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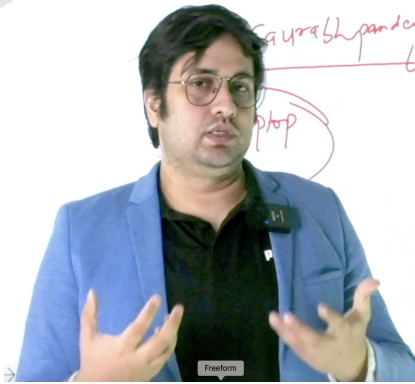

By saurabh Pandey

THE HINDU

Target Mains -2025/26 -

Q → ''Judiciary independence derives from judicial integrity and judicial accountability'' Discuss.

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"Success depends on Right and Relevant content"

Can't draw parallels between Tuticorin and Vizhinjam ports, Centre tells Kerala

Dhinesh Kallungal
THIRUVANANTHAPURAM

Deepening uncertainty over providing the Central share of viability gap funding (VGF) to the Vizhinjam international seaport, the Centre has made it clear that Kerala cannot draw a parallel between Tuticorin port and Vizhinjam port.

Kerala had been demanding that since the VGF given for the development of outer harbour container terminal at Tuticorin port has no such condition of repaying the VGF amount to the Centre, the same should be given for Kerala.

Uncertain times: A container vessel leaving the Vizhinjam International Seaport in Thiruvananthapuram. FILE PHOTO

Defending its stand that Kerala should repay the VGF amount of ₹817.80 crore to the Centre, Union Ports, Shipping and Waterways Minister Sarbananda Sonowal said in Parliament that the development of the outer harbour container terminal at Tuticorin is carried out by V.O. Chidambaranar (VOC) Port Authority. It is a Central project where the expenditure is carried out by VOC Port Authority, and the revenue also goes to the VOC Port Authority.

Since VOC is an autonomous body under the administrative control of the Government of India, there is no need for any revenue-sharing agreement while providing VGF. The State had been maintaining that it will have to repay approximately ₹10,000 to ₹12,000 crore if the repayment condition is agreed for the VGF amount of ₹817.80 crore, which goes to the kitty of Vizhinjam port concessionaire Adani Vizhinjam Private Port Limited (AVPPL).

Topic → Vizhinjam Port Overview

Summary of Facts

🏗️ Location: Vizhinjam is situated in the Thiruvananthapuram district of Kerala, India.

🚢 Port Type: It is a deep-sea port, designed to accommodate large vessels.

🌊 Significance: The port aims to enhance trade and shipping activities in the region.

💼 Economic Impact: Expected to boost local economy by creating jobs and improving infrastructure.

🌍 Connectivity: Will improve maritime connectivity with international shipping routes.

🏛️ Development: The project is part of a larger initiative to develop Kerala's coastal infrastructure.

📅 Timeline: Construction and operational timelines are crucial for regional development plans.

Topic → Deep-Water Ports: An Overview

🌊 Definition

Deep-water ports are manmade structures designed to accommodate the largest ships and cargo, constructed in deep water.

📍 Location

Typically found in naturally deep harbors or areas that have been dredged to increase depth.

📏 Depth

These ports have a depth of at least 45 feet, compared to regular ports which are usually 20 feet or less.

🏗️ Infrastructure

Equipped with advanced facilities such as large cranes, storage areas, and intermodal connections.

🚢 Purpose

Primarily used for the transportation, storage, and handling of oil, natural gas, and various cargo.

🇮🇳 Examples in India

Vizhinjam Port: Located near Thiruvananthapuram, it is a strategic natural deep-water port.
Krishnapatnam Port: Known as India's deepest port with a draft of 18.5 meters.
Vadhavan Port: A project in Maharashtra aimed at creating one of India's largest deep-water ports.

New chemical pathway worsens quality of air in harsh winters

Shahzad Gani, of the Centre for Atmospheric Sciences in IIT Delhi, said the new study indexes a 'major shift' in our understanding of how the formation of secondary aerosols like hydroxymethanesulphonate 'can happen in fine particles even in extremely cold, dark conditions'

Sayantan Datta

In winter, the temperature in Dras in Ladakh drops to -20° C, making it the coldest place in India. On the other side of the world, Fairbanks, the capital city of Alaska, holds a similar record in the U.S., its temperature hovering around -22.4° C in winter. But the two cities have drastically different air quality. Unlike Dras, where the air is remarkably healthy, Fairbanks is among the U.S.'s worst-performing cities. One estimate ranked it tenth in a list of the country's most air-polluted cities. Another ranked it first for particle pollution.

Particle pollution, also called 'particulate matter' (PM), is a mix of solid particles and liquid droplets suspended in the air. PM can be classified into two broad categories: $PM_{10-2.5}$ and $PM_{2.5}$. $PM_{10-2.5}$ refers to particles whose diameter ranges between 2.5 and 10 micrometres (µm, equal to one millionth of a metre), and $PM_{2.5}$ refers to particles that are less than 2.5µm in diameter.

$PM_{0.1}$ particles are also called ultrafine particles. They are considered to be particularly dangerous: they enter the lungs through the nose and throat; once in, they reduce lung function, aggravate asthma, and – for people with lung or heart disease – pave the way for premature death.

An aerial view of the smog-covered city of Bishkek, Kyrgyzstan, in January 2023. COLLAB MEDIA

Pollution and temperature

In 2009, authorities from the Division of Air Quality in Alaska declared Fairbanks to be a "$PM_{2.5}$ nonattainment area": that is, the amount of $PM_{2.5}$ in the city exceeded the limit of 35µg per cubic metre of air. The main sources of these pollutants were identified to be emissions from wood stoves, the burning of distillate fuel oil, industrial sources, and automobiles, all of which also emit a large amount of sulphur dioxide.

To bring $PM_{2.5}$ levels below the permissible limits, the Division in a 2022 directive banned the use of fuel with sulphur concentrations exceeding 1,000 parts per million in Fairbanks. Now, a study led by researchers from the University of Alaska Fairbanks and the Georgia Institute of Technology, both in the U.S., has found that the ban may not be entirely effective because the chemistry of $PM_{2.5}$ particles changes in cold weather.

In their study, published in the journal *Science Advances* on September 4, the researchers found that lower sulphate concentrations in the air combined with low temperatures (around -35 °C) made the PM particles less acidic. This in turn increased the production of hydroxymethanesulphonate – another component of $PM_{2.5}$ – in the air.

Rodney J. Weber, a professor at the School of Earth and Atmospheric Sciences, Georgia Institute of Technology, and one of the corresponding authors of the study, told this reporter that the study's findings have implications for the "effectiveness of emission controls to reduce pollution levels."

Aerosol chemistry

In a 2022 study, James Campbell, the lead author of the current study and a doctoral scholar at the University of Alaska Fairbanks, showed that a large amount of hydroxymethanesulphonate formed during winters in Fairbanks when formaldehyde and sulphur dioxide reacted in the presence of liquid water.

Campbell's finding was surprising because hydroxymethanesulphonate formation has been traditionally thought to occur in clouds and fog, not in aerosols, because the former have more liquid water.

Hydroxymethanesulphonate formation also requires more acidic conditions, whereas the sulphite ions (SO_3^{2-}) required for its formation are present in adequate amounts only when the air is less acidic. The higher density of water droplets in clouds and fog absorbs more water-soluble gases, rendering them less acidic than most aerosols, the authors wrote in their paper.

What, then, explained the formation of large amounts of hydroxymethanesulphonate particles in Fairbanks during the winter?

To investigate, the researchers combined measurements obtained previously from the Alaskan Layered Pollution and Chemical Analysis (ALPACA) project with thermodynamic modelling. For the latter, they used computational models to calculate the amount of various ions and gases in aerosol particles in a given air mass.

At very low temperatures, water typically freezes to ice. But sometimes, in a process called supercooling, the temperature of a liquid can drop well below its freezing point without it turning solid.

The researchers wrote in their paper that aerosol particles exist in a supercooled state during Fairbanks winters. As a result, they contain liquid water, which allows hydroxymethanesulphonate to form within these particles. The researchers also reported that the acidity of aerosol particles in Fairbanks changes rapidly during the winter from low to high, making the conditions more favourable for the formation of hydroxymethanesulphonate.

Since Fairbanks sees very low temperatures, fewer ammonium ions jump to the gaseous state. As concentration of ammonium ions in the aerosol builds, its acidity falls, making it ideal for hydroxymethanesulphonate production

The rapid shift in the acidity of $PM_{2.5}$ in many places is largely the handiwork of the relative concentration of two ions: sulphate (SO_4^{2-}) and ammonium (NH_4^+). Sulphate ions increase the acidity of aerosol particles while the latter, a base, neutralise the acidity.

Two ammonium ions are required to neutralise the acidity contributed by each sulphate ion.

