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March 2024

Editor: Dr. V. V. Georgekutty

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MESSAGE

It is with immense pleasure and pride, I present the second issue of the Handbook on Current Affairs before the student community in Kerala. It is an important step taken by the Civil Service Institute Pala to strengthen the competitiveness of the students in our universities and colleges. Being updated in today's dynamic world is the real challenge that the students face. I believe that this book will help them to improve their confidence level by being updated. May God Almighty bless you abundantly.

Msgr. Sebastian Vethanath
(Manager)

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A Foreword

I am happy to present before you the second issue of the Handbook on Current Affairs. With its broad scope of bridging concepts with current affairs in the varied subjects that are relevant for competitive examinations, job interviews and campus placements, the book is meant to fulfil a challenge. The challenge is to address minds filled with information and transform them to be analytical, innovative, critical and creative. Without knowledge of the current affairs, a graduate or post graduate may not establish himself/herself as a competent candidate in the area of study and employment. In the present system of university education, owing to the hindersome process of curriculum update, students may not get even an overview of the major events in the current world. There are currently a number of publications that bring articles on current developments on a defined topic. But an easily accessible book that gives an overview on the current developments of selected subjects that are widely considered important for job interviews and campus placements as well as for general essay type university questions is seldom found. This handbook is an effort of the Civil Service Institute Pala to supplement the knowledgebase of the students in colleges and universities with a note on the significant current developments in different subjects. This issue includes papers on Economics, International Relations, Indian Polity, Science and Technology, Environment and Disaster Management, Education and Sociology. This book is not for sale and it is made available to all final year UG and PG students in Kerala who are desirous of attending job interviews including campus placements as well as competitive examinations such as civil services examinations, they will find this book as a ready reckoner.

I also place on record my sincere thanks to Msgr. Sebastian Vethanath (Manager of the Institute), to Dr. Mathew Joseph (Associate Principal), Dr. Baby Thomas (Vice-Principal), the experts who contributed articles, and the Editorial Board, for their sincere efforts in making this book a reality.

Dr. V. V. Georgekutty
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One Nation, One Election

P. C. Cyriac IAS
Former Chief Secretary, Tamil Nadu

The Concept

The Central idea behind the "One Nation, One Election" campaign, is to synchronize the timing of the Loksabha and State Assembly elections and the Panchayat / Municipal elections, across all States, throughout the country.

The Government of India has constituted a Panel to study the feasibility of holding these elections simultaneously.

Our revered former Rashtrapathi, Honourable Ramnath Kovind is the Chairman of this Panel.

After our Constitution was adopted and the Republic of India began its Democratic journey, in 1950, the first General Elections were held during a four-month period in 1951-52, by the newly established Election Commission of India, under its legendary Chief Election Commissioner, Shri Sukumar Sen.

The entire country voted for electing its Members of Parliament, Members of Legislative Assemblies in the States and the Municipal Councillors and its Panchayat members during that historic four-month period.

The elected MPs and MLAs held office for 5 years except in the States of Travancore- Cochin and PEPSU, where the Central government had to take over the administration under Art. 356 of the Constitution after dissolving the State Assemblies. After the Second General Elections in 1957, history repeated itself, when in Kerala in 1959, the first democratically elected Communist Government in the World, under the Chief Minister, EMS Nambuthirippad, was dismissed and the State Assembly was dissolved, under Art 356 of the Constitution., followed by fresh elections. Many more similar events were to happen soon, which would completely upset the rhythm of the Indian Electoral Cycle.

Aayarams and Gayarams

The Fourth General Elections in 1967 created history when the Indian National Congress lost the majority in many States and Coalition governments of the Opposition Parties came to power there.

And soon, some of the Coalition partners started quarrelling on sharing the spoils and dissensions and defections followed. Many MLAs

were available for sale. Aayarams and Gayarams were many. Governments came and Governments went. Houses were dissolved and fresh elections held. Soon, Indian democracy was celebrated as not only the democracy with the largest electorate but the one which conducts elections most frequently. In fact, in a bid to stop the unseemly procession of Defector-led Governments, we experimented with enactments for preventing defections.

When the Elections are frequent, the Ministers and top leaders will be always on the campaign mode and will be keen to adopt policies which will please the voters. And the Policies which will yield results in the long term will be forgotten. Before every election, there will be a period, covered under the Model Code of Conduct, when no important decision should be taken and announced. In short, the frequent elections and the Model Code of Conduct periods together, will ensure a period of paralysis of decision making.

Not the taking of decisions alone, even the implementation will get slowed down as the Ministers will be busy campaigning and the officers will also be on election duty.

Pros

If the Elections are held only once in five years, the Ministers and top bureaucrats will get a lot of time to think and initiate long term policy measures. The quality of governance will improve. Business friendly policies will come. The economy will improve. Project approval and project implementation will be faster. More employment opportunities too will come.

It is found that a lot of money can be saved. If the "One Nation, One Election" policy gets accepted, since the election expenses will have to be incurred only once in five years. And since the officers need to be diverted from their regular work and deputed to the Election duty, only once in five years, there is saving there also.

In view of these factors, the proponents of the One Nation One Election policy, hopefully look forward to the recommendations of the Ramnath Kovid Panel's favourable recommendations.

In short, Streamlining the electoral process would enhance better governance, efficiency and faster economic development and make our Country the third highest economy, sooner than expected. On these grounds, India should revert to a cycle of simultaneous elections., once in five years.

Çons

On the other hand, let us examine the problems and difficulties in implementing the attractive looking "One Nation, One Election"

policy. To implement this concept, the Constitution of India and the Representation of Peoples Act, will have to undergo many changes. The Constitutional amendments here, will need two- third support in both Houses of Parliament and the consent of more than half the States, to go ahead.

If the Loksabha and the State Assembly elections are held together, the Regional and local issues will get overshadowed by the national issues. If voters end up voting on national issues even for State polls, it would not further the public interest. People should be given an opportunity to express their views on vital local issues and for this, the local polls should be held separately. And further, 12. if the voters end up voting on national issues even in the local elections, it would benefit only the large national parties and marginalise the Regional Parties.

It will be very difficult to organise the polling arrangements, including collecting together the required number of Electronic Voting machines and VVPAT machines, for conducting the Parliament and State Assembly elections together. If all the States are to conduct the simultaneous elections under the, "One Nation, One Election" policy, even the manpower requirement will be huge. In short, the claim that a huge amount of money would be saved if simultaneous elections are held, is not true. The mobilisation of the required resources will be an immense challenge and the cost would, in fact, go up.

"One Nation, One Election" may result in lack of accountability towards the people. The different elections coming up one after the other, serve to keep the politicians on their toes and continuously accountable.

In a federal set up, it is necessary to give enough opportunity to the States to protect their local language and culture and initiate discussions on issues relevant to each State. If the state elections are held along with the Loksabha elections, the local concerns will never get highlighted and the people will be denied the opportunity to study them and take a stand. This dilution of local issues will make the States and our Federal structure very weak. So, there are serious issues making one hesitant to get into the "One Nation, One Election" bandwagon.

Let not the battle cry "One Nation, One Election" degenerate into " One Nation, One Election, One Leader!"

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Bharatiya Nyaya Sanhita: Does It Deconstruct the Age-old Laws?

Adv. Anu Maria Francis
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On December 25th, 2023, the official gazette published the Bharatiya Nyaya Sanhita, replacing the Indian Penal Code of 1860, along with two other new laws, the Bhartiya Nagrik Suraksha Sanhita ('BNSS') and the Bharatiya Sakshya Adhiniyam ('BSA') correspondingly replacing the Criminal Procedure Code and the Indian Evidence Act. Being a creation of the British colonial period, the Indian Penal Code (IPC) contained numerous provisions that were subject to debate due to their harsh and oppressive characteristics. This article examines the sanhita in relation to the IPC and evaluates whether the sanhita has eliminated unnecessary provisions and introduced new offences relevant to the modern era.

The Sanhita contains updated and extended definitions. The Sanhita has provided a clear definition of "child" and has broadened the concept of gender to encompass transgender individuals, which is a commendable step. Gender neutrality is read into some of the provisions, especially those relating to children, such as Section 96, which deals with the procurement of a child instead of a girl, as discussed in Section 366A of the IPC. Nevertheless, the regulations pertaining to rape continue to focus primarily on women and have not encompassed individuals of other genders. Although the Supreme Court struck down the section on adultery in the case of Joseph Shine v Union of India, marital rape was not included in the Act. The infractions committed against women and children are exhaustively examined, and a significant number of these transgressions carry harsher penalties.

It is dubious whether the entire section should be deleted rather than the parts dealing with homosexual acts that were decriminalised under section 377 of the IPC. Although the laws pertaining to rape still exhibit gender bias, non-consensual sexual acts could potentially be addressed under the existing Section 377, which is the only provision that is not specific to a particular gender. The existence of gender-based violence highlights the out-dated nature of the Sanhita due to its failure to acknowledge gender neutrality as a standard in its provisions.

The Sanhita has preserved certain sections in their original form, demonstrating a conservative position despite multiple interventions by the Supreme Court in its various rulings. An example of this is the regulation regarding the sale of obscene publications outlined in Section 292 of Sanhita. The Supreme Court in the case of Sarkar v State of West Bengal in 2014 observed that "'the obscenity has to be judged from the point of view of an average person, by applying contemporary community standards." The Court emphasised the significance of prioritising constitutional morality over personal morality when it comes to criminalization. However, it is noteworthy that the provisions of the new Sanhita remain unchanged.

One significant modification in the sanhita involves the inclusion of "community service" as a form of punishment for minor offences. There is no definition to the term community service and the punishment figures in six different offences. One of them is theft, convicted for the first time and having a value of less than Rs 5,000, if the stolen item is restored or upon returning the value of property stolen and defamation. What must be observed are the consequences of implementing this reformative form of punishment for both the offender and society at large.

The efficacy of reformative punishment may be compromised despite the implementation of novel approaches. Moreover, the Sanhita has not eliminated the use of solitary confinement as a punitive measure. Sustaining an individual in solitary confinement for a duration of three months may not effectively achieve the intended deterrent effect and constitutes a violation of human rights. Therefore, the prevailing tendency towards more severe penalties, the continued use of solitary confinement, and the implementation of reformative punishment approaches are perplexing.

The widely discussed addition to Sanhita is the offence of organised crime and acts of terrorism, when the states have specialised laws in place to tackle organised crime and UAPA for combating terrorism related offences, respectively. The terms like land grabbing, contract killing, etc. are not explained or defined in detail, thus leaving room for discretion. Interestingly, there is a provision for 'petty organised crime' as well, which includes the sale of public examination question papers. Some of the crimes listed under both sections feature in certain state level acts and can thus cause jurisdictional issues.

A major development of the Sanhita is the deletion of the controversial section on sedition in the IPC and replacing it with an equivalent provision, but in a more precise manner. Unlike the provision in the IPC, the Sanhita considers only those acts that threaten the sovereignty of the country, not words or gestures in themselves. It has included acts purposively done through electronic communication or the use of financial means as well to cope with the changes in technology.

The Sanhita effectively puts an end to the longstanding debate regarding the criminality of suicide attempts, effectively prohibiting the classification of mental disorders and fleeting thoughts as criminal activity. All sorts of abetment to suicide, including the cruelty of a husband or relatives that compels a woman to commit suicide, are punishable with a higher degree of punishment under the new law. A person who attempts suicide to prevent a public servant from performing their duties is subject to punishment under Section 226 of the new law, which includes a maximum one-year jail sentence, a fine, and/or community service.

Among the new sections is Section 48, which addresses the subject of someone from outside India aiding and abetting an offence in India. It grants the courts additional territorial jurisdiction to try cases involving this type of conduct. Mob lynching is listed as a crime in one of Section 103's subsections. Recognising the act as an offence can serve as a deterrent, especially in the light of the recent rise in these types of incidents. The definition of "mob lynching" is "murder committed by five or more people acting together on the basis of race, caste or community, sex, place of birth, language, or personal belief."

The recent spike in the number of hit and run cases has encouraged lawmakers to define it as a separate offence in the Nyaya Sanhita. If the offender leaves the scene without reporting the crime, the clause imposes a harsher penalty. An offence is committed only if the perpetrator flees the scene and fails to notify the police or magistrate promptly following the occurrence.

The Sanhita, despite having a more expansive definition of gender, harsher penalties, equitable punishments for crimes committed against women and children, and the identification of crimes such as mob lynching, does not succeed in challenging the colonial mindset. Laws pertaining to sexual offences continue to be centred around women and ignore other genders, despite the fact that we live in an age where gender and sexual identity are significant. The enforcement of specialised state laws may become unnecessary if organised crime is brought under central law, which could weaken the federalist lawmaking authority.

Addressing Gender Disparity in Politics: Women's Reservation Bill in India

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Globally women remain significantly underrepresented in Political spheres holding an average of only 24% of parliamentary seats. Rwanda is the country with the highest percentage of women legislators in its Parliament; forty nine of its 80 Lower House seats are occupied by women (around 61 per cent). In 1990, Tutsi rebel forces, such as the Rwandan Patriotic Front (RPF) invaded Rwanda and it resulted in genocidal killings extended over 100 days. Women faced sexual assaults but most of the men lost their lives. Thus 70 per cent of the total population became women after the war. The Rwandan government put forward a gender equality initiative, promising 30 percent women quota in all decision-making bodies. The Philippines, one among the first countries in the world to introduce reservations for women, has crossed the global average with 28 percent. In Bangladesh, Pakistan, Nepal and South Korea as many as 50 percent of seats are reserved. When compared to BRICS nations, including the new members, India has the 2nd lowest share (15%), just above Iran (6%). The number of women MPs has increased from 5% in the first Lok Sabha to 15% (82 women MPs) in the 17th Lok Sabha. The average number of women MLAs in Assemblies across the nation accounts for only 8%. In the 2023 election, Nagaland got its first 2 women MLAs. Mizoram too has not had a women MLA in the past 7 Assemblies. Spotting this disparity, the Women's Reservation Bill emerged as a legislative initiative to address the under-representation of women in politics.

History of Women Reservation Bill

The women's reservation bill in India has been a vital topic in the country's political background for more than a few decades. Initial demands for Women's participation in governance in India date back to the pre-independence era. In 1931, prominent leaders Begum Shah

Nawaz and Sarojini Naidu wrote a letter to the then British Prime Minister advocating the absolute equality of political status for Indian women. The letter read, "To seek any form of preferential treatment would be to violate the integrity of the universal demand of Indian women for absolute equality of political status." In the post-Independence scenarios, even if the Constitution of India was drafted and equality to all citizens was offered, there was no specific provision for women's representation in the political domain. Fast forward to 1971, the National Action Committee on the Status of Women in India highlighted women's dwindling political representation in the country. Over the years, there have been a number of suggestions to amend the constitution to reserve seats for women in the Parliament and State Legislative Assemblies. The Women's Reservation Bill, was presented in the Parliament in different forms since the mid-1990s.

Women reservation at Local level: 73rd and 74th Constitutional Amendment Acts 1992

In 1987, Rajiv Gandhi's government constituted a 14-member committee under then Union Minister Margaret Alva, which presented the National Perspective Plan for Women. Among the committee's 353 recommendations was the reservation of seats for women in elected bodies. The National Perspective Plan for Women1988 recommended reservations for women at all levels of governance, from Panchayat to Parliament. Rajiv Gandhi introduced the Constitution Amendment Bill to provide one-third reservation for women in rural and urban local bodies. The Bill was passed in Lok Sabha but failed to get passed in Rajya Sabha in September 1989. In 1992, Prime Minister PV Narasimha Rao's government passed the 73rd (Article 243D) and 74th Constitutional Amendment (Article 243T) Acts 1992, which mandated the reservation of one-third of seats (33.3%) for women in Panchayati Raj institutions and offices of the chairperson and in urban local bodies. This was a historical footstep towards augmenting women's political participation at the base level.

This had a transformative impact at the grassroots level, resulting in the elevation of over 1.4 million women to leadership positions. Latest data reveal that around 44 percent of seats in local bodies are held by women in India, a significant record that makes India one of the top-performing countries in the world in women's political empowerment at the local level, leaving behind other major countries like France, United

Kingdom, Germany, and Japan. Panchayat-level politics has shown to be a crucial platform for women to take part in public life and decision-making bodies, considerably boosting their leadership capacity and self-confidence. A 2010 study published by the India Policy Forum, organised by the NCAER, noted that Elected Women Representatives (EWRs) at the panchayat level are less likely to be allied with corruption, and are more efficient to coordinate developmental work alike investing in health, education, irrigation, expansion of drinking water facilities in rural areas. EWRs play a key role in providing redressal support on issues of domestic violence and child marriage. Women's entry into non-traditional spaces has challenged existing rigid gender norms in rural India. EWRs perform as role models to other women in their communities and attract other women to participate in politics. In 2006, Bihar became the first state to increase the reservation percentage to 50%, under CM Nitish Kumar. Chhattisgarh, Madhya Pradesh, Rajasthan and Uttarakhand subsequently passed laws to increase reservation for women in Panchayats to 50%. At present, 20 states, including Madhya Pradesh, have 50% reservations for women at the Panchayat level.

Women Reservation Bill- Upper bodies- Milestones:

The discussion upon the women reservation bill has been prevalent since 1990s. The Women's Reservation Bill was first introduced in Parliament in 1996 by the H D Deve Gowda-led government. Ramakant D Khalap, then Minister of State for Law brought the Constitution (Eighty-first Amendment) Bill, 1996 (insertion of new Articles 330A and 332A) to the Lok Sabha on September 12. However, several leaders in the United Front government, a coalition of 13 parties, were not in favour of the Bill. It was then referred to a Joint Committee. Two years later, the Atal Bihari Vajpayee-led NDA government pushed the WRB Bill in the 12th Lok Sabha in 1998. However, this time too, the Bill failed to get support, and lapsed again. It was subsequently reintroduced in 1999, 2002 and 2003 under the Vajpayee government, but with no success. The National Policy for the Empowerment of Women (2001) had stated that reservation will be considered in higher legislative bodies. In May 2004, the Congress-led United Progressive Alliance (UPA) government, led by then PM Manmohan Singh, declared its commitment to introduce legislation for one-third reservation for women in Vidhan Sabhas and the Lok Sabha. In 2008, the Bill was examined by the Standing Committee on Personnel, Public Grievances, Law and Justice. The recommendations

given by the Committee included considering reservation for women belonging to other backward classes at an appropriate time, providing reservation for a period of 15 years and reviewing it thereafter and working out the modalities to reserve seats for women in Rajya Sabha and state legislative councils. In 2009, the Constitution (110th Amendment) Bill was introduced in the Lok Sabha to increase reservation for women from one-third (33%) to one-half (50%) of the total seats in panchayats. In 2010, the Union Cabinet passed the Bill and Rajya Sabha passed it. The Rajya Sabha passed the Women's Reservation Bill unanimously on September 21 with 214 members voting in support and none against. In 2014, the Bill was expected to be tabled in LS. The bill also proposed sub-reservation for Scheduled Casts, Scheduled tribes and Anglo-Indians within the 33% quota.

Despite several attempts to pass the bill, it has faced repeated delays and has not yet been enacted into law. Various political factors, including coalition dynamics and differing ideological stances, have resulted in the bill's stalling. The bill faced significant challenges and opposition from various quarters, including political parties and some activists. Critics raised concerns about the effectiveness of the reservation policy, its impact on the existing political system, and the need for broader societal changes to ensure genuine gender equality. Efforts continued, with various governments introducing the Bill repeatedly, but the political landscape remained challenging.

Women Reservation Act 2023

The legislation to mandate one-third reservation for women in India's lower house of parliament and state assemblies was passed in the special session of the Indian parliament associated with the shift to the new parliament building inaugurated on 28 May 2023. The session was held between 18 and 22 September. However, the highlight of the session was the passage of the long-delayed legislation mandating one-third reservation for women in the lower house of parliament (Lok Sabha). The Constitution (One Hundred and Twenty-Eighth Amendment) Bill, 2023 was introduced in Lok Sabha on September 19, 2023.

It also has the sunset clause of 15 years from the date of enactment of the legislation. The legislation was passed by 454-2 votes in the Lok Sabha and in the Rajya Sabha, where all the 214 members voted in favour of it. 15% of the total members of the 17th Lok Sabha are women while in state legislative assemblies, women on an average constitute

9% of the total members. In 2015, the Report on the Status of Women in India noted that the representation of women in state assemblies and Parliament continues to be minimal. It is noted that decision making positions in political parties have negligible presence of women. It recommended reserving at least 50% seats for women in local bodies, state legislative assemblies, Parliament, ministerial levels, and all decision-making bodies of the government. During the debate on the legislation, several opposition parties pointed out these anomalies as well as the necessity for reservation for the OBCs within the women's quota. However, the government ignored those demands and asserted that delimitation is necessary to identify women's reserved seats. The home minister also stated that the reservation will be implemented only after 2029. Under the provisions of the current legislation, there are two new articles – 330A and 332A.

Key Points on Corresponding Articles in The Act

Reservation of seats in Lok Sabha (Article 330A)

The Act introduces a new Article 330A to the Indian Constitution, which mandates the reservation of one-third of the total number of seats in the Lok Sabha for women.

This provision is borrowed from the existing Article 330, which guarantees reservation for Scheduled Castes (SC) and Scheduled Tribes (ST) communities.

