetic variant, we travelled through Similipal and collected tiger excreta/scat. We looked for this specific genetic variant in tiger DNA and found that it was common only in Similipal, where 60% of the tigers carried at least one copy. Other analyses have suggested that the tigers in Similipal form a small and isolated population. All our results pointed to genetic drift, or random events that have led to this genetic variant that causes pseudo-melanistic coat colour becom-

ing common only in Similipal.

On the other side of India, in Rajasthan, genome sequences from wild tigers reveal that individuals in the Ranthambore tiger reserve show inbreeding. While we do not see adverse effects of inbreeding as yet, individuals are related and carry potentially disadvantageous genetic variants, which might affect the survival and the reproduction of tigers in Ranthambore in future. In short, we are seeing the genetic effects of isolation and small population size in wild tigers at some locations.

Strategies for the future

While we celebrate the recovery of tiger populations only by looking at numbers, we must not lose sight of other factors that are critical to their continued survival, such as connectivity. Special attention is needed for populations that are becoming isolated and facing the genetic consequences of such isolation. The future of such populations may depend on genetic rescue or even the introduction of novel genetic variants. We are fortunate that novel genome sequencing technology provides an opportunity to understand tigers much better in the context of their conservation. The future of tigers will require a 'dialogue' between such data and management strategies in order to ensure their survival. India is lucky to have so many wild tigers and we must work together to save them.

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General Studies Paper I	
A	History of Indian culture will cover the salient aspects of art forms, literature and architecture from ancient to modern times;
B	Modern Indian history from about the middle of the eighteenth century until the present-significant events, personalities, issues;
C	Freedom struggle-its various stages and important contributors / contributions from different parts of the country;
D	Post-independence consolidation and reorganization within the country;
E	History of the world will include events from 18 th century such as industrial revolution, world wars, re-drawing of national boundaries, colonization, decolonization,
F	Political philosophies like communism, capitalism, socialism etc.-their forms and effect on the society
G	Salient features of Indian Society, Diversity of India;
H	Effects of globalization on Indian society;
I	Role of women and women's organization;
J	Social empowerment, communalism, regionalism & secularism
K	Salient features of world's physical geography;
L	Geographical features and their location- changes in critical geographical features (including water bodies and ice-caps) and in flora and fauna and the effects of such changes;
M	Important Geophysical phenomena such as earthquakes, Tsunami, Volcanic activity, cyclone etc.
N	Distribution of key natural resources across the world (including South Asia and the Indian subcontinent);
O	Factors responsible for the location of primary, secondary, and tertiary sector industries in various parts of the world (including India);
P	Population and associated issues;
Q	Urbanization, their problems and their remedies
General Studies Paper II	
A	India and its neighbourhood- relations;
B	Important International institutions, agencies and fora- their structure, mandate;
C	Effect of policies and politics of developed and developing countries on India's interests;
D	Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.
E	Indian Constitution, historical underpinnings, evolution, features, amendments, significant provisions and basic structure;
F	Comparison of the Indian Constitutional scheme with other countries;
G	Functions and responsibilities of the Union and the States, issues and challenges pertaining to the federal structure, devolution of powers and finances up to local levels and challenges therein; Inclusive growth and issues arising from it;
H	Parliament and State Legislatures - structure, functioning, conduct of business, powers & privileges and issues arising out of these;
I	Structure, organization and functioning of the executive and the judiciary, Ministries and Departments;

J	Separation of powers between various organs dispute redressal mechanisms and institutions;
K	Appointment to various Constitutional posts, powers, functions and responsibilities of various Constitutional bodies;
L	Statutory, regulatory and various quasi-judicial bodies;
M	Mechanisms, laws, institutions and bodies constituted for the protection and betterment of these vulnerable sections;
N	Salient features of the Representation of People's Act;
O	Important aspects of governance, transparency and accountability, e-governance- applications, models, successes, limitations, and potential;
P	Citizens charters, transparency & accountability and institutional and other measures;
Q	Issues relating to poverty and hunger,
R	Welfare schemes for vulnerable sections of the population by the Centre and States, Performance of these schemes;
S	Issues relating to development and management of social sector / services relating to education and human resources;
T	Issues relating to development and management of social sector / services relating to health
General Studies Paper III	
A	Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment;
B	Effects of liberalization on the economy, changes in industrial policy and their effects on industrial growth;
C	Inclusive growth and issues arising from it;
D	Infrastructure Energy, Ports, Roads, Airports, Railways etc. Government budgeting;
E	Land reforms in India
F	Major crops, cropping patterns in various parts of the country, different types of irrigation and irrigation systems;
G	Storage, transport and marketing of agricultural produce and issues and related constraints;
H	e-technology in the aid of farmers; Technology Missions; Economics of Animal-Rearing.
I	Issues of buffer stocks and food security, Public Distribution System- objectives, functioning, limitations, revamping;
J	Food processing and related industries in India – scope and significance, location, upstream and downstream requirements, supply chain management;
K	Issues related to direct and indirect farm subsidies and minimum support prices
L	Awareness in the fields of IT, Space, Computers, robotics, nano-technology, bio-technology;
M	Indigenization of technology and developing new technology;
N	Developments and their applications and effects in everyday life;
O	Issues relating to intellectual property rights
P	Conservation, environmental pollution and degradation, environmental impact assessment
Q	Disaster and disaster management
R	Challenges to internal security through communication networks, role of media and social networking sites in internal security challenges, basics of cyber security;
S	Money-laundering and its prevention;

T	Various forces and their mandate;
U	Security challenges and their management in border areas;
V	Linkages of organized crime with terrorism;
W	Role of external state and non-state actors in creating challenges to internal security;
X	Linkages between development and spread of extremism.
General Studies Paper IV	
A	Ethics and Human Interface: Essence, determinants and consequences of Ethics in human actions;
B	Dimensions of ethics;
C	Ethics in private and public relationships. Human Values - lessons from the lives and teachings of great leaders, reformers and administrators;
D	Role of family, society and educational institutions in inculcating values.
E	Attitude: Content, structure, function; its influence and relation with thought and behaviour;
F	Moral and political attitudes;
G	Social influence and persuasion.
H	Aptitude and foundational values for Civil Service , integrity, impartiality and non-partisanship, objectivity, dedication to public service, empathy, tolerance and compassion towards the weaker sections.
I	Emotional intelligence-concepts, and their utilities and application in administration and governance.
J	Contributions of moral thinkers and philosophers from India and world.
K	Public/Civil service values and Ethics in Public administration: Status and problems;
L	Ethical concerns and dilemmas in government and private institutions;
M	Laws, rules, regulations and conscience as
N	sources of ethical guidance;
O	Accountability and ethical governance; strengthening of ethical and moral values in governance; ethical issues in international relations and funding;
P	Corporate governance.
Q	Probity in Governance: Concept of public service;
R	Philosophical basis of governance and probity;
S	Information sharing and transparency in government, Right to Information, Codes of Ethics, Codes of Conduct, Citizen's Charters, Work culture, Quality of service delivery, Utilization of public funds, challenges of corruption.
T	Case Studies on above issues.