If there were to be an equal number of sulphate and ammonium ions in an aerosol particle, it would be more acidic. But since the 2022 ban on high-sulphur fuel in Fairbanks, the concentration of ammonium ions in $PM_{2.5}$ particles increased relative to that of sulphate ions. This lowered the acidity.

Further, ammonium in aerosols can exist in its gaseous form, ammonia, and in its ionic form dissolved in the liquid water in the aerosol. In normal conditions, the two forms exist in equilibrium, where the rates of conversion of ammonium to ammonia and ammonia to ammonium are equal.

But since Fairbanks's winters register very low temperatures, fewer ammonium ions are able to jump to the gaseous state. And as the concentration of ammonium ions within the aerosol particle builds up, its acidity drops further, making it a fertile site for hydroxymethanesulphonate production.

Relevance to the Global South

According to Prof. Weber, the Georgia Tech atmospheric scientist, the study's results are "broadly applicable to cold regions but also provide new insights into aerosol thermodynamics."

Shahzad Gani, an assistant professor at the Centre for Atmospheric Sciences in IIT Delhi, told this reporter the study indexes a "major shift" in our understanding of how "secondary aerosol formation can happen in fine particles even in extremely cold, dark conditions." Secondary aerosol refers to molecules like hydroxymethanesulphonate that are formed from parent molecules in chemical reactions.

"These findings have important implications for understanding how air quality-relevant aerosols form in extremely cold urban and industrial regions," he added.

At the same time, he clarified the study's relevance to "many areas of the Global South is limited, except for some high-altitude regions like the Andes or Himalayas." He said he is looking forward to future research in other cold regions that could help validate the findings of the study and expand its implications to the Global South.

Meanwhile, he added, the study compels scientists to confront how temperature changes might affect chemical pathways related to air quality and climate, especially in a world that is being rapidly reshaped by global warming.

(Sayantan Datta is a science journalist and a faculty member at Krea University. (dattasayantan95@gmail.com))

Topic →Understanding Particle Pollution: A Deep Dive into Particulate Matter (PM)

Particle pollution, often referred to as particulate matter (PM), is a significant environmental concern that affects air quality and public health.

: What is Particle Pollution?

It’s a mix of solid particles and liquid droplets suspended in the air. These particles can come from various sources, including vehicles, industrial processes, and even natural events like wildfires.

: Definition of Particulate Matter (PM)

Particulate matter is classified based on the size of the particles. The two main categories are PM10-2.5 and PM2.5.

: **Types of Particulate Matter**

Understanding these categories is crucial for grasping their health implications.

PM10-2.5

PM10-2.5 refers to particles with diameters between 2.5 and 10 micrometres. These particles can penetrate the lungs but are generally less harmful than their smaller counterpart

PM2.5

PM2.5, on the other hand, consists of particles smaller than 2.5 micrometres. These ultra-fine particles are particularly dangerous as they can easily enter the bloodstream and cause severe health issues.

Health Impacts

PM2.5 can reduce lung function, aggravate asthma, and even lead to premature death, especially in individuals with pre-existing heart or lung conditions. It’s like having a silent enemy lurking in the air we breathe.

: **Vulnerable Populations**
Children, the elderly, and those with chronic illnesses are particularly vulnerable to the effects of PM2.5. It's essential to understand who is at risk to take appropriate measures.

PM2.5 Nonattainment Area
In 2009, Fairbanks was declared a "PM2.5 nonattainment area," meaning the levels of PM2.5 exceeded the safe limit of 35µg per cubic metre of air.

: **Sources of PM2.5 Pollution**
Emissions from wood stoves, burning distillate fuel oil, industrial activities, and automobiles. These sources also release a significant amount of sulphur dioxide, compounding the problem.

The Role of Temperature in PM2.5 Levels

Interestingly, temperature plays a crucial role in PM2.5 levels.

Effects of Cold Weather

A study revealed that during cold weather, particularly around -35 °C, the chemistry of PM2.5 changes, making it less acidic and increasing the production of hydroxymethanesulphonate, another harmful component.

Hydroxymethanesulphonate Formation

This formation occurs when formaldehyde and sulphur dioxide react in the presence of liquid water, which is surprising since it was previously thought to happen only in clouds and fog.

The Surprising Role of Supercooling

During Fairbanks winters, aerosol particles can exist in a supercooled state, allowing liquid water to remain without freezing. This unique condition facilitates the formation of hydroxymethanesulphonate.

Acidity Changes in PM2.5

The acidity of PM2.5 can shift rapidly, influenced by the balance of sulphate and ammonium ions. This shift can create conditions favorable for hydroxymethanesulphonate production.

Implications for Global Air Quality

What does this mean for air quality globally?

Relevance to Cold Regions

The findings from Fairbanks are applicable to other cold regions, providing new insights into aerosol thermodynamics and pollution control.

Insights for the Global South

However, the relevance to the Global South is limited, except for high-altitude areas like the Andes or Himalayas.

Conclusion

In conclusion, understanding particle pollution, particularly PM2.5, is crucial for protecting public health and improving air quality. The unique chemistry of aerosols in cold regions like Fairbanks highlights the complexity of air pollution and the need for targeted solutions.

Residents transport drinking water from Humaita to the Paraizinho community along the Madeira river, a tributary of the Amazon, during a dry spell in Amazonas state, Brazil. AP

UN talks on drought deal in Saudi fail to produce pact

Agence France Presse

Negotiators failed to produce an agreement on how to respond to drought at Saudi-hosted UN talks, participants have said, falling short of a hoped-for binding protocol addressing the scourge.

The 12-day meeting of parties to the United Nations Convention to Combat Desertification (UNCCD), known as COP16, concluded early on Saturday morning, a day later than scheduled, as parties tried to finalise a deal.

Prior to the talks, UNCCD Executive Secretary Ibrahim Thiaw said the world expected negotiators "to adopt a bold decision that can help turn the tide on the most pervasive and the most disruptive environmental disaster: drought."

But addressing the plenary session before dawn, Thiaw acknowledged that "parties need more time to agree on the best way forward."

A press release on Saturday said the parties — 196 countries and the European Union — had "made significant progress in laying the groundwork for a future global drought regime, which they intend to complete at COP17 in Mongolia in 2026."

The Riyadh talks came after the partial failure of biodiversity talks in Colombia, the failure to reach a UN deal on plastic pollution in South Korea, and a climate finance deal that disappointed developing nations at COP29 in Azerbaijan.

Droughts "fuelled by human destruction of the environment" cost the world more than $300 billion each year, the UN said in a report published on December 3, the second day of the talks in Riyadh.

Developed nations seek a framework that does not commit them to a course of action, something nations most affected by droughts find is an unsatisfactory solution

Droughts are projected to affect 75% of the world's population by 2050, it said.

A delegate at COP16 from a country in Africa, speaking on condition of anonymity to discuss private deliberations, said African nations had hoped the talks would produce a binding protocol on drought.

That would ensure "every government will be held responsible" for devising stronger preparation and response plans, the delegate said.

"It's the first time I've seen Africa so united, with a strong united front, with respect to the drought protocol."

Two other COP16 participants, also requesting anonymity, said developed countries did not want a binding protocol and instead were pushing for a "framework," which African countries deemed inadequate.

Indigenous groups also wanted a protocol to better monitor progress and develop response plans, said Praveena Sridhar, chief technical officer for Save Soil, a global campaign backed by UN agencies.

Yet the absence of a protocol from COP16 "shouldn't delay progress," as national governments can still allocate "budgets and subsidies to financially support farmers in adopting sustainable soil and land management."

Ahead of the Riyadh talks, the UNCCD said 1.5 billion ha of land must be restored by the decade's end and that at least $2.6 trillion in global investments was needed.

The first week saw pledges of more than $12 billion from national and regional institutions and the Riyadh Global Drought Resilience Partnership, which is meant to mobilise public and private money to help at-risk countries.

Topic → COP16: The Unfortunate Outcome

Negotiators from 196 countries and the European Union gathered for a 12-day marathon at the **United Nations Convention to Combat Desertification (UNCCD) COP16, held in Riyadh**. The hope was to produce a groundbreaking protocol to address the escalating crisis of drought, a pressing environmental concern that has far-reaching implications on global ecosystems and economies. However, the outcome left much to be desired.

The meeting concluded without a binding agreement, a scenario that many had anticipated yet feared.

UNCCD Executive Secretary Ibrahim Thiaw highlighted the need for a bold decision to combat this pressing environmental disaster.

The assembly's failure to finalize a deal signifies a disappointing trend following recent unsuccessful biodiversity talks and climate negotiations.

"Parties need more time to agree on the best way forward," acknowledged Thiaw in a candid assessment of the negotiations.