2. Reservation of seats in Legislative Assemblies (Article 239AA)

The Act creates a new Article 239AA specifically for the Union Territory of Delhi (National Capital Territory).

This article mirrors Article 330A and mandates the reservation of one-third of the total number of seats in the Delhi Legislative Assembly for women.

For state legislative assemblies outside of Delhi, the Act encourages state legislatures to pass similar legislation within their respective jurisdictions.

3. Reservation within Reserved Seats (Article 334B)

The Act introduces Article 334B, which mandates that one-third of the seats reserved for Scheduled Castes (SC) and Scheduled Tribes (ST) in the Lok Sabha and state legislative assemblies must be further reserved for women belonging to these communities.

This ensures increased representation for both women and marginalized communities within the political landscape.

4. Rotation of Reserved Seats (Article 334C)

The Act introduces Article 334C, which outlines the principle of rotation for reserved seats for women.

This system ensures that different constituencies experience the benefits of women's representation over time and prevents any specific constituency from having a permanent claim to a reserved seat.

5. Commencement and Transitional Provisions (Article 334D)

The Act outlines the timeline for its implementation through Article 334D.

The provisions came into effect on the date of receiving the President's assent in October 2023.The article also addresses transitional provisions for existing female representatives to ensure a smooth transition and continued representation.

Women Reservation Bill: Controversies

Uncertainty: The current Bill simply says that it shall come into effect "after an exercise of delimitation is undertaken for this purpose after the relevant figures for the first Census taken after commencement of the Bill. It does not offer women's reservation in the Rajya Sabha and State Legislative Councils. The Rajya Sabha at present has less representation of women than the Lok Sabha. Representation should be perfect which could be reflected in both the Lower and Upper Houses. The Women's Reservation Bill represents a significant stride towards achieving gender equality in political representation. While its implementation may face challenges, its potential impact in empowering women cannot be denied. As societies continue to strive for equality and inclusivity, the passage of the Women's Reservation Bill emerges as a crucial step towards realizing these ideals.

India and Bharat: A Deep Dive into Cultural Heritage and Political Dynamics

Shahin Basheer
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In the kaleidoscope of India's diverse identity, the names "India" and "Bharat" weave through the intricate fabric of history, resonating with cultural pride and political symbolism. From the ancient verses of the Rig Veda to the constitutional principles of modern India, these names encapsulate the essence of a nation shaped by centuries of cultural diversity and historical evolution. Recent discussions regarding the increased emphasis on "Bharat" in official communications have sparked debates, reflecting broader conversations about heritage, unity, and linguistic choices. As we embark on a comprehensive exploration of this nuanced landscape, we'll trace the historical roots, navigate the constitutional perspectives, delve into the political implications, and unravel the complex interplay between "India" and "Bharat."

Historical Roots: Resonating Through Antiquity

The roots of "Bharat" extend deep into antiquity, tracing back to the Rig Veda, where its association with the legendary King Bharata establishes a profound historical connection. This connection not only adds cultural depth but also serves as an anchoring force within the collective consciousness of the nation. In sharp contrast, the term "India" bears the imprint of foreign origins, having been historically utilized by external forces and colonial powers to demarcate the vast subcontinent. This dichotomy transcends linguistic nuances, unveiling a complex historical interplay between indigenous identity and external perceptions. Thus, the layers of India's historical nomenclature unfold, painting a vivid picture of the intricate fabric woven over centuries by cultural evolution and external influences, shaping the nation's identity in multifaceted ways.

Nationalism and Identity: The Cultural Renaissance

The 19th and early 20th centuries witnessed the emergence of a cultural renaissance in India, a transformative period that significantly influenced the narrative of a unified nation. During this epoch, advocates ardently rejected names with foreign origins, channelling their efforts towards fostering national pride deeply rooted in ancient heritage. Within this movement, the term "Bharat" gained prominence, resonating with profound cultural significance and embodying the spirit of a resurgent nation. Concurrently, the syncretic term "Hind" also found favour, emphasizing a shared identity that transcended religious affiliations. The discourse surrounding names during this era reflects a profound quest for a unified national identity, a journey that transcended linguistic preferences and delved into the rich fabric of India's historical and cultural heritage.

Constitutional Symphony: Balancing Linguistic Equilibrium

The Indian Constitution stands as a pivotal cornerstone, embodying the principles of democracy and celebrating the vast richness of diversity within the nation. Commencing with the eloquent phrase "India, that is Bharat," the constitution skilfully encapsulates the coexistence of both names, acknowledging their profound historical and cultural significance. Recent shifts in official communications, where "Bharat" gains emphasis, introduce another layer without disturbing the constitutional equilibrium. In Article 1, the nation is defined as "India, that is Bharat," establishing a robust legal framework that not only honours linguistic diversity but also reaffirms a shared national identity. This constitutional symphony masterfully balances the historical roots embedded in both names, emphasizing the importance of linguistic equilibrium in weaving a united national narrative that respects and cherishes its diverse cultural heritage.

Political Implications: Decoding Linguistic Choices

The recent surge in emphasizing "Bharat" in official communications aligns with specific political factions, triggering wider debates surrounding the potentially divisive nature of linguistic preferences. The deliberate choice to prioritize "Bharat" over "India" in official contexts, including global summits, raises pertinent questions about the broader political implications inherent in such linguistic choices. This linguistic shift extends beyond mere semantics, permeating the intricate fabric of national discourse and identity. It reflects a nuanced interplay

between political symbolism and cultural narratives, underscoring the deep-seated connection between linguistic choices and the political landscape. As linguistic preferences become key markers in political communication, they wield the power to shape perceptions, influence public sentiment, and contribute to the ongoing evolution of the political and cultural ethos within the nation. The broader discourse surrounding these linguistic choices thus unfolds as a dynamic reflection of the complex interrelationships between politics, culture, and national identity.

Cultural Significance of "Bharat": Embracing Heritage Globally

The term "Bharat" carries a profound cultural significance deeply rooted in ancient texts and traditions, embodying the essence of India's rich heritage. Sadhguru's exploration of the term accentuates its sensory and emotional dimensions, symbolizing the rhythmic heartbeat of a nation grounded in cultural legacy. In today's globalized landscape, where cultural identities grapple with the pressures of homogenization, the embrace of "Bharat" serves as a powerful assertion of cultural uniqueness and continuity. It becomes a poignant reminder of India's diverse historical fabric that transcends geographical boundaries. However, it is crucial to acknowledge that "India" itself has become ingrained in global culture, literature, and political discourse, reflecting the multifaceted and inclusive nature of India's cultural identity. This duality underscores the complexity of India's cultural narrative, where the timeless resonance of "Bharat" coexists harmoniously with the global recognition embedded in the name "India."

International Recognition and Pragmatism: Navigating Global Diplomacy

Internationally, India has consistently employed the name "India" in diplomatic engagements, underscoring its global recognition and widespread acceptance. This strategic use of nomenclature aligns with a dual-language approach evident in official documents, symbolizing India's unwavering commitment to multilingualism and inclusivity. The deliberate balancing act between traditional nomenclature and pragmatic global engagement showcases a nuanced approach imperative for navigating the intricate complexities of a rapidly changing world. By maintaining the use of "India" on the international stage, the nation not only upholds its historical continuity but also pragmatically positions itself within the global discourse. This strategic

alignment fosters a diplomatic environment that respects the country's diverse linguistic heritage while ensuring effective communication and cooperation on the international stage.

Legal and Constitutional Considerations: Navigating Unity and Diversity

The Supreme Court's steadfast rejection of pleas to rename 'India' as 'Bharat' serves as a robust affirmation of the legal and constitutional stability inherent in the current naming convention. This stance underscores the profound implications any alteration would carry, as it would necessitate a meticulous constitutional amendment. Such a process would require considerable procedural diligence, adding layers of complexity to linguistic choices and reflecting the delicate balance between tradition and evolution. The Constitution, often regarded as the charter of unity, not only acknowledges but celebrates linguistic diversity, recognizing it as a cornerstone in the forging of a collective national identity. This legal framework encapsulates the essence of India's unity in diversity, providing a stable and resilient foundation that upholds the nation's constitutional ethos amidst the evolving discourse surrounding its nomenclature.

Current Scenario: Embracing Diversity in Unity

In the current dynamic discourse surrounding "India" and "Bharat," adopting a balanced perspective is imperative. Both names weave intricate threads into the historical, cultural, and political arena that forms India's multifaceted identity. The term "Bharat" resonates deeply with ancient roots, invoking a profound connection to cultural heritage that spans millennia. On the other hand, "India" signifies continuity in international relations and serves as a recognition of the nation's linguistic diversity. Embracing diversity within unity is crucial, recognizing that the strength of the nation lies in harmonizing the multiplicity of identities within its borders. It's this symbiotic relationship between "Bharat" and "India" that encapsulates the essence of a nation navigating the complexities of modernity while cherishing its rich historical and cultural legacies. Finding common ground in this diversity is not just a rhetorical pursuit but a dynamic acknowledgment of the intricate layers that constitute the unique identity of India.

So, in the vast and diverse mosaic of India, the names "India" and "Bharat" coexist harmoniously, each contributing to the rich narrative of a nation that cherishes its multifaceted heritage and embraces the

complexities of its identity. The journey through history, culture, and politics reflects the intertwined nature of linguistic choices with the evolution of a nation. The resonance of "Bharat" with ancient roots and cultural depth echoes through the ages, while "India" serves as a dynamic bridge connecting the nation to the global community. As India steps into the future, the delicate balance between tradition and pragmatism becomes paramount. The coexistence of these names reflects not a dichotomy but a synthesis of diverse elements that form the bedrock of India's strength.

This nuanced relationship between "India" and "Bharat" underscores the nation's ability to navigate change while preserving its fundamental essence. The constitutional stability and legal framework, reaffirmed by the Supreme Court, provide a solid foundation for this delicate equilibrium. In embracing unity within diversity, India finds its strength, ensuring that linguistic preferences do not become divisive but rather contribute to the vibrant fabric of the nation. As India charts its course on the global stage, the names it chooses to adopt become symbolic representations of its multifaceted identity, encapsulating a rich historical past and an inclusive vision for the future.

The Conundrum of Governorship in Contemporary India

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"The Governor has no functions which he is required to exercise either in discretion or his individual judgement. According to the principles of the constitution, he is required to follow the advice of his ministry in all matters" Dr. B R Ambedkar

In recent times, the post of Governor in India has been a subject of intense scrutiny and discussion within the media and academic circles. The renewed interest in this constitutional office is not without reason; it reflects the evolving dynamics of federalism, governance, and politics in India.

The hullabaloo over controversies surrounding the actions of Governors across various states in India, such as Maharashtra, Tamil Nadu, Kerala, Telangana, West Bengal etc., has reignited deliberations on the role, powers and even the need of this constitutional office. From the return of bills for reconsideration to clashes with democratically elected state authorities, these incidents have sparked debates on the constitutional mandate and discretionary powers vested in Governors. These events highlight the challenges faced by Governors in upholding constitutional principles while navigating political realities. The clash between governors and state governments, as seen in Kerala and Tamil Nadu, underscores the delicate balance of power within India's federal structure. Moreover, judicial interventions, such as the Supreme Court's rebuke of governors causing delays in bill approvals, reflect the need for checks and balances to prevent abuse of power.

This article delves into the historical backdrop, constitutional provisions, and contemporary challenges faced by Governors in India, while also exploring potential avenues for reform. The institution of Governorship in India traces its origins back to the colonial era when it was first established under the Government of India Act, 1935.

The Government of India Act of 1935 marked a significant shift in India's constitutional landscape, particularly with regard to provincial autonomy. This legislative enactment aimed to redefine the power dynamics between the central and provincial governments within British India. One of the primary objectives of the Government of India Act of 1935 was to decentralize power and grant provinces a higher degree of autonomy in their internal affairs. Under the new provisions, the Governor emerged as the head of the executive in the provinces, representing the Crown's authority.

The Governor was the head of the executive; and there was a Council of Ministers to advise him. These ministers operated under the scrutiny and control of the provincial legislatures, which held the power to both appoint and remove them, thereby ensuring a degree of democratic accountability in the executive branch. While the Act granted greater autonomy to provinces, the Governors retained certain special reserve powers, thereby maintaining a level of centralized control within the provincial administrations. These reserve powers allowed British authorities to intervene in provincial affairs under exceptional circumstances, such as threats to public order or constitutional breakdowns.

The convening of the Constituent Assembly of India in 1946 heralded a momentous chapter in the annals of the nation's history, gathering representatives from diverse corners of the land. Comprising luminaries from various political factions, princely domains, and heterogeneous communities, this august Assembly, presided over by the venerable Dr. Rajendra Prasad, embarked upon a noble mission - the drafting of a constitution befitting the lofty ideals and yearnings of a nascent independent state. Among the stalwarts shaping this constitutional tapestry were the visionary figures of B.R. Ambedkar, Jawaharlal Nehru, and Sardar Vallabhbhai Patel, drawing inspiration from an eclectic array of sources - India's rich cultural tapestry, global constitutionalism, and the eternal principles of justice and egalitarianism.

Amidst the tumultuous backdrop of Partition, insurgencies, communal tensions, and the lingering shadows of colonial rule, the imperative of forging a robust Union to bind the nation's disparate strands assumed paramount significance. It was amidst these tempestuous currents that the role of Governors in shepherding the fledgling democracy found itself thrust into the crucible of deliberation. Yet, within the hallowed

precincts of the Constituent Assembly, divergent voices clamoured for recognition, each articulating its vision of the powers and prerogatives vested in the State Governor. An undercurrent apprehension permeated the discourse, evoking memories of colonial-era Governors acting as emissaries of the central authority, wielding unchecked power akin to their imperial predecessors.

The contours of the debate crystallized around the pivotal question - should the appointment of Governors be ordained by the President of India or democratically elected by the populace at large? The Provincial Constitution Committee, under the stewardship of Patel, advocated a parliamentary form of governance, the direct election of Governors by adult suffrage. However, amidst fervent deliberations, the tide of opinion shifted, with proponents of direct election facing formidable opposition. Concerns were voiced that an elected Governor might encroach upon the authority of the Chief Minister and inject partisanship into the gubernatorial office.

Consequently, the Constituent Assembly, in a momentous decision, veered away from the path of direct election, embracing instead a system where Governors are appointed by the President. Hence the governor is neither directly elected by the people nor indirectly elected (as is the case with the president); he/she is appointed by the president by warrant under his hand and seal. This choice, borne out of a desire to safeguard the impartiality of the gubernatorial office and shield it from the partisan maelstrom, found resonance amidst the tumultuous landscape of post-independence India. In the crucible of history, the role and appointment of Governors assumed a sacrosanct mantle, symbolizing the nation's enduring commitment to upholding the sanctity of democratic governance and fostering a harmonious equilibrium between the Union and the States.

Following independence, the role and powers of Governors were outlined in the Indian Constitution, primarily in Articles 153 to 356. According to these provisions, Governors are appointed by the President of India to represent the Union government in states and union territories. The governor possesses executive, legislative, financial and judicial powers more or less analogous to the President of India. However, he has no diplomatic, military or emergency powers like the president. Constitutional provisions, such as Articles 156, 161, 163, 200, and 356, outline the powers and functions of Governors, including the

ability to grant pardons, appoint Chief Ministers in certain situations, and dismiss state assemblies in case of constitutional breakdown. Over the years, the functions and powers of Governors have evolved, with a primary responsibility of ensuring the smooth functioning of the state administration and safeguarding constitutional values. Despite the intent for impartiality, the discretionary powers vested in Governors, particularly during situations like the imposition of President's Rule or the formation of governments in hung assemblies, have often been a subject of contention and debate.

Contemporary India presents Governors with a myriad of challenges that require adept handling. One such challenge pertains to the increasing politicization of the office, where Governors are often perceived to act at the behest of the ruling party at the Centre rather than upholding constitutional principles impartially. This phenomenon has led to concerns regarding the erosion of federalism and the independence of state governments.

To address these challenges, there is a need for a nuanced understanding of the role of Governors and a re-evaluation of their powers and functions. Enhancing transparency in the appointment process, ensuring Governors act as impartial custodians of the Constitution, and promoting greater cooperation between the Centre and states are some measures that can contribute to strengthening the institution. Recommendations from various commissions, such as the Punchhi Commission and the Administrative Reforms Commission, advocate for reforms like limiting gubernatorial discretion, ensuring objective reporting during President's rule, and using Article 356 sparingly. Furthermore, there are proposals to establish time limits for bill approval and disqualify governors from seeking subsequent public office aim to enhance accountability and prevent political interference.

In conclusion, the post of Governor in India is at a crossroads, necessitating reforms to balance constitutional duties with democratic principles. By addressing concerns regarding discretionary powers, promoting transparency in decision-making, and enhancing accountability mechanisms, the institution of Governorship can effectively contribute to the country's federal structure and uphold the rule of law.

The Curious Case of Internet Shutdowns in the Largest Democracy

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"When the internet is shut down, I have no work, do not get paid, cannot withdraw any money from my account, and cannot even get food rations." H.K., 35, a Dalit woman with five children, Rajasthan, September 2022

In recent years, India has witnessed a peculiar phenomenon that has sparked both concern and curiosity: internet shutdowns. An internet shutdown is an intentional disruption of internet-based communications, rendering them inaccessible or effectively unavailable, for a specific population, location, or mode of access, often to exert control over the flow of information.

From January 1, 2023, to June 30, 2023, there were 42 internet shutdown occurrences globally, nine of which occurred in India. At that time, Iran had the most cases—14. With three cases, Pakistan came in third. Asian nations accounted for 71% of all new cases, the three largest countries being Asian.

Jammu and Kashmir had the most shutdowns in India between 2012 and June 30, 2023 (422), followed by Rajasthan and Uttar Pradesh with 97 and 32 incidents, respectively. This is in accordance with the information obtained from the Internet Shutdown Tracker by the Software Freedom Law Centre, a group dedicated to protecting online freedom. Manipur, with twenty-five events, finished fourth nationally. Two Kuki women were gang raped and displayed nude by a group of men in Manipur on May 4, 2023. But the event didn't become widely known until July 19, when a video of it began to circulate online.

According to the data provided by the Internet Outage Tracker, India had 741 instances of Internet outages between 2012 and 2023. 49 instances were reported in 2023 compared to just three in 2012. A total of 135, 109, 132, and 101 cases were reported in 2018, 2019, 2020, and 2021 respectively. Events such as the 2019 Citizenship Amendment Act demonstrations, the 2019 repeal of Article 370, and the 2021 introduction of Farm Bills are some of the events that contributed to the closure during this time.

Section 144 of the Code of Criminal Procedure (CrPC) was the primary legal basis for shutdowns until 2017. The District Magistrate and the police were granted the authority to order anyone to refrain from engaging in a certain activity and to stop unlawful gatherings of individuals under Section 144 of the CrPC. The method to suspend telecom services in case of public emergency or public safety and consequently, the suspension of Internet services in India was notified under Section 7 of The Telegraph Act, 1855. In August 2017, the rules were changed to the Temporary Suspension of Telecom Services (Public Emergency or Public Safety) Rules, 2017. These rules stated that internet shutdowns can now only be ordered by the home secretary of the union or state governments, and shutdowns could be ordered where "necessary" or "unavoidable", during a "public emergency" or in the "interest of public safety".

While internet shutdowns are generally viewed as controversial and are often criticized for impeding freedom of expression and for hindering access to information, proponents argue that they can have certain advantages in specific situations. One notable advantage is the potential to maintain public safety and national security. In times of civil unrest, protests, or security threats, authorities may employ internet shutdowns to curb the dissemination of inflammatory content, and fake news, or to prevent coordination among individuals involved in illegal activities. This measure can aid in preventing the escalation of violence, maintaining law and order, and protecting citizens from potential harm.

Additionally, internet shutdowns can be utilized during emergencies or crisis situations to prevent the spread of misinformation that could contribute to panic or chaos. By temporarily restricting online communication, authorities aim at controlling the narrative to ensure that accurate and reliable information is disseminated through official channels. While these advantages are acknowledged by some, it is crucial to strike a balance between security concerns and preserving fundamental rights, as excessive or indiscriminate use of internet shutdowns can have detrimental effects on democracy, economic activities, and individual freedoms.

Although there may be valid justifications for internet shutdowns for security purposes, it is impossible to ignore the harm they inflict on fundamental rights and civil liberties. Arbitrary internet shutdowns represent an encroachment on citizens' freedom of expression and their right to access information, raising concerns about the erosion of democratic values. Beyond the infringement on basic rights, these

shutdowns inflict severe economic repercussions. Businesses suffer considerable losses, and working professionals face disruptions, resulting in lost sales and job opportunities. The broad-reaching consequences extend to everyday activities, as individuals find themselves unable to work, access telemedicine, study, or even engage in simple tasks like ordering food due to the reliance on internet connectivity and OTP (one-time password) verification for delivery services.

Moreover, the efficacy of internet shutdowns in achieving their stated goals of maintaining law and order is questionable. Critics argue that such measures may not necessarily contribute to public safety and could exacerbate tensions or lead to alternative means of communication that are harder to monitor. The collateral damage inflicted on citizens' lives, businesses, and the overall functioning of society underscores the need for a more nuanced and targeted approach to address security concerns without compromising fundamental rights and economic activities.