Looking Ahead: A Call for Continued Action

Despite the lack of a finalized protocol, the discussions at COP16 laid a foundation for future negotiations. The next pivotal gathering, COP17, is scheduled to take place in Mongolia in 2026, where parties hope to finalize a comprehensive drought regime.

- **The UNCCD emphasizes the need for 1.5 billion hectares of land restoration by the decade's end and estimates a staggering $2.6 trillion in global investments is required to achieve this goal.**

- **National governments are encouraged to initiate budgets and subsidies to support farmers in sustainable land management practices, a critical step in mitigating the effects of drought.**

- **The absence of a protocol from COP16 shouldn't delay progress—action can still be taken at the national level.**

The hidden cost of greenwashing the Indian Railways

According to a recent report published in this daily, RITES Ltd., the consultancy arm of the Indian Railways, has won two contracts for the repurposing of six broad gauge diesel electric locomotives for export to some African railways. These locomotives will be converted for use on railways that use the Cape Gauge of 1,067 mm as against the 1,676 mm used on the broad gauge of the Indian Railways. While the Indian Railways, in collaboration with its consultancy public sector undertakings such as RITES and IRCON, has exported locomotives to countries in Asia and Africa in the past, this is probably for the first time that second-hand (used) locomotives are proposed to be exported after "gauge conversion". While there is no doubt that this is a commendable effort in re-engineering that involves virtually rebuilding the locomotives on a narrower platform, the story that lies hidden is a sordid saga of the humongous wasting of costly assets and profligacy unmatched in the annals of railways anywhere in the world, in pursuit of a wholly fictitious goal.

K. Balakesari

formerly of the Indian Railway Service of Mechanical Engineers, was Member Staff, Railway Board

RTI data and policy justification

The report mentions "soon to be redundant diesel locomotives'. The fact is that even as far back as March 31, 2023, according to information obtained by this writer under the Right to Information (RTI) Act more than a year ago, there were 585 diesel locomotives stabled (kept idling/stored) in various locations across the Indian Railways' network due to electrification. Further over 60% of those locomotives had a residual life of more than 15 years. Today, the figure is reported to be about 760 locomotives. How and why did the Indian Railways end up in a situation where hundreds of diesel electric locomotives in good working order with years of service still left in them became redundant? The answer lies with the policy of the government to electrify the entire broad gauge network of Indian Railways in mission mode, at a frenetic pace.

Railway electrification in India has long ago transcended mundane considerations such as economic and financial viability and joined the pantheon of universal desiderata such as world peace and universal brotherhood (*Vasudeiva Kutumbakam*). Today, railway electrification is generally justified broadly on two grounds: a saving of foreign exchange by reducing the import of crude oil and reducing environmental pollution, and, as a corollary of the second point, the adaptability to switch over to renewable sources of energy such as solar and wind. In fact in an official pamphlet issued by the Ministry of Railways in February 2021, entitled 'Mission 100% Electrification - Moving Towards net zero carbon emission', the objectives of the mission have been spelt out thus: to provide environment friendly, green and clean mode of transport to the people; and to unleash its potential to use of renewable energy, especially solar, by making use of the huge land parcel available along the railway tracks.

The 'mission 100% electrification' project is about chasing a mirage of turning into a green railway; a large number of serviceable diesel locomotives will also become redundant

Let us examine these justifications in greater detail. The benefit of saving in foreign exchange is true in absolute terms. But viewed in the context of the total consumption of high speed diesel (HSD) oil in the country, the consumption for railway traction is minuscule. According to a study conducted by AC Nielsen and published by the Ministry of Petroleum and Natural Gas (January 2014), when electrification of the Indian Railways was proceeding at a sedate "conventional" pace, 70% of of total diesel oil consumption in the country was by the transport sector. Out of this, the share of the Railways was just 3.24%. In comparison, trucks consumed 28% and agricultural sector consumed 13.2%. The share of the Railways reduced further to about 2% in 2021-22. So, 100% rail electrification will eliminate one of the smallest segments of diesel consumption, leaving the elephants in the room to roam free.

Truth about environmental considerations

The claim of environmental benefits is even more untenable in the Indian context. Consider the following facts. Electricity is a secondary source of energy, except when generated by lightning. It needs to be generated by expending a primary source of energy from fossil fuels such as coal, oil and natural gas, nuclear energy or the kinetic energy of water stored at a height (as in hydroelectric projects), or through solar or wind power.

What is the situation in India? Nearly 50% of the electricity generated today in the country is through coal-fired thermal plants and the Indian Railways plays a crucial role in transporting the coal from the pit heads to the thermal power plants. In fact, nearly 50% of the Railways' total freight earnings of about ₹1.7 lakh crore in 2023-24 (revised estimates) was generated by transporting coal for various purposes of which 80%, i.e., 40% of total freight earnings was generated only by transporting coal to thermal generating plants.

Replacing diesel locomotives with electric locomotives will only result in electric locomotives powered by electricity – about 50% of which is generated by burning coal – being used to move more coal to coal-fired thermal plants to generate more electricity, to transport more coal. Coal is considered the dirtiest fuel, environmentally, on the planet. A complete switchover by the Indian Railways to electric traction merely shifts the pollution caused by diesel locomotives near the railway tracks to the source of power generation in a more concentrated form, ultimately polluting the same atmosphere. Unless and until about 80% of the total electricity generated in the country comes from non-fossil fuels – and that day seems far off – any claim of 100% electrification of the Indian Railways, making it a "Green Railway", is in the realm of fantasy. Incidentally, before that situation becomes a reality, the Railways will have to find alternative commodities to coal – which, today, is the single highest freight earner – to avoid a financial meltdown.

This article is not intended to reopen the time-worn debate of electric traction versus diesel traction. The issue is about chasing a mirage of converting the Indian Railways into a "green railway", and, in the process, rendering a large number of serviceable diesel locomotives redundant. If all the locomotives already stabled are lined up today end to end, they will stretch for a length of almost 16 kilometres, a majority of them heading prematurely to the scrapyard.

'Disaster management, strategic purposes'

Mission 100% electrification of the Railways will also result in a dichotomy in the near term. The Indian Railways today has more than 4,000 diesel locomotives. With the impending 100% electrification of the system, all of them will not become redundant overnight. According to a recent news report in a reputed financial daily, quoting a senior official, 2,500 diesel locomotives are proposed to be retained by the Railways for "disaster management and strategic purposes". It is beyond comprehension what disaster will require such a large number of diesel locomotives to be set aside, unless this is a ruse to avoid sending locomotives with considerable residual service life prematurely to the scrapyard. Further, it is reported that another nearly 1,000 locomotives will continue in service for the next few years to meet traffic commitments. In other words, a 100% electrified "green" railway will continue to use about 3,500 "dirty diesels" in the foreseeable future, financially sustained to a large extent by transporting a not-so-green commodity: King Coal. That raises the question: what was the ultimate purpose of the tearing hurry to electrify 100%?

The Indian Railways' Mission 100% electrification is a sterling example of what happens when headline-grabbing slogans promoting vanity projects substitute for well-thought out policies, finally resulting in colossal wastage of tax-payers' money.

But does anyone care?

Topic → What is Greenwashing?

Greenwashing refers to the practice where organizations present an exaggerated or misleading image of their environmental efforts to deceive consumers. This phenomenon has grown increasingly relevant as eco-consciousness among consumers rises, pushing companies to adopt green marketing strategies that may not accurately reflect their actual environmental impact.

Definition: Misleading use of green marketing to promote an illusion of environmental responsibility.

Common Practices:

Misrepresentation of products as environmentally friendly.
Unsubstantiated environmental claims.
Use of vague terminology (e.g., "eco-friendly," "natural").

Consumer Implications:

Erosion of trust in genuine environmental initiatives.
Difficulty in making informed purchasing decisions

Green hydrogen and the financing challenge

Amarendu Nandy

Assistant Professor (Economics) at the Indian Institute of Management Ranchi. Views are personal

Malvika Awasthy

Green Energy Professional at ReNew. Views are personal

As India charts its path to net-zero emissions by 2070, green hydrogen offers a crucial pathway to decarbonise its industrial sectors. India's ambitious target of producing 5 million metric tonnes (MMT) of green hydrogen annually by 2030 signals its bid to establish early leadership in this emerging sector. However, the daunting economics of financing these projects threatens to derail India's green hydrogen ambition.

Based on a recent analysis by BloombergNEF, India is on track to meet only 10% of its stated goal. The sluggish progress is attributable to the substantial disparity between green hydrogen production costs ($5.30-$6.70 per kg) and traditional grey/blue production costs ($1.9-$2.4 per kg). This wide price differential makes it challenging to drive domestic offtake and attract private investment. It also creates a classic market deadlock – green hydrogen costs can only decrease with scaled production, but scaling requires viable economics.