When the Supreme Court considered the Kashmir-related case of "Anuradha Bhasin versus the Union of India," it attempted to strengthen the prohibitions against enforcing shutdowns. In a historic decision, the court limited government internet shutdowns to 15 days or fewer and forbade the government from permanently shutting down the system. It also provided a comprehensive set of principles to govern such orders. However, Manipur's lockdown was still enforced by re-posted orders every several days, therefore the new standards did not stop it.

In a democratic setting, it is imperative for governments to furnish a compelling justification when resorting to periodic disruptions of internet services. To uphold transparency, it is crucial that all orders related to such shutdowns are promptly published. The current scenario calls for a careful examination through a proportionality and necessity test to ensure that any course of action is not only justified but also only minimally infringing on citizens' rights.

Indiscriminate internet shutdowns, as evidenced by their high social and economic costs, are often found to be ineffective measures in achieving their intended goals. Therefore, the need for a thorough analysis to determine the appropriateness of such actions is underscored. To enhance internet governance, the Indian civil society must actively advocate for the establishment of a transparent and accountable system. This collective effort is vital to strike a balance between security concerns and the preservation of democratic principles, fostering an environment where citizens can enjoy the benefits of a free and open internet without unwarranted disruptions.

Judicial Intervention: Judicial Activism and Judicial Overreach

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Judicial Intervention is a complex subject. This owes a lot to the delicate task that judicial review is as also to the public expectations about judiciary as an organ of the State. This article is an attempt to understand the scope of judicial intervention in our democratic polity. What is the correct degree of judicial intervention? How much of judicial activism is the optimum level? When does judicial activism transgress into judicial overreach? These questions are sought to be answered through the constitutional and social lens.

Judicial Activism or Judicial Overreach: Understanding Forms of Judicial Review

French jurist Montesquieu in his book *The Spirit of Laws* divides powers of the State into legislative, executive and judicial, each exercised by distinct organs. In India, we follow a model where there is no absolute separation between the three organs. Rather, the three organs of the State function in a system of checks and balance. The functions of each organ are sufficiently demarcated so that there is no assumption of the functions of one organ by the other. It is within this framework that judicial intervention must be seen.

Judicial Review, or the power of the judiciary to adjudicate upon the constitutionality of actions of the legislature and the executive is a manifestation of the system of checks and balance in our polity. The power of judicial review is vested in the Supreme Court and the High Courts by virtue of Art. 32 and Art. 226 of the Constitution. Judicial intervention can be seen as a direct outcome of judicial review.

Judicial activism refers to a form of judicial review where the Courts go beyond the traditional bounds of judicial review. In the Black's Law Dictionary, it is defined as a philosophy of judicial decision-making whereby judges allow their personal views about public policy to guide their decisions. Here, Courts play an activist role expanding the scope of individual rights or interpreting laws to suit the changing socio-economic conditions.

One prominent example of judicial activism is the leading case of *Vishakha v. State of Rajasthan* (1997) where the Hon'ble Supreme Court formulated guidelines to prevent sexual harassment of women at workplace. The activist role of the Court was necessitated by the legislative vacuum in the area of law for protection of women. A more recent example is the decision in *Puttaswamy v. Union of India* (2018) where the Court read the right to privacy as an integral part of right to life under Art. 21 of the Constitution. Here the Court adjudicated upon the legality of the Aadhaar Act laying down clear limitations for State interference with privacy rights of persons. Thus, by and large, judicial activism has the potential to play a dynamic role enriching our legal jurisprudence.

But controversy arises when the scope of judicial intervention exceeds the limits. That is when it transgresses into judicial overreach. For example, does judiciary have the right to enact policy under the guise of judicial review? Does that not belong to the realm of the legislature or the executive? Such cases would also be a violation of the doctrine of Separation of Powers which is part of the Basic Structure of our Constitution.

Judicial Activism: An Essentiality?

"The active process of implementation of the rule of law, essential for the preservation of a functional democracy".

Justice J.S Verma describes judicial activism as the process of implementation of rule of law, essential for the preservation of a functional democracy. In a modern democracy, it serves to check legislative excessed and despotic use of power by the executive. Judicial activism becomes imperative when there is failure to act on the part of the legislature and the executive.

The institution of Public Interest Litigation (PIL) is one tool through which judicial activism has made fundamental rights more meaningful. Stepping out of the traditional limits of judicial review and assuming the role of guardians of fundamental rights, judiciary has protected the rights of common man. This includes cases where rights of vulnerable sections including women, child labourers, displaced tribals, construction workers have been preserved. It can be rightly said that judicial activism has enlarged the scope of social and economic justice.

The philosophy of judicial activism is also evident in a number of environment law cases. The *Godavarman Thirumulpad* series of cases have seen the Supreme Court issue numerous directions for protection of forest and wildlife. There have also been cases where the Court has connected the right to life to a right to clean environment.

All this is evidence for the pro-active role judiciary can play. There is absolutely no denying that the judiciary has played a stellar role in preserving fundamental rights and the sanctity of our democracy. Were it not for judicial innovations such as the Basic Structure doctrine or the expansion of right to life, our constitutional history would have been a different story. Judicial activism has been a factor in ensuring public confidence in the system as well as enforcing principles of equality and liberty. The problem is, however, when judicial activism takes the form of judicial overreach.

Judicial Overreach: A Constitutional Distortion

When the judiciary engages is policy making, the casualty is the dignity of the Court itself. Policy making should be ideally left to the executive or the legislature as conceived by the Constitution.

Such decisions will suffer from the problem of impracticality and difficulty of implementation. One example would be the Shyam Narayan Chouksey case. Here the Supreme Court passed an order making the playing of the National Anthem mandatory across all theatres in the country. The very logic of such an order is questionable. Should patriotism be worn on the sleeve every time? Does the role of the judiciary extend to dictating expression of patriotism? In fact, the order had to be reviewed by the Court itself. Justice Chandrachud therein also observed the risk of moral policing that such an order would create. Despite the good intentions of the judiciary, the case remains one where the Court is to act with restraint in a matter that is essentially one of policy.

The noble intentions of judicial activism are diluted when it interferes with the power of the Government to decide on policy matters. These are cases where the Court is not approached for enforcement of fundamental rights, but for better governance. Such orders range from those on parking charges, steps to control monkey menace in towns, for interlinking of rivers etc. There have been cases where the Supreme Court has ordered the Speaker of Legislative Assembly to conduct proceedings according to a prescribed agenda. Further, matters of policy are subject

to judicial oversight under the garb of judicial activism. This not only interferes with the proper execution of policy by State, but also creates a temptation among public to rush to the Courts for any grievance against authorities.

More importantly, when judges decide on policy issues, it amounts to disrespecting the democratically elected representatives. The purpose of judicial activism is to fill in gaps in the law, not to usurp to itself roles of the legislature or executive. Intellect of the judiciary cannot be a replacement for the wisdom of the Parliament or the administrative maturity of the executive. Thus, judicial overreach has no place in a democracy.

A Balancing Act: A Case for Constitutional Harmony

The best way ahead is to limit judicial activism to cases as an exception and not as a rule. The constitutional role of the Courts is to interpret the law. The judiciary must follow a policy of restrictive interference when faced with inaction on the part of other organs.

This means, Courts can monitor actions of other organs of State without actually stepping into their shoes. For example, the judiciary should not create policies to enforce rights, but order the Government to create its own policy. The role of Court must be limited to setting a timeframe for framing of the policy or to strike it down if the reasons stated by the executive are not reasonable. That way, the Court can facilitate better governance without stepping into the realm of other organs.

Constitution needs a happy harmony among the three organs of State. Judiciary must act within the limits of constitutional discipline, following rules of accountability. It is important to rein in judicial activism and not push the boundaries too far. Perhaps, the best form a check in exercise of the power of judicial activism is self-imposed restraint and self-discipline. The judiciary must discover for itself, the *Lakshman Rekha* in judicial intervention.

Interim Budget 2024

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Smt. Nirmala Sitharaman, Hon'ble Union Minister for Finance, presented the interim budget and vote on account on 1st February 2024. As elections to the Lok Sabha is to be conducted before May 2024, the new government will present the full-fledged budget in June or July 2024. Before going into the salient features of the budget, it is worthwhile to evaluate the challenges facing the economy. They are as follows: -

Poverty and Inequality

Though we are a fast-emerging economy, poverty still continues in different parts of the country. The country registered a significant decline of 9.89 percentage points in India multi dimensionally poor from 24.85 is in 2015-16 to 14.90% at the end of March 2021. The rural areas witnessed the fastest decline in poverty from 32.59% to 19.28%. However, the existence of poverty is a matter of great concern. According to the world inequality Report 2022, India is among the most unequal countries in the world with the top 10% and top 1% of the population holding 57% and 22% of the total national income respectively.

Unemployment and Underemployment

Though the government claims that it undertook Sabka Sath, Sabka Vikas as its mantra, structured reform was undertaken and pro-people programs were formulated and implemented properly, the Union Government failed to create employment to the youth. It created a massive exodus of the youth to other countries in search of employment. Unemployment in India among persons aged 15 years and above fell to 8.7% in December 2023 from 8.9% in the previous month. (Report of CMIE). The Modi Government in 2014 promised the creation of 2 crore employment every year. But this remains unfulfilled.

Agricultural Distress

Agrarian distress refers to the economic, political and social challenges faced by farmers and rural communities - direct factors such as law crop

yields, fluctuating prices of agricultural produce, high import costs, indebtedness and lack of access to credit, markets and infrastructure.

Infrastructural deficiency

Infrastructure is universally acknowledged as a key driver of growth. The term Infrastructure is associated with physical assets such as roads, ports, power transmission lines etc. Brazil and India are two countries having a huge deficit in Infrastructure. But in recent years, India's growth story has been closely associated with a strong focus on not only physical but also social and digital Infrastructure. India's capital expenditure as a percentage of GDP increased from 1.7% in 2014 to nearly 2.9% in 2022-23. In the 2023-24 budget Rs. 10 Lakh crore was allocated for Infrastructure. Still, there is more to be achieved in Infrastructural development.

Fiscal deficit

The FRBM Act of 2003 envisaged that fiscal deficit be fixed at 3% of the GDP. But the revised estimates of 2023-24 show that fiscal deficit is 5.8% of the GDP. It is a matter of great concern. The debt & GDP ratio is estimated at 40%.

Public Debt

The budget estimates show that internal debt is Rs.16335070.06 crores and the external debt is Rs. 537484.10 crores.

The Finance Ministry in its report on "The Indian Economy: A Review" found three threats to the Indian Economy. They are (1) Artificial Intelligence is a threat to the service sector (2) the trade-off between energy security and economy and (3) inadequate availability of the skilled work force.

Against the challenges and threats facing the economy, Government of India estimates that the Indian Economy grows by 7% in 2024-25 financial year and achieves $ 7 million economy by 2030. India's direct tax collection is robust during 2023-24. As of January 2024, the gross direct tax collection has been 17.18 Lakh Crore which is nearly 20.6% lighter than the previous year. During the April-December 2023 period, Gross GST collection witnessed a robust 12% growth. The gross GST collection stood at 1,64,882 crores.

The Budget at a Glance

	Item	Revised estimates	Budget Estimates
		2023-24	2024-25
1	Revenue Re-ceipts2699713	3001275	
2	Tax Revenue (net to centre)	2323918	2601574
3	Non-Tax Revenue	375795	399701
4	Capital Receipts	1790773	1764494
5	Recovering of loans	26000	29000
6	Other Receipts	30000	50000
7	Borrowing and other Liabilities	1734773	1685494
8	Total Receipt	4490486	4765768
9	Total Expenditure	4490486	4765768
10	Revenue Account	1055427	1190440
11	Interest Payments	1055427	1190440
12	Grants in Aid	321190	385582
13	Capital Account	950246	111111
14	Revenue Deficit (10-1)	840527 (2.8%)	653383 (2.0%)
15	Effective Revenue Deficit (15-12)	51933 (1.8%)	267801 (0.8%)
16	Fiscal Deficit 9- (1+5+6)	1734773 (5.8%)	1685494 (5.1%)
17	Primary Deficit (17-11)	679346 (2.3%)	495054 (1.5%)

It is a matter of great concern that the budget allocation for the farm sector has been coming down in the last 3 years. The allocation for the agricultural sector was Rs. 4,68,290 crores in 2022-23, Rs. 387189.4 in 2023-24 and Rs. 363944.8 in 2024-25.

Prime Minister Narendra Modi characterized the Interim budget as inclusive and innovative. This budget will empower all pillars of developed India - the youth, the poor, the woman, and farmers. It carries the guarantee of strengthening the foundation of 'Viksit Bharat' by 2047.

He highlighted two announcements Rs.1 Lakh crore for research and innovations, and the extension of tax exemption for start-ups.

The budget resisted the temptations to hand out dramatic pre-poll sops such as the ones unveiled ahead of the 2019 Lok Sabha election. This budget is a Vote on account without spectacular announcements.

However, for the poor there is the promise of 2 crore houses under the Pradhan Mantri Awas Yojana. The govt. stuck to the theme of raising infrastructural development to rs.11.11 lakh crore, an increase of 11%. The thrust of the budget is on fiscal consolidation. While the fiscal deficit for 2023-24 is 5.8% (revised estimate) over the initial estimate of 5.9%, then the figure for 2024-25 is 5.1%. The finance minister expects to bring it down below 4.5% by 2025-26.

The allocation MGNREGS which is Rs.86000 crore remain the same as of the revised estimate of 2023-24. To meet the employment needs of the registered households of under MNREGS, a crucial Rs.3 lakh crore is essential. Hence, the allocation seems increasingly inadequate. This short fall raises serious concerns as it not only jeopardizes the granted right to work under MNREGS font but also constitutes a gross violation of this fundamental entitlement. The demand for wage rate has not been considered and addressed.

Through rooftop solarization, one crore households will be enabled to obtain 300 units each of free electricity every month.

The Interim Union Budget has been widely hailed as one of continuity, where the focus is on rural housing, power generation, tourism development, research, woman empowerment and infrastructure building. However, representatives of MSMES, and farmers groups have expressed disappointment over being overlooked in several areas of their concern.

The tax to GDP ratio would be at an all time high during the next financial year at 11.7% from 11.6% and 11.2% during 2022-23. In the words of Sanjay Malhotra, Revenue Secretary, corporate and personal income taxes have been reduced significantly over the years and the government is hopeful that most of the tax payers will opt for the new tax regime. The growth in the personal income tax rates stands at 28% so far this year. Indirect taxes are also increasing but remain stagnant at around 5% of the GDP.

In the context of robust tax collection, especially direct tax collections it was generally expected that the F.M. would make some reliefs at least in the personal income tax by way of revising standard deduction and increase of limit for growing under 80C. But the government went on the path of fiscal discipline keeping the deficit in check. The move to increase capital expenditure by 11.1% with a major focus on railways, airports, defense, education and health among others is in the right direction. The proposals to boost dairy development, agriculture and aquaculture schemes for the middle class are welcome moves.

India's International Relations in the Contemporary World Order

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India's role in the world is influenced by its size, population, economy, democracy, culture, and history, geography as well as by its challenges and aspirations in the 21st century [1]. India's foreign policy has evolved from non-alignment during the Cold War Era to multi-alignment in the post-Cold War time. India is seeking strategic autonomy and co-operation with various global and regional powers, which aims at addressing India's national interest. India's foreign policy also reflects its interests and values in various domains, such as trade, security, development, energy, climate change, human rights, terrorism, cyber, space, and health.

India's foreign policy is guided by several principles and objectives.

1. **Non-Alignment:** India follows a non-alignment policy, which means avoiding aligning with any major power blocs or military alliances. Instead, India maintains strategic autonomy and independence in its foreign relations.
2. **Non-Interference:** India respects the sovereignty of other nations and refrains from interfering in their internal affairs. India also advocates peaceful resolution of conflicts and supports dialogue and diplomacy.
3. **Afro-Asian Unity:** India promotes co-operation and solidarity among Asian and African countries.
4. **Neighbourhood First:** India prioritizes its immediate neighbours in South Asia, and aims at enhancing regional stability, economic cooperation, and people-to-people ties through initiatives like the South Asian Association for Regional Cooperation (SAARC).
5. **Look East Policy:** India seeks to strengthen economic and strategic partnerships with East Asian countries. Major focus is on trade, investment, and connectivity in the Indo-Pacific region.
6. **Global Engagement:** India engages and collaborateswith various international forums on issues like climate change, counterterrorism, and economic development.

7. **Security and Defence:** To secure India's borders and maritime interests is of utmost priority.
8. **Economic Diplomacy:** India actively promotes trade, investment, and economic ties with various countries.
9. **Multilateralism:** India participates in international organizations such as the United Nations (UN), World Trade Organization (WTO), and World Health Organization (WHO) and also advocates reforms in these institutions to reflect contemporary global realities.
10. **Strategic Autonomy:** India balances its relations with major powers while safeguarding its national interests, aiming to maintain strategic autonomy and not become overly dependent on any single country.

India faces both opportunities and challenges in the contemporary world order, which is undergoing significant changes due to the rise of new actors, and the emergence of new issues.

In the last decade, particularly under the leadership of the current Prime Minister, India's foreign policy has been characterized by some analysts as more assertive, proactive, and pragmatic than under his predecessors [2].

Some of the key features are:

- A focus on improving relations with neighbouring countries in South Asia, especially through the 'Neighbourhood First' initiative.
- A shift from 'Look East' to 'Act East', which entails greater engagement with Southeast Asia and the Indo-Pacific region, as well as a strategic partnership with Japan.
- A balancing act between the United States and China, two major global powers that have competing interests and influence in Asia.
- A diversification of partnerships and markets, including countries like Africa, Latin America, the Caribbean, and the Middle East.
- A promotion of India's interests and values in various domains, such as trade, security, development, energy, climate change, human rights, terrorism, cyber, space, and health.
- A reorientation of India's foreign policy based on the ethos of "VasudhaivaKutumbakam" (the world is one family).

But at the same time, some challenges and criticisms of India's Foreign Policy are:

- The lack of a clear and consistent strategy towards China, especially after the 2020 border standoff and the subsequent disengagement process.
- The deterioration of relations with Pakistan, which have been marred by cross-border terrorism, military clashes, and diplomatic tensions.
- The difficulty of maintaining strategic autonomy and independence in a changing world order, where India has to navigate between competing alliances and interests.

India & Major Powers of the World:

India and China

The relationship between India and China is complex and multifaceted.

- **Trade and investment:** India and China are among each other's largest trading partners, with bilateral trade reaching $100 billion in 2023[3]. However, the trade balance is heavily skewed in favour of China, which accounts for more than 80% of India's trade deficit. India has also imposed restrictions on Chinese investments and apps, citing security and privacy concerns, especially after the 2020 border clash. Both countries have expressed their willingness to enhance trade and investment ties, but face challenges such as market access, quality standards, and geopolitical factors.
- **Border dispute:** India and China share a long and disputed border, which has been the source of several conflicts and standoffs. The two sides have held multiple rounds of military and diplomatic talks to de-escalate the situation and restore peace and stability along the Line of Actual Control (LAC). However, the disengagement process has been slow and incomplete, with both sides maintaining a large troop presence and infrastructure buildup in the area. The border dispute remains a major obstacle to the normalization of relations between the two countries.
- **Regional and global issues:** India and China have different and sometimes conflicting interests and views on various regional and global issues, such as the Indo-Pacific, Afghanistan, Pakistan, Myanmar, climate change, human rights, and multilateralism. India has been pursuing a more active and assertive role in the Indo-Pacific region, in partnership with the United States, Japan, Australia, and others, to counter China's growing influence and

assertiveness. China has been expanding its economic and strategic presence and interests in South Asia, Central Asia, and the Indian Ocean, often at the expense of India. The two countries have also clashed over issues such as the status of Tibet and Taiwan, the membership of the Nuclear Suppliers Group and the UN Security Council, and the origin and handling of the COVID-19 pandemic.

- **Co-operation and dialogue:** Despite the differences and challenges, India and China have also maintained some degree of co-operation and dialogue on various levels and platforms, such as the BRICS, the Shanghai Cooperation Organization, the G20, and the RIC (Russia-India-China) trilateral. The two countries have also cooperated on issues such as trade, energy, health, and disaster relief, and have exchanged high-level visits and communications.

India, Russia, and the USA and what to expect in 2024

- **Elections:** All three countries will have important elections in 2024. The USA will have its presidential election, where President Joe Biden will seek a second term or a successor from his Democratic Party will run against a Republican challenger. Russia will have its parliamentary election, where President Vladimir Putin's United Russia party will face opposition parties and potential protests. And India will have its general elections during 2024.
- **Ukraine:** The conflict in Ukraine, is a major source of tension and confrontation between Russia and the USA. India can strive to maintain its neutrality and urge both sides to resolve the issue peacefully and through dialogue.
- **Indo-Pacific:** The Indo-Pacific region, which spreads from the eastern coast of Africa to the western coast of the Americas, will be a key arena for co-operation and competition among the three countries, as well as other regional and global powers. While the USA wants to continue to promote its vision of a free and open Indo-Pacific, and strengthen its partnerships and alliances with countries like Japan, Australia, India, and others, Russia is seeking to balance its relations with China and India, and expand its presence and interests in the region, especially in the areas of energy, security, and connectivity.

To summarize, India has been focusing on strengthening its ties with both traditional allies and emerging partners. India's growing influence on the global stage can be attributed to India's proactive approach, economic strength, and commitment to global peace and development.

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Navigating Turbulence: Analysing the Implications of the Red Sea Crisis on India's Trade

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The Red Sea crisis refers to the escalating geopolitical tensions and security threats in the Red Sea region, a vital waterway connecting the Mediterranean Sea to the Indian Ocean via the Suez Canal and the Bab el Mandeb strait. The strategic importance of this maritime corridor cannot be overstated, as it serves as a critical artery for international trade, facilitating the movement of goods, oil, and natural resources between Europe, Asia, and Africa.

The events leading to the Red Sea crisis are rooted in longstanding geopolitical tensions and regional conflicts that have intensified in recent times. The Red Sea region, encompassing key chokepoints like the Suez Canal and Bab el Mandeb strait, has become a hotspot for maritime disputes and geopolitical rivalries. Ongoing conflicts in Yemen, political instability in the Horn of Africa, and power struggles among regional actors have exacerbated the situation, raising concerns about the security and stability of the maritime corridor.

Since November 2023, Yemen-based Houthi militia have targeted cargo ships in the Red Sea, claiming solidarity with Palestinians in Gaza. As tensions rise, 95% of vessels have rerouted around the Cape of Good Hope, adding 4000 to 5000 nautical miles and 15 to 20 days to journeys. The implications are far-reaching, impacting freight costs, delayed deliveries, and potentially disrupting global supply chains.

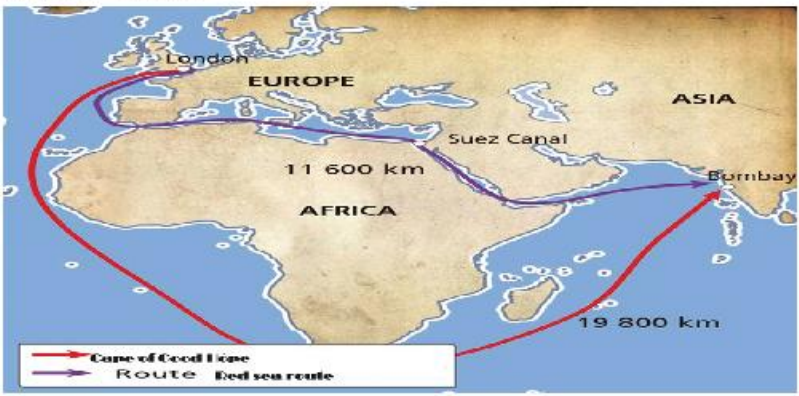
The crisis has global implications, disrupting the smooth flow of maritime commerce and posing challenges to the stability of international trade routes. With approximately 12% of the world's trade and 30% of global container trade transiting passing through the Suez Canal, the Red Sea shipping crisis is upending supply chains. The crisis raises concerns about the safety and security of vessels navigating

these waters, impacting the cost, efficiency, and reliability of maritime transportation on a global scale. through the Suez Canal.

The escalation in shipping costs is concurrently exerting upward pressure on prices for certain shipping routes, notably those connecting Asia to Europe, where costs have experienced a nearly fivefold surge. The ensuing elevation in shipping expenses is anticipated to impact the prices of imported goods, albeit with a time lag contingent upon the duration and severity of the prevailing crisis. J.P. Morgan Research projects that the disruptions may contribute an incremental 0.7 percentage points to global core goods inflation and 0.3 percentage points to overall core inflation in the initial half of 2024.

Importance of Red Sea Trade for India

The Red Sea trade route holds immense strategic and economic significance for India. As a major player in the global trade network, India heavily relies on this maritime corridor for its imports and exports. The Suez Canal provides the shortest maritime route between India and Europe, North America, and North Africa, facilitating time-efficient and cost-effective trade. The Red Sea is a critical trade route for India with about $230-240 billion worth of imports and exports shipped through the waters every year. With big shipping lines like Maersk suspending their operations through the route, most consignments are now being routed through the Cape of Good Hope in South Africa, which is longer by about 14 days.



Source:www.blinklearning

Due to the threat of attacks, vessels are opting to circumvent the route and instead taking the considerably longer journey around the southern tip of Africa. Container ship transits have seen a significant decline of 67% compared to the same period last year. The most substantial impact is observed in liquefied natural gas (LNG) carriers, which have completely ceased operations since January 16, as reported by UNCTAD. The rerouting affects 20-25% of India's total merchandise trade, particularly impacting cargo bound for Europe, the US East Coast, North Africa, and Russia.

India's trade ties with key regions such as the European Union and the United States are heavily reliant on the efficiency of the Red Sea route. The economic vitality of sectors like pharmaceuticals, automobiles, and textiles is intricately linked to the accessibility and reliability of this maritime corridor. Any disruptions to the Red Sea route directly impact India's trade competitiveness, export-led growth, and overall economic resilience.

The impact of the crisis on India's trade

The crisis has disproportionately affected specific sectors critical to the Indian economy. Pharmaceuticals, a sector heavily reliant on timely and secure transportation of medical supplies, witnesses increased freight costs that directly impact the affordability and accessibility of medicines. The automobile industry faces challenges in the timely delivery of components, impacting production schedules and potentially leading to supply chain disruptions. Textiles, a significant contributor to India's exports, grapples with increased operational costs, affecting the competitiveness of Indian textiles in the global market.

The Red Sea trade disruptions are exerting a multifaceted impact on various sectors of India's trade, as evidenced by a survey conducted by the Federation of Indian Export Organizations. The potential ramifications span a wide array of industries, including plastic, rice, and garments, with an estimated $64 billion worth of Indian exports at risk.

Capital Goods Sector: The prolonged disruptions in trade routes, characterized by delays in goods delivery, pose a substantial threat to the capital goods sector. This situation could lead to undesired inventory build-up and operational challenges.

Crude Oil: India's crude oil imports, heavily reliant on Russia (37%), Iraq (21%), and Saudi Arabia (14%), face challenges due to heightened

geopolitical tensions. Increased freight costs are impacting on the profitability of oil companies and the export of petroleum products.

Fertilizers: The Red Sea conflict has disrupted fertilizer exports from the Middle East to India, resulting in a 15-day extension in shipment timelines and escalated freight costs. Imports of muriate of potash (MOP) from Jordan and Israel, constituting 25-30% and 10-15%, respectively, are significantly affected. Despite government assurances of sufficient buffers, prolonged conflict may impact MOP supplies.

Steel: While the steel sector, primarily relying on domestic supply (95%), minimizes the impact of the Red Sea crisis, logistics costs for metal exports to Europe have risen. This has affected major flat steel producers, leading to increased raw material costs for scrap-based steel producers in India.

Pharma: Approximately 50% of India's pharmaceutical revenue is derived from exports, with a substantial contribution from the US and Europe. The Red Sea crisis could increase shipping costs, impacting industry margins. Prolonged crises may jeopardize margins, elevate shipping costs, and impose additional financial burdens due to delayed product deliveries.

Shipping: Geopolitical issues in the Middle East and Red Sea attacks have significantly increased global shipping freight rates. Suez Canal transit rates, particularly from Asia to Europe, have surged almost five-fold. Unscheduled rerouting around the Cape of Good Hope, causing delays of up to two weeks, adds to the global spot rate increase. While 80% of shipping contracts are long-term, renewals may be impacted if Middle East tensions persist.

Textile: The textiles industry, predominantly oriented toward the domestic market, appears resilient in the near term. However, prolonged crises may dent margins and extend the working capital cycle, despite the absence of higher export demand and weak trade cycles.

According to a trade analyst, the Red Sea route plays a pivotal role in facilitating approximately USD 100 billion worth of Indian exports annually, translating to over USD 8 billion monthly. If 25% of these exports are adversely affected by the challenges in the Red Sea, the resultant impact for this fiscal year alone is estimated to be approximately USD 3 billion. Furthermore, even in the absence of additional attacks on merchant shipping, a significant duration is expected for the situation to undergo complete normalization

Strategies to Mitigate the Impact

To mitigate the impact of the Red Sea Crisis on the Indian economy, the government and relevant stakeholders can consider several strategies:

1. Diversification of Trade Routes: India can explore alternative trade routes and transportation modes to reduce its dependence on the Red Sea region. Strengthening maritime ties with other regions and investing in infrastructure development can help diversify trade routes and ensure smoother trade operations.

2. Energy Security Measures: India can enhance its energy security by diversifying its sources of oil imports and investing in renewable energy sources. Developing strategic oil reserves and fostering energy partnerships with other countries can help mitigate the impact of disruptions in the Red Sea region on India's energy supply.

3. Diplomatic Engagement: India can engage in diplomatic efforts to promote peace and stability in the Red Sea region. Collaborating with international partners and participating in multilateral forums can help address the root causes of the crisis and prevent further escalation of tensions.

The Red Sea Crisis poses significant challenges to the Indian economy, particularly in terms of trade and energy security. By proactively addressing these challenges through strategic planning, diversification of trade routes, and diplomatic engagement, India can navigate the impact of the crisis more effectively. As a key player in the global economy, India's response to the Red Sea Crisis will not only shape its own economic future but also contribute to regional stability and prosperity.

Fiscal Crisis in Kerala with Special Reference to the State Budget 2024

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The Context

The state of Kerala has been experiencing a huge financial crisis in these years. The state is not able to meet its expenditure from its revenues. The central government reduced the borrowing limit of the state with retrospective effect from 2021-22. The total debt of the state has risen to 3,24,000 crores which is 39%of the state's domestic product. Kerala has been categorized by the RBI as among the five highly stressed states with high indebtedness requiring urgent corrective measures. The report said Kerala, Rajasthan, and West Bengal are projected to exceed the debt-GSDP ratio of 35%by 2026-27. The crisis in Kerala must be discussed in this context.

The Kerala Crisis- A Historical Overview

Sometimes Kerala's development is considered a riddle naming it a unique paradigm 'the Kerala model of development which explains the paradox of low per capita income and high development in indicators like health and education. So many factors have contributed to such a perspective. This narrow stretch of land along the banks of the Arabian Sea has been exposed to various cultures from very ancient times. The political attitude was also apparently different from that of other parts of the country; social reformers contributed much to the rational and pragmatic attitude of the people. English education, literacy, and health consciousness all have contributed to the development of an ambitious middle-class society.

The creation of the middle-class society led to the structural transformation of the state from primary sector occupations to service sector occupations. A culture has been created in Kerala in which every degree-holding youth is looking for some tertiary sector jobs. Unemployment in the state rises. Kerala has been transformed into a

consumer state. This transformation needs income sources for the life sustainability of the growing middle class. The root of the crisis stands in this aspect.

The migration to the Middle East has created an outlet for unemployment and a source of income for the growing consumer needs of the state. Around 30% of the GSDP in the 1980's and 1990's was based on the income from the Gulf countries. The remittances from the gulf were mostly channelized into unproductive spending and that enhanced the cost of living in the Kerala society. Now, the Gulf impact has been waning. Not only as a result of the decrease of Gulf spending but also due to various other reasons do the revenue collections of the state government decrease and the spending increases. The state fell into a debt crisis.

Kerala's fiscal crisis is not a recent one. The gradual transformation of Kerala into a consumer state contributed to its growing fiscal imbalance starting thirty or forty years ago. In 1987, following a long pending overdraft, the RBI suspended treasury payments on behalf of the Government of Kerala. There were white papers on state finances during the years 2001,2011 and 2016. All these white papers indicated the worsening fiscal situation in the state over the years.

The Magnitude of the current crisis

The revenue deficit GDP ratio in the current period is 3.5% - much higher than that of the national average. Similarly, the gross fiscal deficit is also at a higher level compared to the national average (5.1% of GSDP). As stated earlier, the debt –GSDP ratio is at an alarming state. The major share of the government expenditure was for distributing salaries and pensions.

The state budget 2024 proposals to raise revenue

Besides the estimated tax revenues (Rs 7845.21 crore) and non-tax revenues (1503.41 crore), the budget outlined a plan to raise Rs 1067 crores in additional resources through various rate revisions like adjustments to electricity duty, judicial court fees, and other levies. The gallonage fee on Indian Made Foreign Liquor is to be increased by Rs 10 per litre. An additional revenue of Rs 200 crore is expected.

In the budget speech, the finance minister hinted at a Plan B to ensure sustainable development. The finance minister emphasized the

importance of attracting private investment, particularly in sectors like infrastructure and tourism.

What is the way out?

It is a million-dollar question to ask what is the way out of this crisis? A lot of suggestions have been made by many people including economists and public finance experts. Some suggested the pension reform. According to them, the statutory pension system should be abolished at any cost. Some suggested revenue creation by investments in the education and tourism sectors. The strategy of allowing private universities is a policy change in this context. Suggestions include enhancing the retirement age, privatizing the loss-making public sector units, and so on. There were also suggestions for increasing the sale of low-cost liquor to earn non–tax revenue for the government exchequer.

Apart from some mediocre measures, these suggestions could not provide sustainable solutions to the ills of Kerala's Fiscal issues. A total change in the attitude of the people, political parties, and all other stakeholders is required to tide over the resource shortage facing Kerala. The migration of young people to permanent settlement in foreign countries will create a human capital vacuum that will cause the aging of Kerala society. Therefore, pensions and other social security benefits are expected to increase if the outflow of young people continues. A visionary and farsighted policy is needed to prevent the mounting fiscal crisis; otherwise the situation will worsen further.

Decoding Legalized Minimum Support Price (MSP): Its Upsides and Downsides

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On February 13, 2024, thousands of farmers began marching towards the national capital to push their set of demands.This *Dilli Chalo march, also known as the Farmers' Protest 2.0* – under the leadership of *Samyukta Kisan Morcha (SKM) and the Kisan Mazdoor Morcha* (KMM) failed after talks with government officials. The Union government, displeased with the farmers' actions, fortified the capital and imposed Section 144 to face the march.

This event reminds us of the 2020-21 farmers' protest against certain proposed farm laws. Despite challenges such as harsh weather and the COVID-19 pandemic, the farmers garnered nationwide support. Eventually, after blockades and violence, the Central government repealed the laws due to the farmers' determination. This time, the farmers are demanding a host of measures from the Central government which, they say, are required for the financial viability of farming. The most important among them is a legal guarantee for Minimum Support Price (MSP) for all the crops. The government sets the MSP for nearly two dozen commodities twice a year based on the recommendations of the Commission for Agricultural Costs and Prices. Most of the crop procurement under MSP is from Punjab and Haryana and consists of mainly wheat and rice produce which supports the government's public distribution system. Farmers want a law that guarantees MSP on every crop. However, the government has multiple concerns over the demand for a guaranteed MSP and the concerns include global prices, pressure on procurement, export competitiveness and massive expenditure. Another major demand of the farmers is for the implementation of the recommendations of the MS Swaminathan committee on agriculture - to increase MSP to at least 50 per cent above the weighted average cost of production.

Minimum Support Price

Minimum Support Price (MSP) is a system where the Government sets a price for farmers' crops - or it is a system where the government procure

crops from farmers at a fixed price. If the open market maintains a lower price for their crops, the MSP ensures a guaranteed price for the farmers thus reducing the uncertainty and guarantees a minimum profit for the farmers. MSP was introduced in 1966-67 when India was desperately in a food deficit. The government was keen to boost domestic food grain production through input-intensive 'Green Revolution technology', which included improved high-yielding varieties of wheat and rice with chemical fertilisers and pesticides, better irrigation systems, and mechanisation, among other methods. The adoption of these input-intensive technologies needed guaranteed financial support of MSP to the farmers. The Minimum Support Price or MSP is a safety net for the farmers as it works towards protecting them from the uncertainties of the markets. The introduction of the Minimum Support Price or MSP was a revolutionary step for the agricultural industry of India, which transformed the country from a food deficit to a food surplus nation. Since then, MSP has proved to be of great help to the farmers to stay safe from financial fluctuations. Today, 23 crops get the MSP. These crops include Bajra, Wheat, Maize, Paddy, Barley, Ragi, and Jowar, pulses like tur, chana, urad, moong, and masur oilseeds like safflower, Rapeseed & mustard, nigerseed, soya bean, groundnut, sesamum, and sunflower seed. Other than these, commercial crops like cotton, copra, raw jute, and sugarcane are also provided with a Minimum Support Price or MSP.

Calculation of MSP

The Minimum Support Price (MSP) is calculated by considering both the explicit and implicit costs incurred by farmers. Explicit costs cover expenses like chemicals, fertilisers, seeds, and hired labour, while implicit costs include factors such as family labour and rent. These variables are represented by A2, FL, and C2. A2 refers to the expenses for inputs like chemicals, fertilisers, seeds, and hired labour for crop growth, production, and maintenance. A2 + FL includes both actual and implicit costs, such as family labour. C2 incorporates A2 + FL along with fixed capital assets and rent paid by farmers. Additionally, the Commission for Agricultural Costs and Prices (CACP) takes into account various other factors:

- Cost of cultivation per hectare and crop costs in different regions.
- Cost of production per quintal and regional differences.
- Market prices of relevant crops and their fluctuations.
- Other production and labour costs, along with associated changes.
- Prices of commodities bought or sold by farmers and any fluctuations.

- Information on product supply, including area, yield, production, imports, exports, and stocks with public agencies or industries.
- Demand information across regions, including total and per capita consumption, processing industry trends, and capacity.

A Legal guarantee for Minimum Support Price

A very important demand of protesting farmers is to get a legal guarantee for the minimum support price for all 23 crops, based on the recommendations that the National Commission for Farmers (NCF), better known as the Swaminathan Commission) made in 2006. This is the bone of contention this time. There are arguments for and against giving a legal status to MSP. Many consider that denying legal guarantees for MSP is a threat to India's food security. MSP stipulations in the past have not only ensured food security but also proved to be an important market intervention mechanism to control the prices of farm produce. The Indian government has successfully implemented its programme to distribute free food grains to nearly a billion poor people (equivalent to about 12 per cent of the global population) since 2020 because of procurement of food grains at MSP prices. Food security through self-reliance is the stability and pride of a nation, just like having strong defence services.

The implementation of MSP resulted in the adoption of input-intensive agricultural technology in the semi-arid zone states of Punjab and Haryana, which regularly recorded high productivity of over 5 tonnes per hectare for major cereal crops (wheat and rice) and total productivity of 10-12 tonnes per hectare annually, which is nearly double the national average and also one of the highest globally. Similar remarkable progress was also achieved by Madhya Pradesh and Chhattisgarh during the last decade through the effective adoption of MSP regimes. The MSP policy helped increase the production of wheat by 10 times and rice by four times. On the other hand, the areas and production of oilseeds, pulses and coarse grain crops drastically declined because these crops proved uneconomical to the farmers in the absence of an effective MSP regime.

The absence of a legal guarantee for MSP is like a tool to exploit the farmers. In the absence of a legal guarantee for MSP. the major share of crops produced (over 90 per cent) are sold at 20-50 per cent lower prices than MSP, which caused average losses of Rs 20,000 per acre and about Rs 10 lakh crore annually to the farmers. Indian farmers have

been harvesting losses continuously since 2000 due to the government policies to keep farm prices artificially low, which has kept farmers in perpetual poverty. Further, in the absence of a legal guarantee for MSP, the farmers were regularly exploited by the middlemen to sell farm produce at 20-50 per cent less than declared MSP prices. This has caused regular unrest and suicides among the farmers of India.

Therefore, the idea of a legal guarantee is not a bad idea. It won't be a fiscal disaster as some fear. MSP comes into the picture only when free market prices dip low, which on average will happen only half the time. It is also strongly argued that as soon as the government intervenes to procure crops, the prices will start moving up, negating the need to continue indefinitely. In effect, it is a price insurance mechanism, needed because forward markets and commodity derivatives markets are not fully developed and are beyond the reach of most farmers. Crop prices are extremely volatile and need some insurance coverage, and MSP is like an "option". The proposed MSP "guarantee" is much like the rural employment guarantee (NREGA), which works as a proxy for unemployment insurance. Guaranteed MSP is also a proxy for price insurance.

Climate change, as we all know, is a critical factor impacting on demand and supply of critical grains, particularly in monsoon rain-fed agriculture of India. The Indian government was compelled to ban wheat exports in May 2022 to manage the high domestic demand and fall in wheat production. To increase local supply in light of a decrease in the area planted with paddy during the Kharif season of 2023 due to uncertain climate, the Centre barred the export of broken rice and placed a 20 per cent export levy on all non-basmati rice, except for parboiled rice. Here comes the role of MSP. A better-guaranteed price for agricultural products can be an incentive for all farmers to continue and increase the production and the area of cultivation.

Challenges of Legal guarantee for MSP

Legal guarantee for the Minimum Support Price (MSP) mechanism could be pivotal in assuring price guarantees for farmers for certain crops, intending to provide them with substantial income regardless of market fluctuations. However, several challenges can undermine its effectiveness. Most important is its limited extent. The MSP is officially announced for 23 crops, but in practice, only two, rice and wheat, are

extensively procured and distributed under the National Food Security Act (NFSA). For the rest of the crops, the MSP implementation is ad-hoc and insignificant. This means that the majority of farmers growing non-target crops do not benefit from the MSP. Ineffective Implementation is another hurdle while we make it legal. Many Committees, revealed that only 6% of the MSP was received by farmers. This suggests that a significant portion of farmers, do not benefit from the MSP. The primary reason for this is inadequate procurement mechanisms and market access for farmers. MSP strategy has also led to the Skewed Crop Dominance as it favoured very few crops. This overemphasis on these crops can have ecological, economic, and nutritional implications. It may not align with market demands, thereby limiting income potential for farmers. Middlemen dependency is another important issue which has to be dealt with by the authorities. The MSP-based procurement system involves intermediaries such as middlemen, commission agents, and officials from Agricultural Produce Market Committees (APMCs). Smaller farmers, in particular, may find it challenging to access these channels, leading to inefficiencies and reduced benefits for them, which can jeopardise their objectives.