The barriers

The economics of green hydrogen production hinge on two factors – the levelised cost of electricity (LCOE) and electrolyzer costs, both driven by the cost of capital. In emerging markets like India, perceived higher risks push up borrowing costs, leading to a high weighted average cost of capital (WACC). As investment costs make up 50-80% of LCOE in renewable energy projects, WACC significantly impacts overall costs.

Studies show that an increase in WACC from 10% to 20% can trigger up to a 73% surge in the levelised cost of hydrogen, even when all other production factors remain constant. Add to this the current high costs of electrolyzers, ranging from $500-1,400/kW for alkaline and $1,100-1,800/kW for proton exchange membrane systems, and the financial viability becomes even more challenging.

The global perspective on investments reflects these barriers. By May 2024, only 27.6% of the 1,572 announced large-scale clean hydrogen projects valued at $370 billion had reached final investment decisions. This disparity between plans and financial commitments indicates that the market's structural barriers extend beyond technological readiness. India needs to adopt innovative financing mechanisms and policy frameworks to effectively de-risk investments and attract capital to scale its green hydrogen sector.

On the policy front, several countries are showing the way. The U.K.'s Low Carbon Hydrogen Standard Certification provides a model for building market confidence. Similarly, strategic hydrogen hubs in the U.S., Japan, and Australia reflect a shift from traditional industrial development approaches – rather than letting infrastructure follow demand, these nations are fostering integrated ecosystems where infrastructure, production, innovation, and consumption co-evolve. Adapting this approach, with localised industrial clusters linked to renewable energy sources, could create self-sustaining hydrogen corridors in India that attract investment.

> India's success in green hydrogen will depend on leveraging its abundant renewable resources through efficient project execution, access to low-cost capital, and strategic investments

How to de-risk investments

On financing, India needs a multi-pronged approach to de-risk investments. First, the government must implement a comprehensive policy framework that extends beyond production incentives to address fundamental financing barriers. This includes establishing long-term hydrogen purchase agreements and partial loan guarantees to reduce investor uncertainty. It should also create "regulatory sandboxes" that allow for rapid experimentation with novel business models while maintaining safety standards, similar to how fintech innovation was accelerated in India.

Second, India's financial sector must move beyond traditional project finance paradigms designed for conventional energy infrastructure. Indian banks and financial institutions must develop products that address hydrogen's distinctive challenges – long development timelines, uncertain demand, and complex value chains. While blended finance and green bonds provide initial momentum, the sector requires innovative approaches like modular project financing that lets facilities scale in phases, reducing initial capital requirements. "Anchor-plus" financing models could help, where a creditworthy industrial anchor customer underwrites the base capacity while additional capacity is financed using flexible instruments as market demand grows. Equipment-leasing structures could transform electrolyzer investments from prohibitive upfront costs into manageable operational expenses, following the successful model of solar and wind sectors.

Third, India's international collaboration must move beyond aspirational agreements to tackle practical market-making challenges. Establishing standardised carbon intensity and hydrogen origin certification can facilitate exports and bolster trust in India's hydrogen supply chain. Key trade corridors, such as the Hydrogen Energy Supply Chain Project between Australia and Japan, show how cross-border partnerships can provide the demand certainty needed for large-scale investments.

In the next few years, early projects in industrial hubs such as Odisha, Maharashtra, and Gujarat that demonstrate viable business models will shape how the sector develops in India. The green hydrogen projects must integrate financial structuring from the outset. The focus must be on delivering hydrogen at prices that suit key industries.

India's success in green hydrogen will depend on leveraging its abundant renewable resources through efficient project execution, access to low-cost capital, and strategic investments.

Topic → GREEN HYDROGEN

Introduction

- India stands on the precipice of a green revolution in energy, targeting net-zero emissions by 2070.
- Central to this ambition is the production of 5 million metric tonnes of green hydrogen annually by 2030.
- However, the pathway to this ambitious goal is fraught with economic challenges that threaten to hinder progress.
- Understanding these obstacles and exploring potential solutions is crucial for the future of India's green hydrogen economy.

The Current Landscape of Green Hydrogen in India

India's green hydrogen goals are not just a mere aspiration; they reflect a broader commitment to sustainability and energy independence. However, the stark reality remains: the nation is currently on track to meet only 10% of its stated target.

The challenges stem primarily from the high production costs associated with green hydrogen, which range from $5.30 to $6.70 per kg, compared to traditional grey and blue hydrogen, which costs between $1.9 and $2.4 per kg.

Key Points:

Economic Disparity: The significant price differential creates a barrier to domestic uptake and investment.

Market Deadlock: Scaling production is essential for reducing costs, yet viable economics are a prerequisite for scaling

Economic Barriers to Green Hydrogen Adoption

The economics surrounding green hydrogen production hinge on two critical factors: the levelised cost of electricity (LCOE) and electrolyzer costs. Both are heavily influenced by the cost of capital, which is notably high in emerging markets like India.

Weighted Average Cost of Capital (WACC):

Increased WACC can inflate hydrogen production costs significantly.

A shift from 10% to 20% WACC can result in a 73% increase in overall costs.

High Electrolyzer Costs:

Current costs range from $500-1,400/kW for alkaline systems and $1,100-1,800/kW for proton exchange membranes

Strategies for Overcoming Investment Barriers

To de-risk investments in green hydrogen, India can adopt a multi-faceted approach:

Comprehensive Policy Framework:

Establish long-term hydrogen purchase agreements.

Implement partial loan guarantees to mitigate investor uncertainty.

Innovative Financial Products:

Move beyond conventional financing models to address the specific challenges of hydrogen projects.

Introduce modular project financing to lower initial capital requirements.

International Collaboration:

Establish standardized carbon intensity and hydrogen origin certification.

Explore cross-border partnerships to create demand certainty.

How does La Niña affect India's climate?

How do the La Niña and El Niño influence global atmospheric circulation and weather patterns? What is a Triple Dip La Niña? If a La Niña was to form now, how would it affect the current Indian winters and subsequent summers and monsoons as well?

EXPLAINER

Mohammad Rafiuddin
Shikhar Tiwari
Rishikesh P.

The story so far:

While the La Niña was expected to emerge by July this year, it is yet to. The India Meteorological Department now expects a La Niña to set in by late 2024 or early 2025, plus a milder winter due to this delay.

What is La Niña?

La Niña, a phase of the El Niño Southern Oscillation (ENSO), occurs when the region of the Pacific Ocean between Indonesia and South America is cooler than usual. Its counterpart, El Niño, represents a warming of the same region. These two phases significantly influence global atmospheric circulation and weather patterns. During La Niña years, India receives normal or above-normal rainfall during the monsoon season. Yet the same phenomenon causes droughts in Africa and intensifies hurricanes over the Atlantic Ocean. Conversely, the El Niño brings extreme summers and droughts in India while increasing rainfall in the southern U.S.

This decade began with three consecutive La Niña events (2020-2022), a rare occurrence known as Triple Dip La Niña, followed by an El Niño in 2023. Climate change may increase the frequency and intensity of both La Niña and El Niño events, as rising sea and land temperatures disrupt the Pacific's balance. This could also amplify extreme La Niña events, which generally lead to harsh winters in India.

Will a La Niña emerge this winter?

2024 is different; the La Niña has not emerged as expected. Historically, the La Niña has usually formed during the monsoon or the pre-monsoon period, and it has formed only twice between October and December since 1950. Global forecasts had also predicted its emergence this monsoon. But in December, there remains only a 57% chance of it forming in 2024. It will be weak if it still does but it could affect global weather.

The onset of La Niña or El Niño can be declared on the basis of many indices. For instance, the oceanic Niño index (ONI) compares the three-month average sea surface temperatures in the East-Central Tropical Pacific with the 30-year average. When the difference between the two is 0.5° C or higher, it is an El Niño, and when it is -0.5° C or lower, it is a La Niña. Currently, it is around -0.3° C. To be classified as a full-fledged La Niña or El Niño, ONI values need to exceed the thresholds at least five times consecutively.

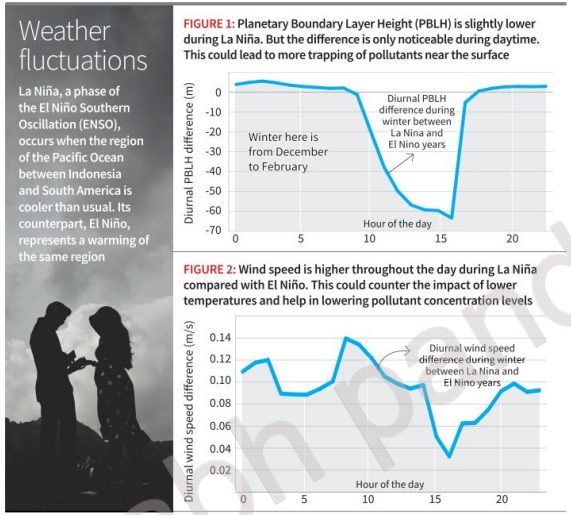

FIGURE 1: Planetary Boundary Layer Height (PBLH) is slightly lower during La Niña. But the difference is only noticeable during daytime. This could lead to more trapping of pollutants near the surface

FIGURE 2: Wind speed is higher throughout the day during La Niña compared with El Niño. This could counter the impact of lower temperatures and help in lowering pollutant concentration levels

What is the meteorology?

Cities in southern India like Bengaluru and Hyderabad are experiencing a colder than usual winter this year, while north India is witnessing a delayed winter with above-normal temperatures. Some reports have linked the southern chill to a La Niña, but the current ONI values suggest otherwise. Had a La Niña developed already, north India would likely be experiencing a colder winter than usual.

An analysis of meteorological data over 35 years by researchers at the Council on Energy Environment and Water, New Delhi, has revealed that while La Niña winters feature colder nights compared to El Niño, daytime temperatures tend to be higher. Meteorological parameters like wind speed and planetary boundary layer height (PBLH) – the lowest atmospheric layer directly influenced by land-atmosphere interactions – also vary during ENSO phases, affecting air quality.

The team found the average wind speed is higher throughout the day during La Niña winters. Faster winds help reduce air pollution by transporting pollutants away. They also found that the average PBLH is slightly lower during La Niña winters. If La Niña sets in, lower temperatures in north India may lead people to burn more biomass for heating, worsening air pollution. A lower PBLH could also trap more pollutants near the ground. But higher wind speeds could disperse the pollutants, potentially leading to better air quality.

What about La Niña and monsoons?

El Niño summers are relatively harsher, as was the case in April this year, when India experienced intense, record-breaking heat waves. If a La Niña arrives and persists into the summer of 2025, it may offer relief from high heat. Additionally, an El Niño often disrupts monsoons, with India historically receiving below-average rainfall during at least half of all El Niño years since 1871. But the same figures also indicate evolving patterns since 1980.

Both north and south India, for instance, have received less rainfall during more intense El Nino events while central India has been barely affected. A La Niña, on the other hand, promotes robust monsoons as evidenced by the "normal" or "above-normal" rainfall in the La Niña years of 2020, 2021, and 2022. There were "below normal" rains in the El Niño year of 2023.

Thus it would be a welcome development if a La Niña forms now or early next year and continues until the monsoon season.

Mohammad Rafiuddin is programme associate, and Shikhar Tiwari and Rishikesh P are consultants – all at the Council on Energy, Environment and Water (CEEW).

THE GIST

- During La Niña years, India receives normal or above-normal rainfall during the monsoon season. Yet the same phenomenon causes droughts in Africa and intensifies hurricanes over the Atlantic Ocean.
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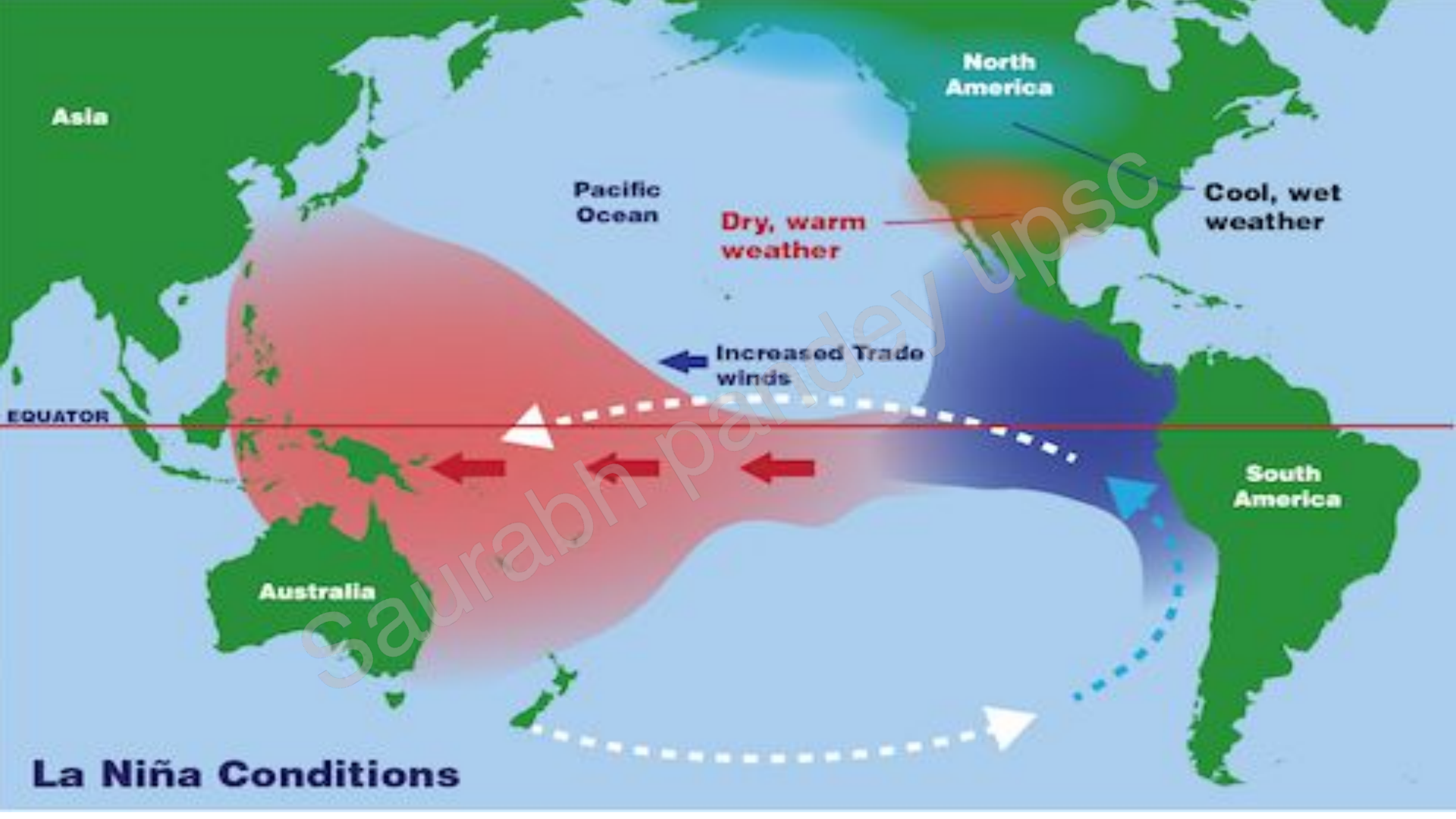

Topic → La Niña and Its Weather Impact: What to Expect This Winter

Introduction to La Niña

- La Niña is a complex climatic phenomenon that forms part of the **El Niño Southern Oscillation (ENSO) cycle,** distinguished by cooler sea surface temperatures in the central and eastern Pacific Ocean.
- This natural occurrence significantly influences global weather patterns, especially in regions like India, where it often leads to enhanced monsoon rains. In contrast, its counterpart, **El Niño, tends to bring about warmer ocean temperatures** and can result in severe droughts and extreme weather events.
- Understanding the **nature and implications of La Niña is crucial,** particularly as we approach the winter of 2024.

Current Status of La Niña

Despite prior expectations of **La Niña emerging by mid-2024**, the India Meteorological Department now forecasts its onset to be delayed until late 2024 or early 2025.

Historically, **La Niña conditions typically develop during the monsoon or pre-monsoon periods**, with only rare instances occurring between October and December since 1950.

As of December 2024, the chance of **La Niña forming** is estimated at **only 57%**, and should it materialize, it is expected to be relatively weak.

> Key indicators include the **Oceanic Niño Index (ONI)**, which monitors sea surface temperature anomalies. Currently, **ONI sits at approximately -0.3°C**, suggesting that a robust La Niña is still contingent on further temperature drops

Impact on Global Weather Patterns

The ramifications of La Niña extend far beyond the Indian subcontinent. **During La Niña years,** regions such as India typically experience normal or above-normal rainfall, fostering a conducive environment for agriculture. However, the phenomenon can simultaneously **instigate droughts** in parts of Africa and exacerbate hurricane activity across the Atlantic Ocean.

Impacts include:

Increased monsoon rains in India: The years 2020, 2021, and 2022 showcased above-average rainfall attributed to La Niña conditions.

Drought conditions: Conversely, regions in Africa may face severe droughts during the same period.

Regional Weather Impact in India

In India, the ongoing winter of 2024 is marked by an unusual climatic pattern. Southern cities like Bengaluru and Hyderabad are experiencing colder than average temperatures, while northern regions are seeing a delayed winter with warmer conditions. This dichotomy raises questions about the underlying meteorological influences, especially as La Niña has not yet established itself.