The government will have to shoulder a significant financial burden in procuring and maintaining buffer stocks especially when we make MSP legal. This diverts resources that could be allocated to other agricultural or rural development programmes. Recent trends indicate a distorted production as there is a shift in the pattern of food consumption from cereals to protein-rich foods, but no such remarkable shift is seen in sowing or production patterns. E.g. India is the largest producer and consumer of pulses in the world, but still, 25 % of the pulses consumed are imported.MSP has not made any impact on the production of Pulses. MSP can also result in 'Open-ended procurement' which means the government can't decide the quantity it wants to buy. How much ever grains are offered by farmers, the Government has to purchase and it has to incur huge costs for its safe storage. MSP can create a price spiral as the Market prices are dictated by MSP which remains most of the time higher. Many analysts suggest an obvious directly proportional link between a hike in MSPs and food Inflation. MSP can breed incompetence and backwardness in the agriculture sector as the farming industry relies on protection, instead of adapting to the market. This can keep private investment away from the sector and thus contribute to backwardness

in agriculture. It can also degrade the soil. Irrespective of the soil condition, some crops are preferred which have MSP over them which results in the exploitation of group water resources, alkalinity, decrease in the production of the crops in the long run and much harm to the environment. Due to a lack of awareness, not all farmers have been able to reap the benefits of MSP. Legalised MSP could lead to a supply glut. Increases in MSP also hurt exports because they make Indian farm products less competitive. Perishables are not covered by it. Another major concern for the Government is its commitments to the WTO, regarding subsidies, market access and market distortions. Many nations have challenged India's MSP scheme for numerous crops in the World Trade Organization. They alleged that the system is extremely trade-distorting. The government will also have to face criticism for distorting the domestic market as some crops are given preference over others. Thus, legalising the MSP is like opening a Pandora's Box. But we need to protect and ensure a decent income for our farmers. So, we have a tricky situation before us and the authorities are in a dilemma.

Way Forward

The government has to go for alternative strategies to protect the farmers as well as the other sections of society. The MSP issue requires a balanced approach that considers both the interests of farmers and the broader economic implications. To encourage crop diversification and reduce the dominance of certain grains, the government can gradually expand the list of crops eligible for MSP support. This will provide farmers with more choices and promote the cultivation of crops in line with market demand. Revisiting the MSP calculation methodology and ensuring a fair and transparent process for determining MSP could also help in addressing some of the concerns raised by farmers. As suggested by NITI Aayog, authorities can think of The Market Intervention Scheme (MIS), which allows the state government to purchase perishable goods like vegetables, as an alternative to the MSP. Suggestions given by the Economic Survey and NITI regarding Price Deficiency Payment (PDP) can also be considered. The inputs subsidy policy can be developed with farmers' interests in mind. Expansion of various schemes initiated by the Governments has to be initiated with great vigour and enthusiasm to include all farming sections of the society.

The Impact of AI on the Labour Market

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Artificial Intelligence (AI) stands as one of the most transformative technologies of the 21st century, revolutionizing industries and reshaping the global economy. From the automation of routine tasks to the creation of new job opportunities, AI's impact is felt in how we work and, in the skills, required for its success.

Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to mimic cognitive functions such as learning, problem-solving, perception, and decision-making. AI systems can analyse large amounts of data, recognize patterns, and make predictions or recommendations based on the information processed. AI technologies encompass a broad range of applications, including machine learning, natural language processing, computer vision, robotics, and expert systems. The goal of AI is to create systems that can perform tasks autonomously and efficiently, often surpassing human capabilities in certain domains. AI has significant implications for various industries, including healthcare, finance, transportation, manufacturing, and entertainment, and it continues to advance rapidly, shaping the way we live, work, and interact with technology.

While AI holds the promise of increased efficiency, productivity, and innovation, its widespread adoption raises concerns about its impact on employment. The automation of tasks through AI often leads to labour displacement, where jobs previously performed by humans are replaced by machines. While this can result in increased efficiency and cost savings for businesses, it also poses significant challenges, including unemployment, income inequality, and workforce reskilling. Here are some key points regarding AI's impact on labour displacement:

Job Displacement: One of the primary concerns is the potential for AI to automate tasks traditionally performed by humans, leading to job displacement. AI-powered automation can affect a wide range of

industries, including manufacturing, transportation, customer service, and administrative roles. Workers in these sectors may find themselves replaced by AI systems, leading to unemployment and economic insecurity.

Skill Mismatch and Structural Unemployment: The rapid advancement of AI technology often requires workers to possess specialized technical skills to remain competitive in the job market. However, many displaced workers may lack the necessary training and education to transition into new roles. This skill mismatch can result in structural unemployment, where there is a surplus of labour in certain sectors and a shortage in others, exacerbating income inequality and social disparities.

Wage Suppression: As AI automation becomes more prevalent, it can lead to downward pressure on wages for jobs that are susceptible to automation. For example, tasks that can be easily automated may see a decline in wages due to the availability of cheaper AI solutions. This wage suppression can particularly impact on low-skilled workers, contribute to widening wage gaps and economic inequality.

Job Insecurity and Anxiety: The prospect of AI-driven automation can create significant job insecurity and anxiety among workers in various industries. Fear of job loss and uncertainty about future employment prospects can have negative effects on mental health and well-being. Additionally, workers may experience stress and financial hardship as they struggle to adapt to the changing labour market dynamics.

Disruption of Traditional Industries: AI disruption can fundamentally alter the structure of traditional industries, leading to the decline of certain sectors and the rise of new ones. While this can create opportunities for innovation and economic growth, it can also result in the loss of livelihoods for workers employed in declining industries. Communities reliant on these sectors may face significant economic challenges and social upheaval as a result of AI-driven transformations.

Automation of Routine Tasks: AI and automation technologies are particularly adept at performing routine, repetitive tasks. This includes jobs in manufacturing, transportation, data entry, and some administrative functions. As AI systems become more sophisticated, they can increasingly replace human workers in these roles, leading to job displacement.

According to NASSCOM, the domestic IT sector employs around 16 million, of which around 9 million are employed in low-skilled services

and BPO roles. While NASSCOM estimates that 1.5-1.6 million people are employed in low-skilled or BPO jobs, independent research by Bank of America states that there will be a 30% reduction in low-skilled jobs globally due to Robotic Process Automation (RPA) by 2025.

While concerns about job displacement and automation often dominate discussions about AI, it's essential to recognize the numerous positive impacts it brings to the labour market.

Creation of New Job Opportunities: The development and implementation of AI technologies require a skilled workforce proficient in areas such as data science, machine learning, and software engineering. Consequently, there has been a surge in demand for professionals with expertise in these fields, leading to the creation of high-paying jobs and stimulating economic growth.

Enhanced Productivity and Efficiency: AI-driven automation streamlines processes, eliminates repetitive tasks, and optimizes workflows, resulting in increased productivity across various industries. By leveraging AI technologies, businesses can accomplish tasks more efficiently, allocate resources effectively, and deliver products and services faster. This heightened productivity not only benefits companies by improving their bottom line but also enables workers to focus on more strategic and value-added activities, fostering job satisfaction and innovation.

Improved Decision-Making and Insights: AI-powered analytics tools enable organizations to harness the power of big data, derive actionable insights, and make informed decisions. By analysing vast amounts of data in real-time, AI algorithms can identify patterns, trends, and correlations that human analysts may overlook. This data-driven approach enhances decision-making processes in various domains, including finance, healthcare, marketing, and supply chain management. Moreover, by providing decision-makers with timely and accurate information, AI facilitates strategic planning, risk management, and resource allocation, contributing to organizational efficiency and competitiveness.

Augmentation of Human Work: Instead of completely replacing human workers, AI technologies often augment human capabilities, leading to greater productivity and efficiency. AI-powered tools can assist workers in tasks such as decision-making, customer service, and data analysis, enabling them to focus on higher-value work that requires creativity,

critical thinking, and emotional intelligence.

Gig Economy and Remote Work: AI and technology are enabling remote work and freelancing opportunities. Online platforms and marketplaces connect freelancers with projects from all over the world. This trend is leading to the growth of the gig economy, where individuals work on a project-to-project basis rather than traditional full-time employment.

As Artificial Intelligence (AI) continues to advance rapidly, there are growing concerns about its potential impact on the labour market, including job displacement and skills mismatches. However, proactive preparation and strategic interventions can help mitigate these challenges and ensure a smooth transition to an AI-driven economy.

Investment in Education and Training: One of the most critical preparations to mitigate the impact of AI on the labour market is investment in education and training. Educational institutions, vocational programs, and lifelong learning initiatives must adapt their curricula to equip individuals with the skills needed to thrive in an AI-driven economy. This includes fostering proficiency in areas such as data science, machine learning, programming, and critical thinking. Additionally, reskilling and upskilling programs should be made accessible to workers in industries susceptible to automation, enabling them to transition to new roles and remain competitive in the job market.

Support for Entrepreneurship and Innovation: Entrepreneurship and innovation play a crucial role in mitigating the impact of AI on the labor market by creating new business opportunities and job roles. Governments, industry stakeholders, and support organizations should provide resources and incentives to encourage entrepreneurship and innovation in AI-related fields. This includes funding for startup incubators, research grants, tax incentives, and regulatory support to facilitate the development and deployment of AI-powered solutions that address societal challenges and create value for the economy.

Development of Ethical and Regulatory Frameworks: To ensure that AI technologies are deployed responsibly and ethically, robust regulatory frameworks and guidelines must be established. Governments and regulatory bodies should collaborate with industry stakeholders, researchers, and ethicists to develop standards for AI governance, data privacy, transparency, and accountability. These frameworks should address concerns such as algorithmic bias, data security, and the ethical use of AI in decision-making processes, safeguarding the rights and

interests of workers and society at large.

Promotion of Lifelong Learning and Adaptability: Given the rapid pace of technological change, individuals must embrace a mindset of lifelong learning and adaptability to thrive in the AI-driven labour market. Continuous learning and professional development should be encouraged throughout one's career, enabling workers to stay abreast of emerging technologies, trends, and opportunities. Employers should provide training and mentorship programs to support employee growth and skill development, fostering a culture of innovation and resilience in the face of technological disruption.

While AI has the potential to disrupt labour markets and displace certain jobs, its impact is complex and multifaceted. Effective preparation is essential to reduce the impact of AI on the labour market and ensure a smooth transition to the future of work. By investing in education and training, promoting digital literacy and technological fluency, supporting entrepreneurship and innovation, developing ethical and regulatory frameworks, and fostering a culture of lifelong learning and adaptability, we can harness the transformative potential of AI while safeguarding the well-being and prosperity of workers and society as a whole. Through collaborative efforts between governments, businesses, educational institutions, and civil society, we can shape a future where AI will enhance, rather than displace, human labour, fostering inclusive economic growth and prosperity for all.

Digital Economy Thrives on Digital Payments

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The demonetization policy in India has had a significant impact on the country's economy, in that it also accelerated the growth of digital payments in India. Prior to demonetization, digital payments accounted for only about 10% of all transactions in India but that number has grown to over 20% in the years since. On November 8th, 2016, the Prime Minister of India, Shri. Narendra Modi, announced that all 500- and 1,000-rupee notes, which accounted for 86% of the cash in circulation, would be demonetized. This strategic movement actually led to aggressive promotion and adoption of digital payment system in India.

The growth of digital payment system in India has been driven by a number of factors, including the government's push towards digitalization, an increase in internet and smartphone penetration and the rise of e-commerce. The Indian government has been actively promoting the use of digital technologies through various initiatives such as Digital India, Make in India and Startup India. These initiatives aim to increase the use of digital technologies in various sectors such as healthcare, education, and agriculture and also to create a conducive environment for start-ups to flourish. The increase in internet and smartphone penetration in India has also played a major role in the growth of the digital payment system. According to a report by the Internet and Mobile Association of India, the number of internet users in India is expected to reach 800 million by 2023. This increase in the number of internet users has also led to an increase in the number of mobile wallet users in India, which is expected to reach 900 million by 2025.

Promoting digital payment transactions in the country, was a significant step towards the government's goal of increasing the use of digital payments and reducing the dependence on cash transactions. Digital payments have become increasingly important in India in recent years, as the country has seen a rapid increase in the adoption of

smartphones and internet access. This has led to a significant increase in the use of digital payment methods, such as mobile wallets, UPI and card payments. However, there is still a large proportion of the population that relies on cash transactions, and the government is looking to change this by promoting the use of digital payments. This will be used for a variety of initiatives to promote digital payments. One of the key initiatives will be to provide incentives for merchants to adopt digital payment methods. This may include subsidies for merchants to purchase point-of-sale terminals, as well as tax incentives for businesses that adopt digital payment methods.

The government's contribution for digital payment transactions is a significant step towards achieving the goal of a cashless society. This allocation will help to increase the number of people who use digital payment methods, which will in turn help to reduce the dependence on cash transactions. Additionally, the government's initiatives to provide incentives for merchants and to build infrastructure to support digital payments will help to create a more conducive environment for digital payments to thrive. This move will also help to increase the overall financial inclusion in the country and will bring more people under the ambit of formal banking and financial services. With the increasing adoption of smartphones and internet access, digital payments are becoming more accessible to more people. This allocation will help to further increase the use of digital payments and reduce the dependence on cash transactions, which will help to create a more efficient and secure financial system for all Indians

The Digital Payments in India has also grown significantly in recent years, driven by a combination of government initiatives, an increase in internet and smartphone usage, and the rise of e-commerce. One of the key initiatives is the launch of the **Unified Payments Interface (UPI),** which allows for real-time inter-bank transactions and the **Bharat Interface for Money (BHIM) app,** which simplifies the process of making digital transactions.

UPI (Unified Payments Interface) has seen significant growth in India since its launch in 2016 by National Payments Corporation of India (NPCI). Here are some highlights of the UPI journey in India with YoY (Year-on-Year) growth statistics till Jan 2023:

In 2017, UPI recorded a YoY growth of 900%, processing over 100 million transactions worth INR 67 billion.

In 2018, the YoY growth was 246% with transactions worth over INR 1.5 trillion processed.

In 2019, the YoY growth was 67% with transactions worth over INR 2.9 trillion processed.

In 2020, UPI recorded an YoY growth of 63% with transactions worth over INR 4.3 trillion processed in December 2020.

In 2021, the YoY growth was 72% with over 1.49 billion transactions worth INR 5.6 trillion processed in June 2021[5].

At the end of the calendar year 2022, UPI's total transaction value stood at INR 125.95 trillion, up 1.75 X year-on-year (YoY), as per the NPCI. Interestingly, the total UPI transaction value accounted for nearly 86% of India's GDP in FY22[8].

At the end of the calendar year 2023, UPI's total transaction volume stands on 83.75 billion.

These statistics showcase the increasing popularity and adoption of UPI as a convenient and secure platform for digital transactions in India.

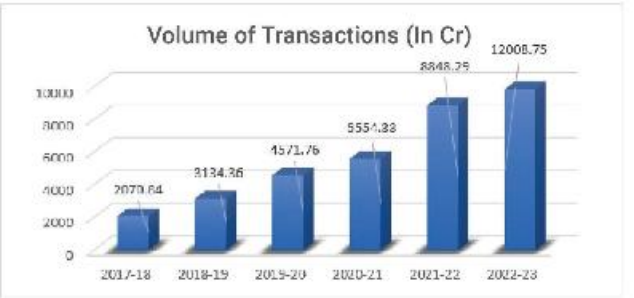
The increase in internet and smartphone penetration in India has also played a major role in the growth of the digital payments. E-commerce has also been a major driver of the growth of the digital payment system in India. The e-commerce market in India is expected to grow at a CAGR of 31% and reach $200 billion by 2026[6]. The growth of the e-commerce market has led to an increase in the number of online shoppers in India, which is expected to reach 220 million by 2025. The digital payment

system in India is also supported by a number of other private players as well. These players offer a range of digital payment services such as mobile wallets, UPI payments and QR code-based payments.

With the aggressive stakeholder consultation with Ministry of Finance and Reserve Bank of India, it was envisaged that there are 16 different digital payment modes, namely; AEPS, BHIM Aadhaar, BHIM UPI, Closed Loop Wallet, Credit Card, Debit Card, IMPS, Internet Banking, Mobile Banking, NACH, NEFT, and NETC.

The UPI 123PAY solution, designed by NPCI, aims to be an inclusive mobile-driven instant payment solution. While initially intended for feature phone users, it also caters to smartphone users who prefer offline or low-connectivity operations. Security remains paramount, with multi-factor authentication, encryption and real-time transaction alerts ensuring a robust and secure environment against fraud and unauthorized access. The introduction of UPI 123PAY has been a significant step toward financial inclusion. By providing digital payment services to the unbanked and underbanked populations, UPI and 123 Pay bridge the gap between traditional banking systems and individuals who were previously excluded from the financial payment system. Case studies and statistics highlight the tangible impact, showcasing how digital transactions empower marginalized communities. Moreover, the 123 Pay interface isn't just advantageous for consumers; it also offers numerous benefits to merchants. Its user-friendly payment gateway and quick settlement features, combined with loyalty programs and discounts, incentivize businesses to embrace digital transactions. This widespread adoption contributes to the interface's integration across various sectors, fostering a digital payment system. Government initiatives have played a crucial role in propelling UPI and 123 Pay to the forefront of digital transactions. Campaigns promoting cashless transactions, along with policy changes favouring digital payments, have created an environment conducive to widespread adoption. The government's commitment to a digital economy has further solidified the position of UPI and 123 Pay in the financial landscape.

Year by Year growth for Digital Payments in India has been significant and can be referred to below:



In conclusion, the digital payment system in India has grown significantly in recent years, driven by government initiatives, an increase in internet and smartphone penetration and the rise of e-commerce. The digital payment system is supported by private players who offer a range of digital payment services. The future of digital payments in India looks bright with the expected growth in the number of internet users and e-commerce market size.

Artificial Intelligence and the Writing of History in the 21st Century: The U-Turn in Historiography

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Tremendous improvements and advancement in communicative technology have made life much easier and smoother. Humans have become addicted to networking technologies. When we speak of human evolution, technology has become an integral part of the human body in many ways. It has now invaded the thought process of humans making them mere users of knowledge produced by technological systems. This scenario has made the Israeli historian, Yuval Noah Harari, observe in Homo Deus of the imminent emergence of a useless human category by 2050. He implied in the book that when the faculty of thinking is overtaken by technological systems, the humans stand to lose his monopoly over thinking. This would lead to the creation of useless humans in future. As a result of this take-over, all disciplines of knowledge will undergo structural transformation, a paradigm shift in the authorship and creation of knowledge systems. While AI is expected to take over laboratorial experiments in the case of sciences, in history and other social sciences it is the domain of textual analysis and content making. In historical research and writing the use and application of AI systems tend to replace the role of historian from that of an evidence collector and fact analyst to that of a programmer and compiler. In the 1960s, a great French historian of the twentieth century, Emmanuel le Roy Ladurie, had prophetically commented on the above remark. Instead of the archives, the 20th century historian will spend more time with computers and other gadgets.

The question that arises out of the problem is not the good and bad of AI and its impact on history writing but the implications of a change in historical research methodology that is to happen in the 21st century which is beyond the logic and reasoning of the historian. To initiate the

issue certain applications of AI in historical research will be highlighted to understand the kind of changes in the science of history writing.

The New Paradigm in Historiography

Historical research is a field that has traditionally relied on meticulous analysis of primary and secondary documents, artefacts, and other sources to reconstruct the past. Recently an array of new sources like oral testimonies, visual evidence and motion pictures are used by historians to bring out a clear picture of the complex past. The advent and popularisation of artificial intelligence (AI) has revolutionised the source analysis methods of the 21st century historians. AI technologies as they are used in sciences and other social sciences, provide new tools and methods that can enhance the speed, efficiency, and accuracy of historical research as well as illuminating the exciting past.

Textual Analysis and AI

Researchers in history are mainly preoccupied with a rigorous textual analysis of primary documents in varied languages, formats and styles.

AI is virtually transforming historical research through its ability to analyse vast amounts of data in quick speed and most coherently. Historians can use AI algorithms to sift through archives, digitised texts, and other sources to identify patterns, trends, and connections that might have gone unnoticed through traditional methods. A case in point is AI-powered textual analysis with tools that can help historians uncover relationships between different historical events or track the evolution of language over time. An AI algorithm called Ithaca is enabling historians to restore ancient Greek inscriptions which remain undeciphered till date. Researchers at British artificial intelligence firm DeepMind trained the algorithm on around 60,000 ancient Greek texts from across the Mediterranean that were written between 700 BC and AD 500.

Restoration of Dead Languages

It is estimated that we lose languages on a daily basis because of their non-use and hegemonization by dominant languages. When a language becomes something like a museum piece, it's cultural and social value in the world is lost forever. AI researchers at Massachusetts Institute of Technology (MIT) in the US have brought back dead languages from the past that are not spoken these days. A system developed in MIT's Computer Science and Artificial Intelligence Laboratory successfully deciphered lost languages that were previously spoken but not

deciphered by historians. The algorithm was trained on insights from historical linguistics to locate and understand the local patterns in the use of such languages.