Key observations:

Colder nights in southern India, yet higher daytime temperatures.

The potential for increased air pollution as colder temperatures may prompt more biomass burning for heating.

La Niña's Influence on Future Monsoons

Looking ahead, if La Niña conditions persist into the summer of 2025, they may provide a buffer against the harsh heat typically associated with El Niño years.

Historically, El Niño summers have resulted in severe heat waves and below-average monsoon rainfall.

In stark contrast, La Niña years have consistently promoted robust monsoons, as evidenced by the favorable rainfall during previous La Niña events.

Anticipated effects include:

A potential decrease in extreme heat and an increase in rainfall during the monsoon season.

Historical data indicates a lower likelihood of drought during La Niña conditions compared to El Niño

Conclusion

- While the emergence of La Niña has been delayed, its potential influence on weather patterns cannot be understated.
- As we enter winter 2024, the implications for temperature, rainfall, and regional air quality remain a subject of great interest and concern.
- Monitoring developments in the coming months will be critical to understanding how this climatic phenomenon will shape the weather landscape in India and beyond

What is the procedure for removing judges?

Why have some Rajya Sabha members called for the removal of Allahabad High Court Judge, Justice Yadav?

Rangarajan. R

The story so far:

Fifty-five MPs of the Rajya Sabha have submitted a motion, for removing Allahabad High Court Judge, Justice Shekhar Kumar Yadav, to Chairman of the Rajya Sabha.

What is the procedure for removal?

Articles 124 and 217 of the Constitution provide that a judge of the Supreme Court/High Court shall be removed by the President, on the grounds of 'proved misbehaviour' or 'incapacity' after a motion is passed in each House of Parliament by a majority of the total membership of that House and by a majority of not less than two thirds of the members of that House present and voting (special majority) in the same session. The Constitution does not define the terms 'proved misbehaviour' or 'incapacity.' The Supreme Court has opined in various cases that wilful misconduct in office, corruption, lack of integrity or any other offence involving moral turpitude would constitute misbehaviour. Incapacity here means a medical condition that may include physical or mental incapacity.

The detailed procedure for removal is provided in the Judges (Inquiry) Act, 1968. It stipulates that a notice of motion for removal should be signed by not less than 50 members in the Rajya Sabha and 100 members in the Lok Sabha. The Chairman or Speaker may after due consideration and consultation admit or refuse to admit the motion. If admitted, a three-member committee will be constituted consisting of Supreme Court/High Court judges and a distinguished jurist. If the Committee, after investigation, absolves the judge of any misbehaviour or incapacity, the motion pending shall not be proceeded with. If found guilty of misbehaviour or suffering from incapacity, the committee report will be taken up in the Houses of Parliament which would then need to pass the motion with special majority.

What is the current issue?

Justice Yadav made communally-charged remarks while speaking at an event organised by the Vishwa Hindu Parishad. He is reported to have said the country would be run according to the wishes of the majority. The 'Reinstatement of Values of Judicial Life' adopted by the Supreme Court in 1997, and followed by all the High Courts, mandates that behaviour and conduct of members of the higher judiciary must reaffirm people's faith in the impartiality of the judiciary. The judges should not commit any act of omission or commission that is unbecoming of the high office they occupy. Notably, though the Judges (Inquiry) Bill, 2006 was not passed by the Parliament, it defined 'misbehaviour' to include violation of code of conduct for the judges. This bill proposed imposition of 'minor measures,' like issuing warnings, public or private censure, withdrawal of judicial work for a limited time etc., for misconduct that does not warrant removal.

What is required?

The Blackstone's ratio in criminal jurisprudence that 'it is better that ten guilty persons escape than that one innocent suffer' can be applied even when it comes to the removal of judges. The stringent process with the requirement of special majority in both houses has resulted in the non-removal of judges even after having been found guilty of misbehaviour by the inquiry committee. This is nevertheless essential to protect the independence of judges while discharging their duties. The Chairman of the Rajya Sabha, against whom himself a notice of motion for removal has been submitted, is unlikely to admit the present motion. The Supreme Court has issued a notice seeking details of the controversial speech made by Justice Yadav. The Judge is likely to appear before the Supreme Court Collegium to explain his stand. It is cardinal that Judges display behaviour that behoves the high constitutional office they hold.

Rangarajan R is a former IAS officer and author of 'Polity Simplified'. Views expressed are personal.

THE GIST

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- Justice Yadav made communally-charged remarks while speaking at an event organised by the Vishwa Hindu Parishad.
- The stringent process with the requirement of special majority in both houses has resulted in the non-removal of judges even after having been found guilty of misbehaviour by the inquiry committee.

Topic -- JUDGE REMOVAL

Understanding the Removal Procedure

The process of removing a judge is steeped in constitutional protocols that ensure both fairness and accountability. Let's break down the essentials:

Constitutional Framework: Articles 124 and 217 of the Constitution of India stipulate the conditions under which a judge can be removed. This is typically due to 'proved misbehaviour' or 'incapacity'.

Judicial Inquiry: The Judges (Inquiry) Act, 1968 outlines the procedural nuances. A motion must be initiated with signatures from at least 50 Rajya Sabha and 100 Lok Sabha members. The motion then goes through rigorous scrutiny.

Committee Formation: Upon motion admission, a three-member committee, including judges and a distinguished jurist, conducts an investigation to ascertain the validity of the allegations.

Outcome: If the committee finds the judge guilty of misconduct, the motion is brought before the Houses of Parliament, requiring a special majority for removal.

The Road Ahead: What's Next?

As the situation unfolds, several key aspects will determine the trajectory of this impeachment motion:

Supreme Court Proceedings: The Supreme Court is expected to scrutinize Justice Yadav's statements further. His appearance before the Supreme Court Collegium will be pivotal in clarifying his position.

Public Discourse: It's imperative to foster discourse around judicial accountability and the ethical standards expected from judges. The ongoing situation serves as a crucial reminder of the responsibilities judges carry.

Political Dynamics: The likelihood of the Chairman of the Rajya Sabha admitting the impeachment motion remains uncertain, given the political landscape and the implications for judicial independence

Many feared dead in French territory Mayotte after cyclone

Agence France-Presse
SAINT-DENIS DE LA REUNION

Rescuers raced against time on Monday to reach survivors and supply urgent aid after the devastating cyclone Chido ripped through the French Indian Ocean territory of Mayotte, destroying homes across the islands, with hundreds feared dead.

Images from Mayotte, which like other French overseas territories is an integral part of France and ruled from Paris, showed homes reduced to piles of rubble.

The crisis, which erupted at the weekend the day after President Emmanuel Macron appointed Francois Bayrou as the sixth Prime Minister of his mandate, poses a major challenge for a government still only operating in a caretaker capacity.

Clinics in tatters

The cyclone left health services in tatters, with the main hospital extremely damaged and health centres knocked out of operation, Health Minister Genevieve Darrieussecq told broadcaster *France 2*.

Mr. Macron was due to chair a crisis meeting in Paris at 2230 IST, the Elysee said.

The "exceptional" cyclone was super-charged by particularly warm Indian Ocean waters, meteorologist Francois Gourand of the Meteo France weather service said.

Trapped in debris

With roads closed, officials fear that many could still be trapped under rubble in inaccessible areas.

The overwhelming majority of Mayotte's population is Muslim and religious tradition dictates bodies must be buried rapidly, meaning some may never be counted.

Mayotte is France's poorest region with an estimated third of the population living in shanty towns.

Mayotte officially has 320,000 inhabitants, "but it is estimated that there are 100,000 to 200,000 more people, taking into account illegal immigration," added the source.

Chido was packing winds of at least 226 km per hour when it slammed into Mayotte, which lies to the east of Mozambique.

French gendarmes and locals clear a road blocked by a tree after Cyclone Chido hit the French Indian Ocean territory of Mayotte. AFP

Topic → Cyclone Chido: Formation and Naming Insights

Cyclone Chido has emerged as a significant meteorological event, captivating the attention of scientists and the public alike. This article delves into its formation, trajectory, and the cultural significance of its name.