It is an amazing story that the Dead Sea Scrolls are examined again with the help of AI in the Netherlands by researchers at the University of Groningen. Dead Sea Scrolls shed light on the culture and history of first-century Israel that enabled scholars to reconstruct the world of Jesus. Of the more than 900 scrolls, 700 are non-biblical writings that are of immense source value for the historians for studying the community rules, military organisation and strategy, and even daily prayers. They date from the 4th century BC and are thought to be the oldest manuscripts of the Hebrew Bible. Through systematic use of computer aided techniques and AI, researchers were able to conclude that the scrolls were written not by one individual and that two authors are behind its writing.

AI and Reimagining the Past

Another important application of AI in historical research is in image restoration and analysis. Postmodern historians are giving great attention to images of the past in varied forms like old paintings, photographs and other pictorial representations including advertisements from the bygone times. AI algorithms are now powered with image recognition tools in identifying, categorising and analysing visual materials and enable the researchers in history to gain more insights into the multilayered cultural fabric of the past. Together AI also offers immense possibilities in data visualisation and simulation in historical research. Creation of interactive visualisations of historical data illuminates the vision of historians into an inextricably nuanced past embedded in symbolic and literary manifestations. It allows them to explore complex relationships and patterns of the past in its variegated forms in a more intuitive way. Additionally, AI-powered simulation tools can help historians model and analyse historical events, enabling them to test different scenarios and hypotheses to better understand the past.

Historiophoty and AI

Postmodern thinker and historian Hayden White coined the term historiophoty to define the writing of history through paintings and photographs. Our society has heaped a mountain of memories through photographs but a majority of them are not preserved. Photographs available are mostly in poor shapes making it difficult to trace the faces and events clearly. AI is of much help here in recognising the

faces through facial recognition technologies. Historians in the west have initiated programmes to restore the faces of holocaust victims from the existing degenerated photographs. From Numbers to Name is the project under which about 34000 photographs are scanned and preserved in the US Holocaust Memorial Museum. It is important to note that this project is a team work of historians, data analysts, graphical animators and software engineers.

AI and Climate History

Environmental history of the world is a thriving area of historical research these days. The Japanese technocrats and scientists are engaged in research using climate data from the past to predict climatic changes in the future. Through the use of machine learning technology called deep neural networks, they analysed average monthly temperatures between 1901 and 2016. The model was able to predict variations in temperature over decades and its implications for the future significantly raise the value of climate history in contemporary times.

Historical Films and AI

Postmodern historians look at feature films as a source for reconstructing the past and there are many young takers of the theme in our times. In a post literate society, the value of films as a source of entertainment and education is intertwined. The study of old films is a fascinating area of historians and experts in cultural studies where AI is increasingly being used to aid in preservation, restoration, analysis, and interpretation of films. AI algorithms can help restore and enhance the quality of old films by removing scratches, dust, and other imperfections, improving image quality, stabilising shaky footage and even through remastering. In this way old films can be enlivened for critical examination by researchers in film history. More than this, even in content analysis AI-powered tools can analyse old films to identify scenes, characters, objects, locations, and themes which were out of bounds of a normal researcher. Content analysis also helps researchers in classifying and indexing vast film collections thereby increasing their accessibility to researchers. Metadata extraction is another AI application through which film historians can better contextualise the background of film production. One could get to know the social background of film production which has wider implications in film history. Through translation aided by AI, films can be used by researchers from various parts of the world irrespective of their competency in languages. This

also facilitates a cross cultural reading of films and ideologies enmeshed in them. Apart from these higher-level AI applications even bring in segmental analysis of films through study of mentalities embedded in films made in various periods. Emotion and sentiment analysis of films are also attempted by film historians to understand mentalities history (French Annales School) of different periods. By augmenting AI technologies in the study of old films, researchers, archivists, and film historians can preserve, analyse, and appreciate feature films in new and innovative ways. AI tools also help in bringing out signs and symbols encoded in films and thereby successfully bring out hidden meanings and facilitate the study of film semiotics with more accuracy and precision.

A Critical Appraisal

Taking all in all, are we poised to assume that AI technology is set to revolutionise history research and historiography? There is no denial of the fact that an integration of artificial intelligence into historical research represents a significant advancement that has the potential to transform historical research in a profound manner. Technologies of simulation, digitisation, preservation and visualisation will definitely impact the historiography of the 21st century. As technologies are political in its inherent nature, irresponsible and fanciful use of AI would be disastrous. As we are aware of racially designed robots that look down upon the black skinned people and black coloured objects, AI is politically motivated in some cases to manipulate, malign and falsify history through its charm of visualisation and presentation. To a greater extent these artificial systems can erode the thinking capacity of humans. Historians of the olden days used to sit in archives and libraries for years to collect and analyse documents. This prolonged working environment provided them with a meditative mindset and feeling of oneness with documents. Archives in that sense became a sacred laboratory for the historian of yesteryears. Simplifying data analysis and source location can harm the original instinct of the researchers in history for hard work and dedication. More serious is the chance of AI systems taking sides with players in human history. Widespread use of gaming technology for teaching history in classrooms can be an enlightening educational experience but at the same time can create racial and sectarian sensibilities disastrous for human civilisation. These problems and issues are not a justification for dispensing with the use of Artificial intelligence

(AI) in historical research. Instead, they point to the need for evolving certain checks and balances in the use of AI in historical research. At a time when robots are charged with consciousness to create histories of their sort, it is for humans to use such 21st century technologies for writing scientifically advanced objective and socially inclusive histories of the world. It is not a tech centric history that we want but a human centric one that cares for the humans as well as other living forms on our planet.

Suggested Readings

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The Future of Secularism in the Country

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These are days during which there are umpteen discussions happening with regard to secularism - the challenges that secularism faces, and the future of secularism. Here, it is important first to understand what secularism is all about. In a definition, more suitable to the Western context, it means the separation of state from religious institutions. It indicates moving away from monarchy and the divine right theory that saw the king as the representative of God. In the Indian context, secularism is a concept that does not denote an anti-religious stand, but equal treatment of all religions without the state being religious in a multi-religious society.

When our Constitution came in to force on November 26, 1950, the word secular as such was not included in our Constitution. But, the principle of secularism was inherent in the Constitution in Articles 25 to 28, which guarantee the fundamental right of freedom of religion. 'Secular,' was added to the Preamble through the 42nd amendment in 1976. The Indian understanding of secularism is based on the social fabric of tolerance that has sustained a multi-religious society in India, accepting and giving space for different religions that came to India during various periods in history. Also, in a deeply religious society like India, secularism has also to be understood in the context of not being antithetical to religion, but respecting all religions equally.

Before dwelling deep into secularism, we need to know the link between being secular and religious. Being religious means having a particular faith of one's own and it does not act as a hindrance to being secular. What comes in the way of secularism is communal thought where one nurtures feelings of enmity towards other religions thinking that the interests of other religions are antithetical to one's own.

Now, when it comes to the practice of secularism, we could definitely say that though we have a secular state, we need to evolve more to be termed a secular society. It is in this context that we need to examine the current state of secularism in the country and the challenges that

it faces. While analyzing the present, it is crucial to keep in mind the historical factors that have impacted the practice of secularism in the country.

The colonial period marked by the British policy of 'divide and rule' saw the development of communalism, which culminated in the partition of the country. When we started our journey as an independent nation there was also the baggage of partition, along with different social, economic and cultural indices that shaped the existence of different religious communities. There have been some instances of communal violence in the country, as a result of various factors. All these factors have had an impact on the way secularism has been shaping in the country.

Now, in a globalized world, in the India of 2024, it is important to discuss the status of secularism, though constitutionally we remain a secular state. It is crucial here to understand the social forces that are at work today across the globe in the era of globalization. At a time when there is great integration, cultural connect, increasing rate of migration, cross-cultural interactions, and unprecedented technological growth, all resulting in cultural homogenization, there is a proclivity among societies and people across the world to go back to their roots, tradition, and culture.

This gets reflected as a renewed interest in religion in some parts of the world, termed as religious revivalism, also accompanied by cultural revivalism and the enhanced focus on what is local and unique to one's own. Also, the economic integration and the global economic forces have resulted in a trend towards economic protectionism. In politics, this change is evident as the growth of right-wing politics and coming into power of conservative regimes in many parts of the world.

It is in this context that we need to ponder over the current state of secularism and its future. Indian society is going through a stage of transition in which there is a unique mixture of tradition and modernity. Tradition gets modified according to modern values ensuring continuity. This aspect gets manifested in our social, cultural and political forces.

Our young generation, deeply influenced and shaped by the transformation that technology brings in through the novel platforms of connection, accessibility to modern values, and possibilities that globalization offers in terms of social mobility and career chances, showcases this blend of tradition and modernity. Here, on the one hand

when they embrace limitless change that modernity offers, at the same time they also hold on to tradition. At this juncture in the forward journey of Indian society, we can say that this is the same value that seems to shape our politics in a huge way raising questions about the future of secularism in the country.

During the Indian National Movement and in India after Independence, the predominant values that guided our polity were liberalism and secularism. Followed by a period starting approximately from 1970s where there was the focus on regional identities and coalitions. Though there has been the line of thought upholding religion as the tool for political mobilization and as ideology, it got strengthened in the political sphere by the 1990s and especially in the past one decade.

What India witnesses now can be explained as increased presence of religion in politics, with the politicization of religion and vice versa. This has been having a significant impact on secularism. When religion is given a primary space in politics, there is a trend towards religious nationalism in which one's religious identity becomes an important criterion in evaluating one's nationalistic attitudes or patriotism, away from secular nationalism that focused on one's identity as an Indian when it comes to nationalism.

This has the danger of leading to the domination of the religion of the majority, in contradiction to the values that secularism espouses. Here, members of the majority religion may feel superior and dominant and those of minority religions may not feel equally valued and respected and as having equal stake in the country. This gets accentuated by the instances of hate crimes, hate speeches, mob lynching, social media vitriol, etc., which have become prevalent recently. Also, vote bank politics that chooses and fixes candidates on the basis of their parochial identities and increasing dependency of political parties on religious and caste organizations during elections has also been posing a challenge to secularism.

The narratives that try to mark India as a country shaped by one predominant culture, the attempts to distort history, the exhortation to go back to the past, etc., which are aimed at altering the plural, secular character of the nation are influencing the secular nature of the country. At the same time the growth of religious fundamentalism and terrorism across the world, cross-border terrorism, etc., have also contributed to the growth of communal tendencies, challenging secularism.

Here it is important to note that when secularism is threatened, it also affects democracy in an unhealthy way, secularism being one of the important pillars that keep our democratic values intact. Then the question comes regarding the corrective course of action that we should pursue.

To preserve and retain the democratic, secular, plural character of the nation as envisaged in the constitution, it is important that the state keeps equal distance from all religions and ensures equal treatment of all religions. No religious community should be made to feel alienated in India. There should be strengthening of the principles of tolerance and communal harmony in India through the spreading of Constitutional values, especially among the youth and our children.

We should be able to distinguish between religiosity and communalism and religiosity should not be misinterpreted as communalism. Every Indian citizen has the right to practice their own religion. Any tendency of communalism, religious fundamentalism and extremism rising from any religion; whether majority or minority, should be countered strongly. Religion should not be the force that guides politics, but secular issues and values should.

So, to preserve the secular values that have contributed to India's plural identity, all Indians, especially the youth, should get ourselves committed to keeping our thoughts and actions secular, along with the actions that the governments and the civil society should take. No one should be discriminated against on the basis of religion. Our relationships should not be restricted by religion.

Our religiosity should not lead to hatred towards other religions. We should see all others as our fellow Indian citizens whichever religion they may belong to. And our love for tradition and need to go back to religion should not be detrimental to the interests of people belonging to any other religion or the country. If these measures are pursued with commitment, we can neutralize the challenges that secularism is facing now and retain the secular character of the country, making everyone feel equal and equally belonged to the nation.

Jagath Guru Adi Shankara: The Apostle of Advaitha Philosophy

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Introduction:

A nation state is often defined as a sovereign territory with a group of individuals who share a common history. The term 'common history' is important. Today every country in the world contains more than one national group. Earlier every nation state consisted of citizens or subjects who were united by factors such as language, common descent etc. The general concept in those days was that sovereignty, land, population and government are the four characteristic pillars of a nation state.

Viewed in this context, the general feeling is that India has never been a nation in the strict sense of the term. To a certain extent this belief is true. The above definition of a nation state can never be applied in the case of India. During the pre –historic times, India was governed by a single ruler like Bharath and Yudhishtra. During the Mughal period also, India was ruled by a single person like Babar, Humayun, Jehangir and Akbar. Except for these brief periods, India was always a conglomeration of princely states. Even in Kerala we had the princely states of Travancore, Cochin and the Zamorins. From the religious and communal point of view too, India was always divided. Going to the roots we will see that India is a mixture of several indigenous and foreign culture. Even linguistically too, India was totally heterogeneous. Needless to say, all these cultures have contributed to the rich heritage of our culture and made it colorful like the different flowers in a garden. But in spite of all these differences, Indians considered themselves to be citizens of a country and children of a common mother. This feeling of oneness was existent in the pre – Colonial period. Except for a few invaders like the Tartans and Mughals, the people of this country took pride in the rich legacy of India. India was not only the motherland for the vast majority of people living here, but also the most sacred place on earth where foreigners were received with warm hearts and outstretched arms. Full credit for this mentality should go to our culture which exhorted Indians to consider the whole world as members of a single family." Vasudhaiva kudumbakam' was the sap that flowed through our veins, as a result of which every Indian chanted

the Sanskrit slokha 'lokha samastha sukhino bhavanthu' meaning May All Beings Everywhere Be Happy and Free.

Relevance of Adi Shankara 's philosophy.

It was Prof. Srinivasa Rao who made a critical analysis of Advaitha philosophy using the tools of modern logic. This in turn led to a critique of the teachings of Adi Shankara. Prof. Rao's findings were later published in the form of a small booklet captioned 'Advaitha". According to Prof. Rao, the traditional interpretation of Advaitha which considers Brahman as the only Reality can lead to confusion and inconsistencies. According to him, Advaitha is more scientific than being a mere philosophy and a close study of Advaitha, setting apart traditional views will reveal that there are no inconsistencies within this scientific thought, though the direct connection between the two is still very elusive.

Shankaran, as Adi Shankara was called when he was a boy, had a crystal-clear view of his mission in life. He had also mentally decided not to permit any impediments in his mission. Shankaran knew that as long as he remained tethered to his family, he would be failing in his mission. Probably that was why he decided to forsake worldly comforts and become a pravarjaka [monk]. An analysis of his philosophy should invariably take into consideration the ground realities existing in those days. To appreciate Shankara's philosophy, one should take cognizance of the age in which he lived. Shankara was aware of the inherent contradictions in the then existing philosophical discourses. But he was also aware of the fact that a total demolition of these contradictions was impossible. Instead, what Adi Shankara aimed at was to blend the contradictions in the matrix of Vedanta philosophy so that the contradictions would melt and become one.

To achieve what he had in mind, Shankara embarked on a tour of entire India to come in contact with the different philosophical streams then existing in India. What he desired was to come in contact with the ground realities and practical application aspects of different philosophies. Before long he realized that the influence of Buddhism had corrupted Hinduism considerably. As a wandering monk, Shankara came in contact with Nature and people of different natures. He indulged in discourses with them, observed nature and ruminated on what he had seen and heard. Wherever he went, he met people and spoke to them, clarified their doubts, educated them and raised them to loftier heights.

While on a journey in Varanasi, he interacted with those who had come to challenge this young monk from South India who did not appeal to them at first sight. But young Shankara was able to interpret Vedantha philosophy based on science and scientific thought. Wherever he went,

he presented himself as a patient listener, accepting their taunts with a smiling benign face and patiently presenting his views without hurting others. Shankara was slowly evolving into Adi Shankara who was fully aware of the ills of society and their solutions.

During his sojourns, Adi Shankara realized the potential energy of Hindu culture in the lives of the common people in different parts of India. What was required was a spark to ignite the embers of Indian culture that had been camouflaged due to the onslaught of foreign cultures. As a practical theoretician, Shankaran knew that there was the possibility of his endeavors coming to a standstill after his mission was over. To overcome this future possibility, Adi Shankaran established four Mutts in four different parts of India: Sringeri in South India, Puri in East India, Dwaraka in Western India and Badarinath in the lap of the Himalayas in North India. Monks who were known for their impeccable integrity and commitment to Indian ethos were entrusted the responsibility of running these, Mutts. Establishment of Mutts in four different parts of India proves Adi Shankara's awareness of the cultural unity of Indians in spite of their geographical diversities.

Adi Shankara was a Parivrajaka-wandering Monk-in the true sense of the term. He desired nothing. He could view things in a very detached manner with equanimity. In other words, Adi Shankara was a true universal cosmopolitan citizen of India-the brand ambassador of Advaitha philosophy. Endowed with an empathetic mind set, Adi Shankara could easily surmount physical and mental obstacles in his life and continue his journey of life because he was fully aware of his life mission. Adi Shankara acknowledged his gratitude to his Guru Govinda Padar in all his works. We find this acknowledgement in the form of 'Sreemadh Paramahamsa Parivrajakacharya Govinda Bhagadvadhpoojya Pada sishyaha" in all his works.

No write up on Adi Shankara will be complete without a reference to his disciples. Among his innumerable disciples, Padmapaadacharya, Sureshwacharya, Hasthamaalkacharya and Totakacharya are considered to be the foremost, having privy to the thought process of Acharya Shankara. Padmapadhacharya was originally known as Sanandan. On one occasion he was on the opposite side of a lake. His master asked him to cross the lake and come this side. It is said that lotus flowers bloomed in the lake suddenly making it easy for Sanandan to cross the lake effortlessly. It is believed that it was Adi Shankara himself who caused

the lotus flowers to bloom because other disciples were often jealous of the Master's special attachment for Sanandan. Acharya wanted to prove that all disciples were equal, but Sanandan was more equal than others. In the Gospel of Mathhew (14-29-31) we can see an identical incident when Jesus Christ's main disciple St. Peter crossed the sea, walking aloft the waves. After the Mutts were established in different parts of India, Adi Shankaracharya entrusted their administration to his four disciples before leaving for his heavenly abode.

After having spent a few days in Kashi, where he was able to counter successfully the arguments of Buddhist and Jain pundits, Adi Shankara left for Kashmir where he ascended the Sarvagnapeedam. The general belief is that only wisest of wise can ascend the Sarvadnapeedam. Lesser mortals can never aspire to ascent this seat of Knowledge.

Acharya Shankara had fulfilled his life mission and it was time for him to leave his mortal body. Although there are conflicting reports about his place of death and mode of death, the generally accepted version is that after having ascended the Sarvagnapeedam, Adi Shankara went to Vrishadri where he abandoned his mortal body and went to his heavenly abode. Achara Swamy Adi Shankara had set apart his life exclusively for the propagation of a philosophy that was inclusive and not based on the teachings of a propagator alone.

Conclusion:

Adi Shankara never remained in a place for a long time. He was always on the move. It was because of his tireless efforts that Hinduism got cleansed of many impurities. He codified and modified the rituals and practices that were in vogue in the temples at that time. Full credit goes to Adi Shankara for making Hinduism what it is today of which we can be proud of. It is up to future generations to continue the good work that Adi Shankara began so that India can be a place where all religions and cultures can blend together and enrich the fabric of Indian society. Adi Shankara taught the world that Hinduism is not merely a collection of rituals and practices. Hinduism is more a way of life and it was he who taught us that we can be good Hindus even without going to any temple. His love was universal and we can rightly say that his outlook of life was identical to the outlook of life propounded by Jesus Christ. Like Christ, Adi Shankara too had an inclusive mind that could imbibe everything, filter it and retain what was necessary for society to live harmoniously. Herein lies the greatness of Adi Shankara.

Mandir, a Depiction of Style and Engineering

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Before we talk about temple architecture in India, mention should be made of the tradition of shrines which were built by the followers of Buddhist in the post-Mauryan period between 200 BCE and 300 CE. A shrine is a demarcated sacred space within which worship or adoration occurs. The earliest shrines in India were simple; they consisted of a fenced-in space or tree which are often associated with the worship of yakshas and yakshis, nagas and nagis and such characters are mostly linked to Buddhist traditions too. The Buddhist text Mahaparinibbana Sutta refers to many chetiyas (Chaityas) or shrines in Vaisali. From an archaeological finding at Amaravati, we are able to see fragments of a Buddhist shrine in which a tree and Buddha's footprints are venerated. The evidence of Hindu temples of this period consists mostly of ground plans revealed by archaeological excavations; the superstructures have not survived. The earliest evidence of a Hindu temple is seen at Vidisha in Madhya Pradesh which must be a Vishnu temple belonging to 3rd c BCE and the remains indicate that the shrine consisted of an inner ellipse (8.1 x 3 m) separated by a 2.5 m gap from the outer ellipse, which was a rectangular projection to the east where the entrance was located. The temple had a brick plinth and its superstructure must have been made of wood, thatch and mud. Similar style temples of Shiva and Lakshmi have also been found in Dangwada and Sonkh respectively. The site Nagarjunakonda revealed the evidence of a temple complex belonging to 3rd c BCE where Shiva, Karrtikeya and goddess shrines and might be a complex to all gods. The temple complexes at Nagarjunakonda did not have a uniform architectural plan. Some consisted of a single shrine - oblong, apsidal or square. Others consisted of more than one shrine, each preceded by a mandapa (pillared hall). Most of the temples had their entrance to the east. Brick was the main construction material, with stone used for the pillared mandapas.