The Meteorological Journey of Cyclone Chido

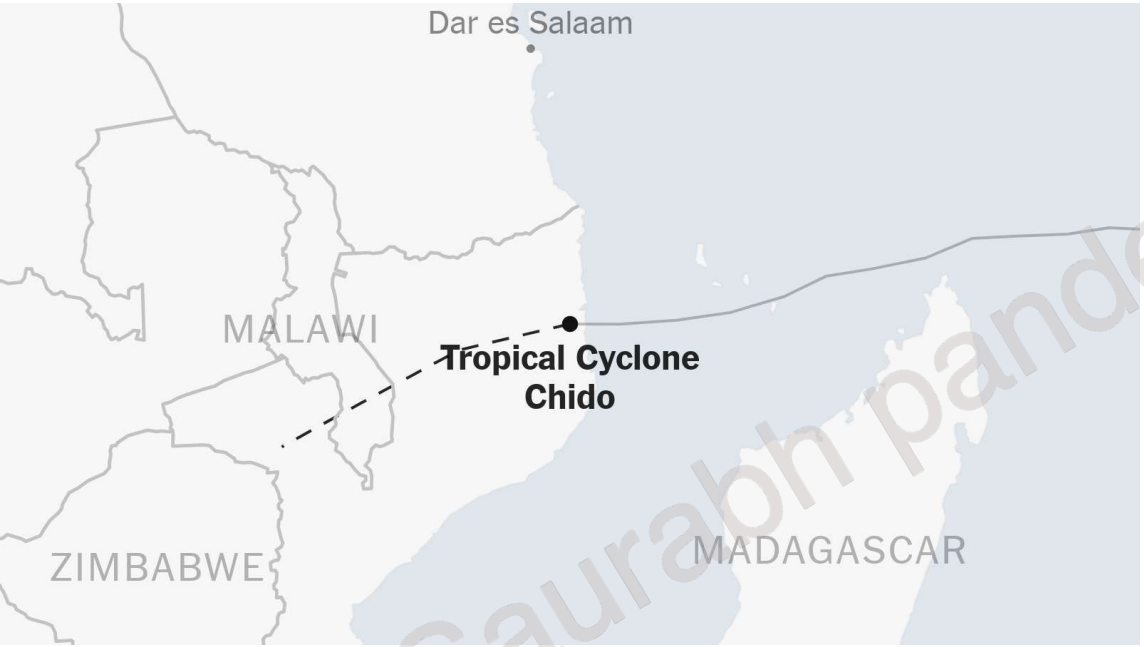
Cyclone Chido's formation can be traced back to a series of meteorological events:

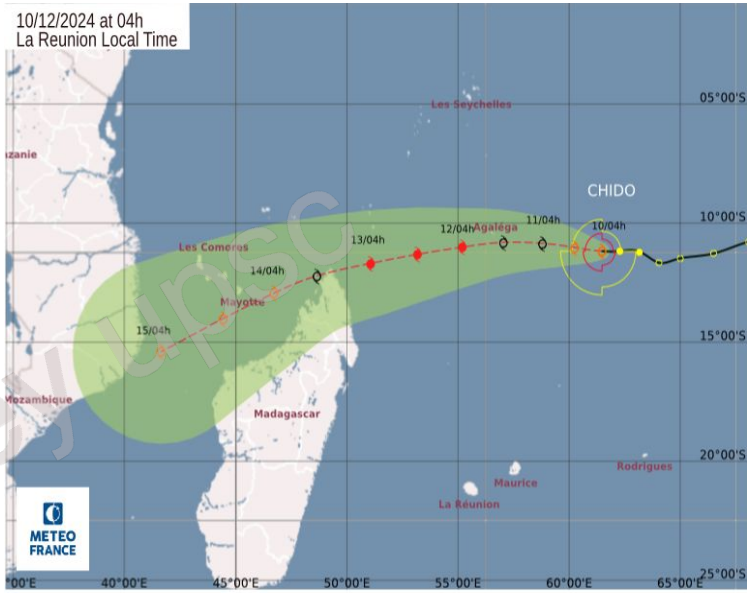
Initial Development: Originating as a tropical depression, it swiftly transitioned into a cyclone due to favorable atmospheric conditions.

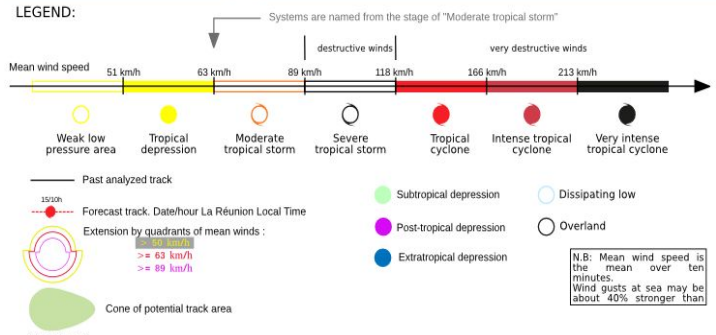
Intensification Factors:

Warm Ocean Waters: The Indian Ocean provided the necessary heat, fueling Chido’s growth.

Low Wind Shear: Minimal wind shear allowed the cyclone to maintain its structure and increase in intensity







WARNING:

The potential track area depicts the track forecast uncertainty for days 1-5 of the forecast. It indicates that the entire 5-days path of the center of the tropical system for which the track forecast has been made will remain within the cone about 75% of the time.

Hence being situated outside of the uncertainty cone does not mean that there is no risk of being affected by the system, especially so since the uncertainty cone is for the storm's center and does not consider the more or less large extension of potential damaging winds or rain surrounding this center.

The Role of SWIOCTC in Naming Cyclones

The South-West Indian Ocean Tropical Cyclone Committee (SWIOCTC) is the authority responsible for naming cyclones that impact Southern Africa. This committee consists of representatives from various countries including:

- Mauritius
- Madagascar
- Mozambique
- Seychelles
- South Africa

Naming Process

the name Chido, which means "grace" in some African cultures, was chosen to ensure resonance with local communities. This practice includes:

- Selecting names that are meaningful and culturally appropriate.
- Ensuring that the names can be easily pronounced and remembered by the public.
- Each year, member countries contribute names to a predetermined list.
- The names are simple, culturally relevant, and easy to remember.
- Once a cyclone forms and reaches tropical storm strength, it is assigned the next name on the list.
- This methodical process helps prevent confusion during the cyclone season when multiple storms may arise.

Assad's sea-facing holiday home in Latakia leaves Syrians in 'disgust'

Agence France-Presse
LATAKIA

The drive winds between manicured lavender-lined lawns to a crescent-shaped home with a gleaming swimming pool on the Syrian coast: Bashar al-Assad's holiday hideaway disgusts those who now come here.

"To think that he spent all that money and we lived in misery," spat Mudar Ghanem, 26.

He is grey-skinned and his eyes are sunken after spending 36 days in a Damascus jail, accused like other suspected dissidents of "terrorism" against the ousted President's rule.

Now he had come "to see with my own eyes how they lived while other people had no electricity", Mr. Ghanem said, standing by the windows of a huge white-marbled living room. "I do not care if the next President lives here too," he added, "as long as he looks after the people and does not humiliate us."

The Assad holiday home is in Latakia, Syria's second largest port after Tartus. It is in an area that is the heartland of the Assad clan's Alawite faith, an offshoot of Shia Islam.

On Sunday, a week after the deposed President fled Syria after a lightning militant offensive, curious people came to see how Mr. Assad had lived.

This was just one of three Assad villas on the outskirts of the city.

In scenes that were unimaginable just days ago, Syrians wandered through the luxury home that is now guarded by a handful of former militants.

Ransacked structure

There was no air of triumphalism, just stupefaction and anger at how Mr. Assad had lived a life of luxury in this idyllic seaside spot. Over the past week the house itself has been ransacked, stripped of its last doorknob, but the grandeur of its rooms and the antique mosaic adorning the entrance bear witness to its standing.

The land used to be owned by Nura's family. "They chased us away. I didn't dare come back" before now, the 37-year-old said, adding that she intends to seek legal redress to get her property back.

Children play inside an empty swimming pool at the summer residence of ousted Syrian President Bashar al-Assad in Latakia. AFP

Most people, like Nura, spoke freely but preferred not to give their full names. Despite its downfall, the fear instilled by the Assad name is still there. "You never know – they could come back," said 45-year-old Nemer.

The house belonged to Munzer al-Assad, a cousin of the former leader. Along with his brother, who died in 2015, Munzer ran the notorious "shabiha" militia, known for its abuses and trafficking operations.

"It is the first time I've stopped here," Nemer said. "In the past the guards would chase us away. We wer not allowed to park."

The two-storey house had also been stripped. Chandeliers, furniture, and stucco mouldings are all gone. Family photographs ripped up and portraits torn from now bare walls. The looters had been busy.

"I get 20 dollars a month. I have to do two jobs just to feed my family," Nemer said, bitter at the memory of Assad clan convoys that used to speed through the city streets. On the pavement outside, two passers-by stopped beside a sewer grating. They lifted it up and scooped out hundreds of small white pills. This was captagon, a banned amphetamine-like stimulant. It became Syria's largest export, turning the country under Mr. Assad into the world's biggest narco state. They said massive quantities of the drug had been found nationwide after Mr. Assad fell.

"I'm shocked by the scale of these crimes," said Ali, 30, a militant from Idlib.

"God will have his revenge," said Mr. Ghanem at the sumptuous holiday villa, standing there and looking out to sea.