The succeeding stage, the Guptan age, is described as a classical age in the sphere of cultural development. Accordingly, the temple

architecture also witnessed an evolution in its style, techniques and magnificence. Apart from brick temples, there were stone temples also that evolved during this period. Most of the surviving temples are located in the hilly areas of Madhya Pradesh. The stone temples include the Vishnu temple at Tigawa, the Shiva temples of Bhumara and Koh, the Parvati temple at Nachna-Kuthara etc. The early temples were small with a square garbha-griha (sanctum) of about 10 x 10 ft which was large enough to house the image. There were a small portico and flat roof. Temple walls tended to be plain, but doorways were often intricately and profusely carved. Later temples of the late 5th & 6th centuries reveal a more sophisticated construction with the temple not built on a raised plinth and had a shikhara (spire). The Dashavatara temple at Geogarsh in Jhansi, UP had curvilinear shikharas of 40 ft in height and had four large porches.

The early medieval period was marked by remarkable developments in the spheres of art and architecture. Distinct regional architectural styles emerged in different areas of northern and southern India. Consequently, different styles and sub-styles were evolved in temple architecture-Nagara, Dravida and Vesara styles. The Nagara style is associated with the land between the Himalayas and Vindhyas, the Dravida style with the land between the Krishna and Kaveri rivers, while the Vesara style is sometimes associated with the area between the Vindhyas and the Krishna rivers. Samarangana Sutradhara is an encyclopedic work on classical Indian architecture (Vastu Shastra) written by Paramara King Bhoja of Dhar (1000–1055 AD). In 83 chapters, the subjects treated are town planning, house architecture, temple architecture and sculptural arts together with Mudras (the different hand poses and the poses of the body as well as the postures of legs), the canons of painting, and a chapter on the art of mechanical contrivances, the yantras.

The basic plan of the Nagara temple is square, with several projections or rathas on each side of the shikhara, giving it a cruciform shape. As per the number of projections, there are triratha, pancharatha, saptharatha, and navaratha styles of shikhara. These projections can occur throughout the height of the structure. The temple's elevation is marked by a conical or convex Shikhara or temple tower usually crowned by an 'Amalaka' or notched ringstone. The temples of Nagara style are characterised by the rectangular sanctum sanctorium built on a raised platform, adhisthana, the plinth, which is a tall platform with one or more flights

of steps leading up to it. Ardhamandapa is the entrance porch that forms a transitional area between the outside world and the mandapa. Mandapa is a hall that leads to garbha-griha, the inner sanctum. For large temples, there may be mahamandapas or other mandapas as well. The temple's inner sanctum, garbha-griha, contains the image of the temple's primary deity. The basic function of a Hindu temple is to serve as the deity's dwelling place. The word garbha can mean either "womb" or "embryo;" both meanings connote potentiality, hiddenness, and a sense of development. The garbha-griha is located directly below the summit of the highest tower, with the primary deity directly under the highest point. Smaller temples may have only a small shrine room at the back end of the temple but larger temples often also have a processional pathway around the central shrine, along which devotees can circle the deity as a gesture of respect and worship. Lingaraja temple of Odisha, and Kandariya Mahadeva temple of Khajuraho, M.P are two Nagara style temples. The recently constructed Ram Janmabhoomi Mandir at Ayodhya also follows the traditional Nagara style with five mandapas- Nritya Mandap, Rang Mandap, Sabha Mandap, Prathana Mandap and Kirtan Mandap. The Mandir has a length (east-west) of 380 feet, a width of 250 feet, and a height of 161 feet and is three-storied, each floor being 20 feet tall. It has a total of 392 pillars and 44 doors. At the four corners of the compound, there are four Mandirs - dedicated to Surya, Bhagwati, Ganesha and Shiva. In the northern arm is a Mandir of Annapurna and in the southern arm is a Mandir of Hanuman.

Pallavas were one of the pioneers of South Indian architecture. The earliest examples of temples in the Dravidian style belong to the Badami-Chalukya-Pallava period. The earliest examples of Pallava constructions are rock-cut temples dating from 610 – 690 CE and structural temples between 690 and 900 CE. The greatest accomplishments of the Pallava architecture are the rock-cut temples at Mahabalipuram. The two most important characteristics of Dravida temple architecture are that the temples of this style have more than 4 sides in the sanctum and that the tower or Vimana of these temples is pyramidal. Dravida-style south Indian temples are marked by huge gateways known as gopurams. It consists of a multiplication of storey after storey. Each of these is a replica of the sanctum cella and is slightly reduced in extent to the one below. The Cholas were prolific temple builders right from the times of the first king Vijayalaya Chola after whom the eclectic chain of Vijayalaya Chozhisvaram temple near Narttamalai is known. His son

Aditya I built several temples around the Kanchi and Kumbakonam regions. Rajaraja Chola built the Brihadisvara Temple at Thanjavur. The maturity and grandeur to which the Chola architecture had evolved found expression in the two temples, the Brihadisvara temple, Tanjavur and the Brihadisvara Temple at Gangaikondacholisvaram by Rajendra Chola. In a small portion of the Kaveri belt between Tiruchy-Tanjore and Kumbakonam, at the height of their power, the Cholas have left over 2300 temples, with the Tiruchy-Thanjavur belt itself boasting of more than 1500 temples.

The Vesara style is a hybrid style that borrowed from the northern and southern styles during 11th to 14th centuries. So, it is a mixture of both Nagara and Dravida styles of temple architecture. This architectural style is difficult to define, as the mixture of northern and southern elements may vary. Temples built in the Deccan under the later Chalukyas of Kalyani and Hoysalas are considered examples of this style. The Vesara style reduces the height of the temple towers even though the numbers of tiers are retained. This is accomplished by reducing the height of individual tiers. The semi-circular structures of the Buddhist chaityas are also borrowed in this style, as in the Durga temple of Aihole. Many temples in Central India and Deccan have used the Vesara style with regional modifications. There are different sub-styles under the Vesara style such as Solanki style, Hoysala, and Gajprastha style.

Modern temple architecture exhibits a blend of tradition and innovation, reflecting contemporary aesthetic sensibilities while preserving cultural heritage. Characterized by sleek lines, minimalist designs, and sustainable materials, modern temples prioritize functionality and symbolism. Architects often incorporate advanced technology for energy efficiency and structural integrity. Open, light-filled spaces invite contemplation and community engagement, while symbolic motifs and traditional elements maintain spiritual resonance. These temples serve as architectural expressions of faith, bridging the gap between tradition and modernity, and embodying the timeless pursuit of divine connection in a rapidly evolving world. The Akshardham Temple, Delhi completed in 2005, combines traditional Hindu architectural elements with modern design principles. It features intricate carvings, stunning domes, and sprawling gardens, all showcasing exquisite craftsmanship. ISKCON Temple, Vrindavan, 2004, is a modern interpretation of traditional Indian temple architecture.

Will the New Four-Year Degree Programme Revolutionize Kerala's Higher Education Sector?

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In the light of the New Education Policy (NEP 2020), UGC put forward the Four-Year Undergraduate Programme (FYUGP) for implementation by the Indian Universities. In Kerala Sri. Shyam P. Menon Commission appointed by the Government, based on the UGC scheme submitted a comprehensive report on Higher Education Reforms in Kerala. On this basis the Kerala Curriculum Committee prepared its report for implementing this modified version of FYUGP with a view to making our degree programme on a par with the degree programmes of leading foreign universities. Therefore, the FYUGP is expected to revolutionize our Higher Education Sector attracting students within and outside India. The Boards of Studies of Universities in Kerala have almost finalised the syllabi for various subjects.

The FYUGP has two broad types of courses - Subject - Oriented and General. The subject specific courses fall into six groups: 1. English language group, 2. Natural and Physical Sciences, 3. Mathematics, Statistics & Computer Application, 4. Library, I.T & Media sciences, 5. Commerce & Management, 6. Humanities & Social Sciences. A course in Humanities & Social Sciences is compulsory for all students. From the other five groups the students will have to choose their disciplinary and multi-disciplinary major subjects and minor subjects which are Optional/ Elective. The major is the main focus of study in the pathway to degree(s). The degree(s) are awarded in the major subject. The degree(s) can be in a single major or multi-disciplinary major(s) with minor(s). The minor(s) may be complementary or supplementary and may be from the Subject-specific groups above or from the General Group explained below.

The General category of courses called capstone level courses is the novel or revolutionary feature of the FYUGP. The Capstone is an educational process in which students pursue practicum or research

in an area of major study and prepare a paper reflecting their deep understanding of the same during the exit years. All the capstone projects/courses teach students how to enhance their research or general skills and rational thinking. They also learn problem solving techniques and understand to tackle multiple challenges. Therefore, capstone courses really prepare the students for the world of work or for self-employment with professional knowledge and skills.

Capstone level courses include specialised advanced level internships, community engagement and services, vocational/professional training or other kinds of work experience. Six types of capstone level courses are included in the Kerala scheme for selection by the students. These are 1. Ability enhancing linguistic skill development courses, 2. General skill development courses, 3. Value addition courses, 4. Vocational/ Professional training courses, 5. Self- Learning courses and 6. Internship.

The course structure comprising Subject-specific and General courses seems to be more scientific than that under the UGC Scheme. It has 3 tiers or levels. At the bottom is the Foundation course, comprising first four semesters/two years. At this level, besides completing the compulsory course from the group of Humanities and Social Sciences, students have to complete 10 other courses. Of these ten, four courses are from the group of linguistic skill development courses (two in English language and the other two in a modern Indian language), three are subject-specific courses (two in core subjects and one in minor) and the remaining 3 are General or Capstone courses. Those who secure 88 or more credit points from these total eleven courses can pass the Foundation course and join for the intermediate level first degree course, in the 3rd year. At this level students have to make deeper study of two core subjects and two minor elective subjects studied at the Foundation level. In addition to these from the listed General/Capstone level courses, they have to complete two general skill development courses, one value addition course and an unlisted general skill development course, through any of the UGC recognized online platforms. Those who secure 45 or more credit points for these 8 courses will be awarded the intermediate level first degree. Now all passing out students have the option to break the study and come back within 3 years to complete the final degree course of the 4th year.

In the 4th/Final year students can prepare for the Degree (Honours) or Degree (Honours with Research). Those choosing the first option have

two other options. First is to undergo a course in Research methodology, do Research/ Dissertation in a selected area of his core subjects for the degree course, prepare a substantial paper/project report and present it satisfactorily at a Seminar attended by subject experts of Universities/ Colleges. In lieu of research he can also make advanced study of three subjects studied for the first degree. Those students having a deep aptitude for research can choose the other option i e. Degree (Honours with Research). Such students will have to do research/Dissertation under the supervision of a qualified professor of University/College, prepare a detailed project report, present it at a Seminar attended by subject experts of Universities and Colleges and after review by subject experts get it published in peer reviewed research journals or get patent for the new invention. All 4th year students will have to complete one general skill development course each through anyone of the UGC recognized online platforms like the 'SWAYAM' of AICTE. Students who secure 44 or more credit points in the 4th year can lift the total credit points to the level of 177 or more and qualify for the award of the appropriate final degree: (Degree (Honours) or Degree (Honours with Research).

The significance or revolutionary nature of our FYUGP is very much highlighted in the curriculum and course structure explained above. More is evident in the approach and procedure for the implementation of the new programme. The FYUGP is an outcome Based Educational Approach'(OBE). Learning and teaching are technology based. The teachers, therefore, can provide real-time feedback to students through continuous assessments and can give remedial support to students. OBE will create a new culture of education which enhances the skills of the students and deepens the understanding of the subjects. Professors are no more monopoly providers of knowledge. They tell the students how to get knowledge and from where to get it. They can introduce new trends, interpretations and research findings. They can enliven classroom learning through techno-pedagogy. In fact, students become their partners, collaborators and providers of new perspectives and knowledge in the new educational process. Critical thinking and innovative solutions will nurture the research driven minds of students to become self-employed or join the modern work force.

The new technology-based curriculum will open up tremendous opportunities for students globally. They can collaborate with learners

from around the world. The FYUGP will mould a new generation of youth with empathy and compassion to work with environment awareness by incorporating high moral and constitutional values. Science students can get opportunities in global science research projects and internship of major World Organisations like the ISRO, DRDO, NASA, etc. and other renowned institutions. Students also can get access to international professional networks and can make global collaborative partnerships. On the top of these are, opportunities available through 'Student Exchange Programmes' of leading foreign universities.

A New Hope for Indian Higher Education: Examining the National Education Policy 2020 And Its Challenges

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Introduction

India had five education policies prior to NEP 2020. The first education policy was declared in 1968 which laid the foundation for universal elementary education and introduced the 10+2 system in the country. The second **National Policy on Education (NPE) was declared in 1986 which** emphasised the need for increasing research in the Universities and other higher education institutions. The policy also aimed at improving the access to education and reducing the gender disparities. The policy also emphasized science and technology in higher education. The 1992 policy, known as **Programme of Action (PoA) - 1992,** focused decentralization, teacher training, and vocational education. The policy also advocated a common entrance exam for professional courses. **The National Policy on Education - 1992** placed emphasis on computer education and environmental awareness. In 2009 the **National Policy on Education (NPE)** spoke about the Right to Free and Compulsory Education and focused on making elementary education a fundamental right. **The National Education Policy (NEP) – 2020** presents an obvious shift from previous national policies in India aiming at revolutionising the education system.

Major Provisions of the NEP

1. Reorganising of regulatory framework

The NEP proposes to consolidate all the regulatory bodies into one to give responsible freedom to institutions to operate. Accordingly, the central government will establish a Higher Education Commission of India (HECI), with separate verticals to regulate, accredit, fund, and to set academic standards. The proposal is to have light but tight norms in place.

2. Large Multidisciplinary Institutions

The NEP proposes to bring down the number of higher education institutions in the country from 40,000+ to 15,000+. These institutions

will be large with not fewer than 3000 students, multidisciplinary and will be independent from affiliation to award of degrees on their own. The affiliation system will be done away with by 2035.

3. Flexibility for learners

The policy proposes to implement multiple entry and exit from a degree programme including the choice of institutions for different courses. This is made possible through Academic Bank of Credit (ABC). The courses (subjects) to be studied by a person are not prefixed by an Institute or Programme. Instead, different possible combinations of courses are chosen by the learner and the credits can be acquired from multiple organisations to get a degree awarded. The learner is free to choose courses and their credits from vocational education and/or internships and industry trainings.

4. Holistic Assessment

The traditional assessments were highly examination oriented and were skewed toward the final term examination. The new policy gives freedom to the faculty to develop creative ways of assessing the continuous learning of students. There is also a shift in emphasis from knowledge to skill and therefore discourages rot learning while encouraging critical thinking and application of knowledge. Therefore, the learning has become more outcome based.

5. Structure of Higher Education

In India we had the undergraduate education of 3 years for arts and science, 4 years for engineering and 5 years for medicine. NEP visualises that a degree programme shall be for 4 years except in the case of medicine. However, there is also the possibility to complete an arts and science degree in three years. Similarly, an integrated postgraduate program can also be completed in 4 years after secondary education.

6. Importance of vernacular in higher education

Modern studies are in general agreement that there is a very high degree of correlation between language and thinking among human being. NEP 2020 has emphasized the need for promotion of multilingualism and the inclusion of Indian (vernacular) languages in all three levels of education. This is a major shift from the previous policies that heavily favoured English as the predominant language in tertiary education.

7. Promotion of research in higher education

It is a significant step towards strengthening India's research ecosystem. Universities distinguish between 'research intensive' and teaching universities. The NEP also proposes the creation of National Research Foundation to promote research in institutions of higher learning. The stress on multidisciplinary research is another important feature of the policy. Institutions are also encouraged to conduct collaborative researches with the industry.

Challenges of NEP Implementation:

1. Concurrent list

Education in India is in the concurrent list where both the central and state governments can make laws and policies. States will have varying levels of infrastructure, qualified faculty, and other resources to implement the policy. The implementation further gets bottlenecked due to pollical considerations too. Therefore, the central government has the challenging task of buy-in the willing cooperation of the state governments to implement NEP through discussions, financial supports, and regulations. This is not easy in a country like India where there are extremely rigid views are held by political leaderships in different states.

2. Reorganising the regulatory framework

It was one of the highly encouraging proposals in the policy. However, nothing significant has happened so far. Amalgamation of different regulatory bodies is yet to happen. Therefore, instead of 'light but tight' regulatory frameworks, the higher education ecosystem in the country witnesses increasing number of regulations from different statutory bodies that are in multiple cases contradicting each other. There are a large number of cases where the affiliating universities and the state governments giving directions are contravening the provisions and directions from central government and the national bodies. Many institutions are compelled to seek the guidance from the honourable courts in the country to get legal positions clarified.

3. Consolidation of colleges and conversion to university status

It aims at abolishing the affiliating system in the country. At present the institutions can become universities under the central (UGC) or state regulations. However, lions share of the existing institutions are regulated by the state governments. Unless the state governments give promote or at least permit existing institutions to become universities they are not able to take any step further towards becoming a university.

As per the NEP, the institutes should merge to become large and multidisciplinary by 2030. This would help institutes to evolve into a multidisciplinary university. However, there is no effective coordination between the central and state government organisations to help HEIs to merge. Consolidation of institutions is moving in a slow pace. The NEP visualises to reduce 2/3 of number of HEIs in the country. This is not an easy task at all. Institutions are established for specific purposes by people/organizations/ societies committed to the cause of education. They may find it difficult to merge with another, burying the fond memories of the founder. Therefore, consolidation of institutions is going to be highly resisted by state governments.

3. Challenges in Flexible E& E (entry & exit) policy

The learner freedom to decide on the progression of his studies is something that is recognised in most developed countries. The universities across globe have systems or norms to recognise the studies held in other institutions from anywhere in the world. Generally, the recognition of previous studies by a student is done at the institutional level. In India, we are yet to evolve an effective system of recognising the previous studies at the institutional level. Even the available systems at the university levels are not scientific enough and are time consuming. Therefore, actual implementation of E&E policy is not an easy option for a learner even while the ABC portal is available to upload the academic credentials, unless there are norms that are acceptable to all the higher education institutions in the country.

Another important hurdle in implementing E& E policy is the lack of clarity regarding the important terms that are used in higher education to explain or define certain concepts. For example, Course, Programme, Programme Outcome, Credit etc are being interpreted differently by HEIs and even by the statutory bodies like AICTE & UGC. Therefore, interpretation of the academic credentials from more than 40,000 institutions in India is not an easy task, without standardisation regarding the fundamental concepts, credits, grading etc. Moreover, the quality of education varies from high standards to very poor depending on the quality of the institutions. Therefore, comparing the academic transcripts of institutions poses huge challenge.

Credibility Check of the academic credentials is yet another problem in implementing E&E. The developed west has a practice of sending academic transcripts to anyone directly from the HEI. Therefore, the reliability of the transcripts is cent percent. India is yet to adopt any such

system. The ABC replaces this problem to a certain extent. However, only fewer than 200 institutions are onboarded with ABC. Therefore, ascertaining the credibility of the transcripts that are directly produced by the students takes a very long time which also is a major hurdle in implementing E&E.

5. Shortage of qualified faculty

This is yet another important problem faced by the Indian higher education. Many thousands of faculty positions are lying vacant even in the existing universities in India. When the number of universities rises from todays 1000 to 15000 or more, we can imagine the heavy shortage of qualified people. Even the available teachers lack quality publications. Most of them fail to contribute through research. There are many reasons behind the shortage of faculty. One structural reason is the tradition of low pay for the faculty. The best brains usually do not opt for teaching. This is further being worsened by the growing migration of the skilled and qualified Indian workforce. The problem can be addressed by incentivising the research studies and by revising the salary package of faculties. At present the governments – both centre and state- progressively withdraw from higher education. Even the available incentive schemes for research are gradually dwindling or disappearing. Therefore, the rapid expansion of the higher education sector by establishing fifteen times more universities in the country within a span of another ten years could exacerbate the problem shortage of qualified instructors potentially impacting the overall quality of education.

6. Equity and Access

The NEP emphasizes inclusivity, addressing disparities in access to higher education, particularly for rural, marginalized, and socioeconomically disadvantaged groups. This remains a significant challenge.

7. Potential for Increased Privatization

Some critics fear that the policy's focus on market elements and opening up to foreign universities could lead to the increased privatization of higher education, making it less affordable.

Conclusion

To sum up, the NEP 2020 presents a visionary roadmap for a more comprehensive and transformative higher education system in India. The key to its success lies in its effective implementation across all the states of India, while carefully addressing potential challenges and concerns to realize its promise of quality, access, and innovation.

Timeline of Independent India's Epochal Moments in Science and Technology

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India has traversed an arduous path to 76 years of Independence. Progress was impossible without scientific prowess. Once disparaged as the 'land of snake charmers and fortune tellers', the gentle waves of scientific temper shaped the shores of a behemoth which would hold the world in its thrall. Let us take a journey back in time tracing the nation's epochal moments in science and technology.

The 1950s

1951: The first Five Year Plan draft has a dedicated chapter on 'Scientific and Industrial Research'.