Topic → Latakia: A Coastal Gem of Syria

Overview

📍 **Location:** Latakia is a coastal city in Syria, nestled along the Mediterranean Sea.

🌊 **Geography:** Known for its stunning beaches and mountainous landscapes, it is a favored spot for tourists.

🏛️ **History**: The city boasts a rich historical tapestry, influenced by the Phoenicians, Romans, and Ottomans.

🌍 **Economy:** As a major port, Latakia plays a crucial role in regional trade and commerce.

🕌 **Culture**: A melting pot of Arab, Armenian, and other cultures, contributing to its unique identity.

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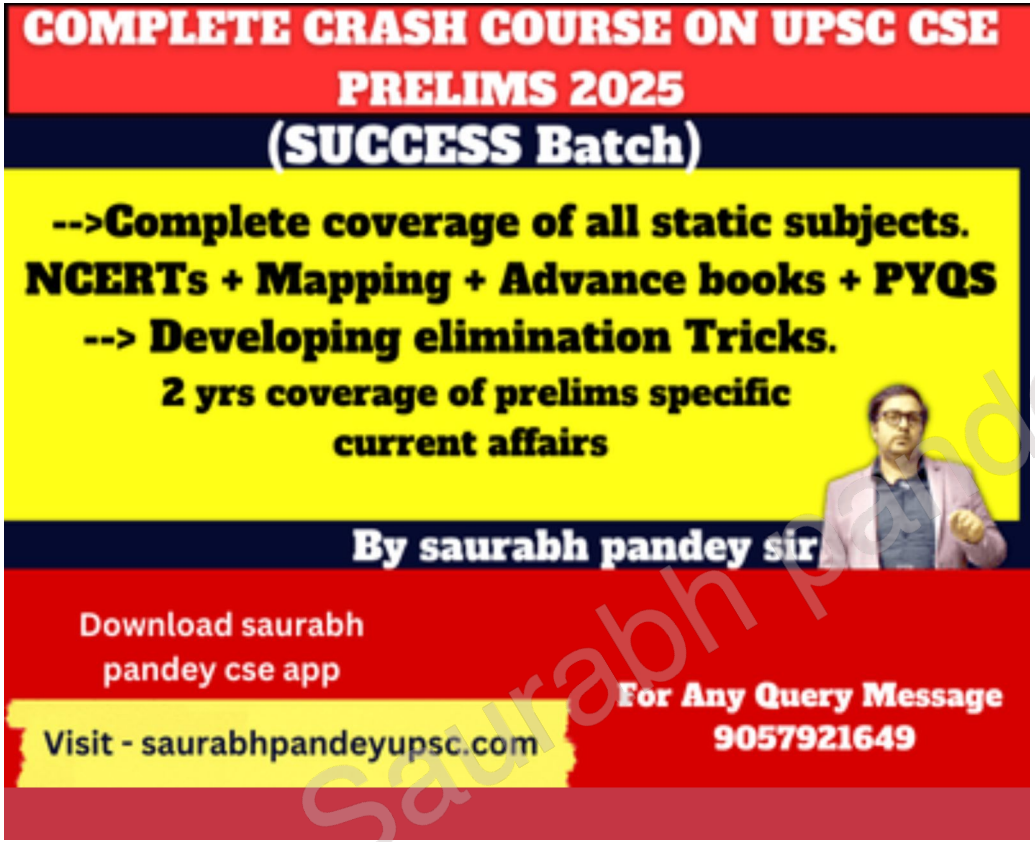

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BY SAURABH PANDEY SIR

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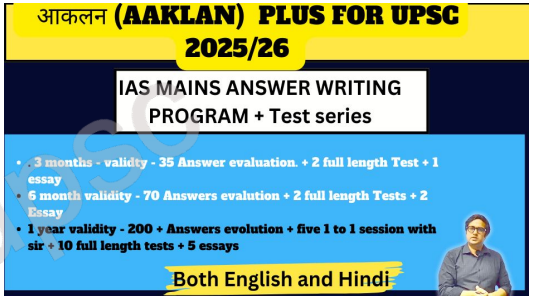

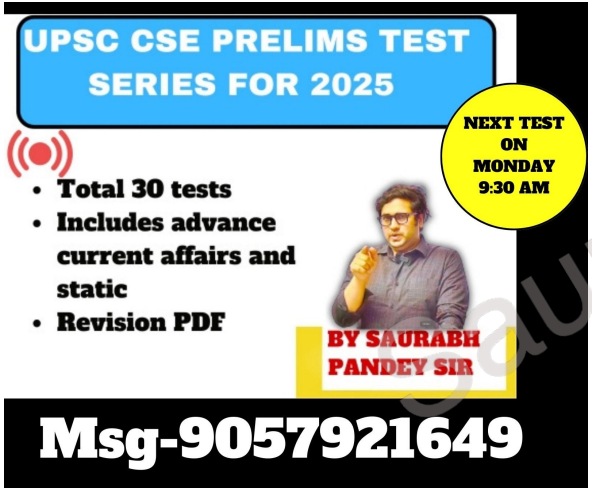

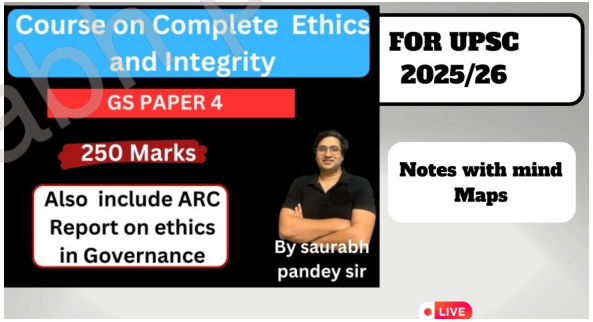

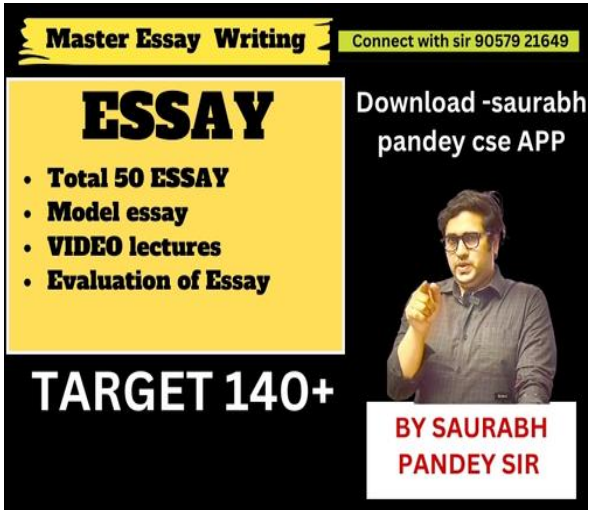

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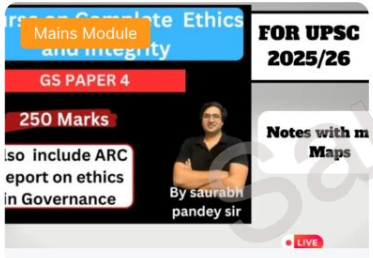

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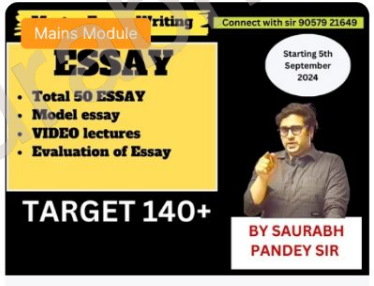

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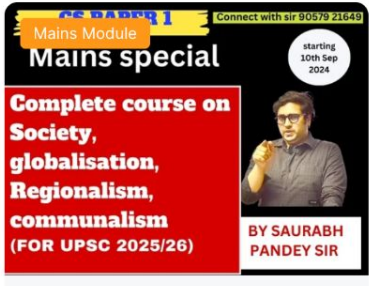

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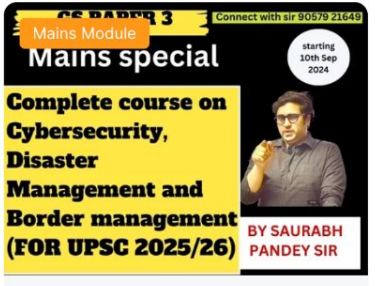

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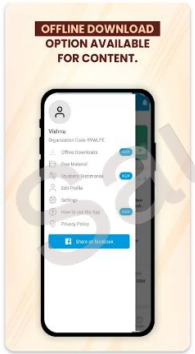

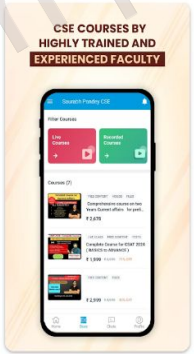

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