1951: The first Indian Institute of Technology (IIT) inaugurated at Kharagpur by then Minister of Education, Maulana Abul Kalam Azad on 18 August.

1952: The indelible ink, a tool to prevent voting by the same person more than once and has become the mark of elections in India, is developed by the National Physical Laboratory (NPL), New Delhi. It was subsequently licensed to the state-run Mysore Paints and Varnish Limited, Mysore, which is the sole supplier of indelible ink to the Election Commission of India.

1953-54: Samarendra Kumar Mitra builds India's first indigenous electronic analogue computer at the Indian Statistical Institute (ISI), Calcutta. Subsequently, under the leadership of Mitra, the first second-generation indigenous digital computer of India was produced, namely the transistor-driven machine ISIJU-1, which became operational in 1964.

1954: First particle accelerator cyclotron becomes operational. Astrophysicist Meghnad Saha and later nuclear physicist Basanti Dulal Nagchaudhuri led the team that built it at the University of Calcutta.

1954: Homi J. Bhabha, the Father of India's Nuclear Programme, sets up

the Atomic Energy Establishment, Trombay (AEET). It was named the Bhabha Atomic Research Centre (BARC) after his death in 1966.

1958: Parliament formulates and adopts the Scientific Policy Resolution (SPR). It looked upon 'science as a key to national prosperity'. It emphasized the Government's responsibility to foster, promote and sustain, by all appropriate means, the cultivation of science and scientific research in all its aspects pure, applied and educational. It embodied Jawaharlal Nehru's vision of India as a welfare state where social transformation was possible only through investment in science and technology.

1959: The Tata Institute of Fundamental Research (TIFR), Bombay computer division led by R. Narasimhan builds TIFRAC (TIFR Automatic Computer), India's first digital computer.

The 1960s

1960: The Central Food Technological Research Institute (CFTRI), Mysore develops the first baby milk food from buffalo milk after multinational companies refused to set up a manufacturing facility in India because the country was short of cow milk and buffalo milk was not suitable as it had too much fat. CFTRI licensed it to the Kaira District Milk Producers Co-operative Ltd., who marketed the product as Amulspray Instant Milk Food.

1963: G.N. Ramachandran, along with his colleagues C. Ramakrishnan and V. Sasisekharan, developed what is today called the "Ramachandran plot", a tool used universally in the field of protein conformation.

1963: Vikram A. Sarabhai, the Father of India's Space Programme, established India's first rocket launching station at Thumba near Trivandrum.

1964: Under the aegis of TIFR, cosmic ray experiments begin at abandoned mines of Kolar Gold Field (KGF) at a depth of 2.3 km. KGF is credited with the discovery of atmospheric neutrinos.

1965: Mathematicians M.S. Narasimhan and C.S. Seshadri from TIFR prove the Narasimhan-Seshadri Theorem, perhaps the most significant mathematical result to come out of post-independence India.

1968: The **Green Revolution** is launched under the premiership of Lal Bahadur Shastri, led by agricultural scientist M.S. Swaminathan with the political support of Agriculture Minister C. Subramaniam.

The 1970s

1970: A team led by astronomer Govind Swarup of TIFR builds the Ooty

Radio Telescope. Uniquely, the telescope sits on a natural slope of 11 degrees, which matches the latitude of the location, allowing it to track celestial objects for up to 10 hours in the east-west direction.

1974: Central Mechanical Engineering Research Institute (CMERI), makes its contribution to mehanisation of agriculture with the first indigenous tractor of the country named Swaraj, a 20 HP tractor, which is licensed to the Punjab Tractor Limited. Subsequently, 30 HP to 90 HP tractors named Sonalika are also designed by the CMERI.

1974: India's first nuclear test code-named Smiling Buddha conducted at Pokharan in Rajasthan on May 18 is a landmark event that demonstrated to the world India's nuclear capability.

1975: On April 19, Aryabhata, India's first indigenously designed and built satellite, is launched. On August 1, the Satellite Instructional Television Experiment (SITE), one of the largest of its kind anywhere, starts. The aim is the use of satellite technology to telecast educational programmes.

1976: India becomes the first country in the world to officially adopt scientific temper as a fundamental duty. The 42nd amendment added Article 51A(h) to the Constitution, which laid down "to develop the scientific temper, humanism and the spirit of inquiry and reform" as a fundamental duty of every citizen.

1977: Indian Institute of Petroleum (IIP) develops the energy-efficient soot-less Nutan kerosene stove, which revolutionises smokeless cooking and reduces fuel requirement by 25%.

1977: World Health Organisation (WHO) declares India free of small pox on April 23. (The world was declared free of small pox on May 8, 1980).

1978: India's first, and the world's second, test-tube baby "Durga" (alias Kanupriya Agarwal), born in Calcutta on October 3. She was 'created' by the physician Dr. Subhash Mukherjee using in-vitro fertilisation. (The world's first test tube baby Louise Brown was born just 67 days earlier on July 25, 1978 in the UK).

The 1980s

1981: Scientists of the National Institute of Oceanography (NIO), Goa collects polymetallic nodules (potato-shaped lumps containing several valuable metals such as manganese, copper and nickel) from the depth of 4,800 m in the western Indian Ocean, a feat not equaled by any other developing country. It earns India the status of "Pioneer Investor" and exclusive rights for deep seabed mining of over 1.5 million sq. m. in the central Indian Ocean basin, from the International Seabed Authority

(ISA) of the United Nations in 1987.

1983: Prime Minister Indira Gandhi unveils government's **Technology Policy Statement (TPS)** at a session of the Indian Science Congress in Tirupati, Andhra Pradesh, in January. It aimed 'to develop indigenous technology and ensure efficient adoption of imported technologies appropriate to national priorities and availability of resources'.

1983: The Integrated Guided Missile Development Programme (IGMDP) starts on July 26 under the leadership of A.P.J. Abdul Kalam, Director, Defence Research and Development Laboratory (DRDL) of the DRDO. Prithvi, Agni, Trishul, Nag and Akash missiles are the result.

1983: India establishes its scientific station (Dakshin Gangotri) at Antarctica, about 2,500 km from the South Pole. In 1988, this was abandoned (being used as a supply base) and a new station, Maitri, also India's first permanent station, was set up 90 km from the first one. Bharati, a third research station, has been made operational since 2012. National Centre for Polar and Ocean Research (NCPOR), Goa is the nodal organisation for managing the Indian Antarctic Porgramme, including the maintenance of India's permanent research stations in Antarctica.

1984: Centre for Development of Telematics (C-DOT) is set up under Sam Pitroda with scientists and engineers from TIFR and Telecom Research Centre of DoT. Its mandate was to develop a telephone digital switching system based on what had been developed for the Army. The result was the first Rural Automatic Exchange (RAX) in 1985.

1985: The Indian Railways reservation system IMPRESS (Integrated Multi-train Passenger Reservation System) launched in New Delhi on October 15.

1986: India's first parallel computing supercomputer Flosolver, built at the National Aeronautical Laboratory (NAL), Bangalore, becomes operational in December. Flosolver was used to aid research in fluid dynamics and aeronautics, and its success triggered other successful parallel computing projects in the country such as the PARAM series of supercomputers, designed and developed by the Pune-based Centre for Development of Advanced Computing (C-DAC) under the leadership of Vijay P. Bhatkar. The PARAM 8000 was the first machine in the series and was delivered in August 1991. It was followed by the PARAM 8600 in 1992 and PARAM 9000 in 1996. PARAM 10,000 (built in 1998) has a computing power of 100 giga flops (giga = 109; flops = floating point operations per second); and PARAM Padma (built in 2002) has a peak computing

power of one tera flops (tera = 1012). The first Indian supercomputer to enter the TOP500 list of supercomputers in the world, PARAM Padma, was ranked 171 in June 2003.

1987: India starts celebrating **February 28 as National Science Day.** It was on this day in 1928 that C.V. Raman had announced the discovery of a new mode of light scattering, which later came to be known as the Raman effect. The programme was initiated by the National Council for Science and Technology Communication (NCSTC) of the Department of Science and Technology, Government of India, to trigger science popularization activities throughout the country and to disseminate scientific education about the current issues of science and technology amongst the citizens of the country. The theme for the National Science Day of 2024 is "Indigenous Technologies for Viksit Bharat".

1988: The Centre for Cellular and Molecular Biology (CCMB), Hyderabad, under the leadership of Lalgi Singh develops an indigenous DNA fingerprinting technology. India becomes the third country to develop the technology. DNA fingerprinting is extensively used for forensic investigation, paternity determination and seed stock verification.

1989: Standardisation of the design of the 220 MWe Indian Pressurised Heavy Water Reactor (IPHWR-220). The IPHWR design was subsequently expanded into 540 MWe and 700 MWe designs.

The 1990s

1991: The world's first non-steroidal, once-a-week oral contraceptive pill (birth control pill) with the brand name Saheli, comprising a biochemical named centrochroman, developed by the Central Drugs Research Institute of India (CDRI), Lucknow, reaches the general public. It was included in the National Family Welfare Programme in 1995.

1993: The Indian pharmaceutical company Cipla, using the technology developed by Indian Institute of Chemical Technology (IICT), Hyderabad, under the leadership of A.V. Rama Rao, starts the commercial production of the anti-AIDS drug Azidothymidine (AZT), also known as Zidovudine, and markets it at one-sixth of the then international price of the drug. Thanks to Indian scientists for their innovative approaches in drug development and process formulations for the production of generics, the Indian pharmaceutical industry has emerged as one of the largest producers of generic drugs in the world.

1994: The radio astronomer Govind Swarup of TIFR completes his Giant Metrewave Radio Telescope (GMRT) at Khodad, near Narayangaon, Pune. It pioneered new techniques in antenna design and is one of the largest and most sensitive low frequency range radio telescopes in the world. It started functioning on 30 November 1999, as a research facility for astronomy and astrophysics. It helps in the study of stellar flares, supernovae, pulsars, quasars and origin and evolution of the universe.

1995: Internet service is made available on commercial basis in India from 15 August onwards, through the Videsh Sanchar Nigam Limited (VSNL) of the Telecommunication Department. Earlier the service was available only for government and educational institutions. (VSNL's monopoly was abolished in 1998).

1997: Shantha Biotechnics, a biotechnology company based in Hyderabad, launches India's first recombinant health product, a Hepatitis B vaccine called Shanvac-B.

1998: On May 11, India witnesses three momentous events: (i) a series of three nuclear tests (followed by two more on May 13) at Pokhran, announcing India's arrival on the world stage as a nuclear weapons power; (ii) test firing of Trishul missile, reflecting on India's advancement in missile technology; and (iii) certification test flight of all-composite two-seater light-trainer aircraft Hansa-3, heralding the establishment of aircraft industry in India. **May 11** is now celebrated as **National Technology Day** in India. The celebration of Technology Day symbolizes India's quest for scientific inquiry, technological creativity & innovations, and the integration of these developments into national socioeconomic benefits and global presence.

1999: India's first synchrotron radiation source, Indus-1, with a beam energy of 450 MeV, becomes operational at the Department of Atomic Energy's (DAE) Raja Ramanna Centre for Advanced Technology, Indore, Madhya Pradesh. Indus-2, with a beam energy ramped up to 2.5 GeV, becomes operational at 2005.

The 2000s

2000-01: The Indian Astronomical Observatory (IAO), built and operated by the Indian Institute of Astrophysics, Bengaluru, in Hanle near Ladakh, is inaugurated in June.

2001: The maiden flight of Tejas light combat aircraft (LCA), on January

4. Designed by DRDO's Aeronautical Development Agency (ADA) under the leadership of Kota Harinarayana, and built by Hindustan Aeronautics Ltd. (HAL), Tejas has been inducted into the Air Force and Navy.

2001: On August 6, computer scientist Manindra Agrawal and his students Neeraj Kayal and Nitin Saxena of IIT Kanpur published a first-ever algorithm to determine (in finite time) whether any given number is prime or composite in provably deterministic manner. In 2006, the authors received both the Godel Prize and Fulkerson Prize for their work.

2003: The **Science and Technology Policy (STP)** is announced by Prime Minister Atal Behari Vajpayee at the 90th session of the Indian Science Congress held in Bangalore during January 3-7. The aim of the policy is 'to build a new and resurgent India ensuring that Science and Technology uplifts the Indian people and indeed all humanity', by upgrading the research and academic infrastructures, building a connection with the economy and society at large.

2004: In an effort to boost students' interest in basic science, the Government of India observes 2004 as the Year of Scientific Awareness.

2004: The first successful test-flight of the 14-seater multi-role light transport aircraft Saras built by the National Aerospace Laboratories (NAL), Bangalore is held on 29 May.

2008: Indian Space Research Organisation (ISRO) launches Chandrayaan-1, India's first mission to the moon on October 22.

2008: India's permanent Arctic research station Himadri is set up at Ny Alesund, Spitsbergen Island (also known as Svalbard) in Norway. It will enable scientists to carry out studies on a range of subjects, including climate change, in one of the cleanest environments on Earth.

2009: Launch of the first of the INS Arihant-class nuclear powered ballistic missile submarines developed under the Advanced Technology Vessel project that began in the 1990s. Arihant is the first nuclear-powered ballistic missile submarine to have been built by a country other than the five permanent members of the UN Security Council.

2009: Scientists at the Institute of Genomics and Integrative Biology (IGIB), New Delhi completes the first human genome sequencing in India, setting the stage for India's entry into individual genomics, which is poised to open new possibilities in disease diagnostics and treatment.

The 2010s

2013: The **Science, Technology, and Innovation Policy (STIP)** lays emphasis on creating a robust environment for enhanced private

sector participation in R & D and enthuses new vigour to establish a PPP framework. It encourages participation in S&T based high-risk innovations due to which India increases her participation in global mega-science projects, including the Laser Interferometer Gravitational-Wave Observatory (LIGO), the Large Hadron Collider (LHC - CERN), the International Thermonuclear Experimental Reactor (ITER) and the Square Kilometre Array (SKA).

2013: ISRO launches a spacecraft to Mars on November 5, called Mars Orbiter Mission (MOM) or Mangalyaan. ISRO becomes the fourth space agency to send a spacecraft into a Martian orbit and the first to do so on its maiden attempt.

2013-14: Development of a paediatric vaccine to prevent rotavirus infections, a leading cause of diarrhoea among children. Developed by a team of scientists under the aegis of India's Department of Biotechnology, it was licensed for production by the biotechnology company Bharat Biotech under the brand name Rotavac.

2013-14: After two decades of R&D, ISRO develops India's first indigenous cryogenic engine (CE-7.5) for its launch vehicle programme. GSLV-D5 powered by the cryogenic engine successfully launched GSAT-14 into orbit. Subsequently, the CE-20 cryogenic engine took its first flight in June 2017. For the Chandrayaan-3 mission of 2023, the CE-20 cryogenic engine was used to power the upper stage of the LVM3 (previously called GSLV Mk-III) rocket, the country's heaviest launch vehicle.

2014: WHO declares India polio-free on March 27.

2014: India's first multisensory underwater moored observatory in the Arctic region IndARC deployed at Knogsfjorden fjord, Svalbard, which is halfway between Norway and the North Pole. Its research goal is to study the Arctic climate process and its influence on the Indian monsoon.

2015-16: The detection of gravitational waves in September 2015 (announced in February 2016) and June 2016 by the US-based Laser Interferometer Gravitational-Wave Observatory (LIGO) is made possible by the mathematical technique developed by Sanjeev Dhurandhar and B. Sathyaprakash at the Inter-University Centre of Astronomy and Astrophysics (IUCAA), Pune. It proves to be the most important and sensitive tool for extracting the extremely feeble gravitational wave signal from the accompanying huge amount of extraneous astronomical noise.

The 2020s

2020: India's AI supercomputer PARAM Siddhi is ranked 63rd in the TOP500 list of the most powerful non-distributed computer systems in the world on November 16.

2020-21: Entering into collaboration with the Indian Council of Medical Research (ICMR) in May 2020, Bharat Biotech develops India's first indigenous vaccine against SARS-CoV-2 (the strain of coronavirus that causes COVID-19) called Covaxin, an inactivated virus vaccine that gets EUA (Emergency Use Authorisation) on January 3, 2021.

2021: In August 2021, the pharmaceutical company ZydusCadila gets EUA for ZyCoV-D, India's first indigenous plasmid DNA vaccine for COVID-19, which has been deployed since February 2022.

2022: Eight African cheetahs (Acinonyx jubatus jubatus) brought from Namibia are released into Kuno National Park (KNP) in Madhya Pradesh on September 17. They were brought to the KNP as part of a reintroduction programme aimed at reviving the species' population in India, where they became extinct more than 70 years ago. A dozen more cheetahs were brought to the KNP from South Africa on February 18, 2023.

2022: India's Samudrayaan mission for manned submersible deep ocean exploration launched on October 29. The project will enable exploration of ocean resources for drinking water, clean energy and blue economy.

2023: The AI supercomputer AIRAWAT installed at C-DAC, Pune is the fastest supercomputer in India, having been ranked 75th fastest in the world in the TOP500 supercomputer list.

2023: India's third lunar mission, Chandrayaan-3 launched successfully on July 14. It soft landed on the Moon's south pole on August 23, making India the first nation to accomplish this feat.

2023: Aditya-L1, India's first dedicated solar mission, launched successfully on September 2. It was placed in a halo orbit around Lagrange point 1 (L 1) on the Sun-Earth system on January 6, 2024, allowing it to continuously observe the Sun without any eclipse or obstruction.

In the last 76 years, India has significantly progressed in science and technology, and will continue to do so at a faster pace in future.

"The future belongs to science and those who makes friends with science". - Jawaharlal Nehru.

Genie, Out the Artificial Intelligence Bag

Albert Abraham
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What do you hate most in a person who offers handholding support to you? Yes, it is imposture or fakeness. So is the case with mankind's new friend, Artificial Intelligence. Despite its immense potential to fuel the 4th industrial revolution and virtual reality, AI is being in the news for the wrong reasons. When AI generated deep fake video of actress Rashmika Mandanna and hit the social media platforms, it generated much debate including a demand for regulation of deep fake materials.

As per Cyfirma, a cybersecurity company, there has been a 230% increase in deepfake usage by cybercriminals and scammers. They have predicted the technology would replace phishing in a couple of years. They call for a better understanding regarding deepfakes and emphasise the need to evolve global consensus on the regulation of it.

Deep in the deep fake

Deepfake creation involves modifying or creating images and videos using a machine learning technique called Generative Adversarial Network (GAN). This has two neural networks - a generator and a discriminator. The AI software detects and learns the minute details and facial expressions from the source material and then duplicates them. To ensure that the deep fake created is as real as possible, creators use a large database of source images. This is why more deep fake videos are created of public figures, celebrities and politicians.

The generator network is used to create fake images or videos while the discriminator network tries to detect signs of forgery in it. Through the collaborative work of the two software, the program runs in a loop until the second software package can no longer detect the forgery in the fake video or image. This is known as "unsupervised learning", where machine language models are teaching themselves. The method makes it difficult for others including both humans and software to detect deep fakes. This unique capability paves the way for various legal or illegal uses which can be beneficial or harmful to humankind.

A double-edged sword

The potential damage deep fakes can cause is familiar to us through various fake videos and images that surfaced on social media and other platforms. Psychological harm through defamation, bullying and intimidation is a real threat. As technology can amplify the inequalities existing within the society, this can have a disproportionate impact on the vulnerable sections like women, children, old people, etc. Technology-facilitated abuses like sextortion are an example of this.

In a multi-ethnic, multicultural society like India, there is no dearth of examples of the social harm created by deep fakes. News and social media manipulation for the creation of internal insurgencies is a potential threat which requires constant vigil. Deep fake use in elections can undermine the trust in society and can affect the integrity of the electoral process at large.

However, this is not the end. While it can be used to generate fake videos, it can also be used to impersonate friends or loved ones to trick individuals into sending money to scammers. Various voice cloning technologies are being misused for financial scams.

Not everything is negative with deep fakes. It has various beneficial uses also. For example, the ALS Association used AI technology in collaboration with Lyrebird, a Canadian company, to use voice cloning technology to help people with ALS to digitally recreate their voices in the future. Similarly, former Pakistan prime minister, Imran Khan, who languished in jail, used AI-created videos to address his followers to boost the morale of the party in the run-up to the national election.

Again AI-generated deep fake content is used by journalists across the globe to mask their original identity from authoritarian regimes. Interestingly, this is not to promote fake news but to safeguard the dissemination of genuine information in the era of infodemic propagated by state actors. It can also be used for recreation of historical events or simulation of real-world events. For example, Deep Empathy is a UNICEF and MIT project that simulates how other cities would look if faced with conflicts similar to those of war-torn Syrian neighbourhoods. It can go a long way in inculcating empathy for the real victims of the conflict.

This technology also has applications in the educational sector. It can revamp our smart classrooms through interactive simulations and role-playing. In the professional courses, it can help students to gain enough real-world training without many adverse consequences. For example, it can help in simulating surgeries for medical students and complex terrain practices for aircraft pilots.

It offers potential in the entertainment industries also. Deep fakes of time-scarce celebrities can cater for the needs of advertisement industries. The legacy of sports persons or film stars can be used for awareness generation also. Synthesia platform is well known for having created the synthetic video of soccer star David Beckham sharing a message to spread malaria awareness in nine different languages.

All these beneficial uses will be lost in case of an outright ban on the technology that facilitates deep fakes. So the way ahead lies in regulation rather than prohibition.

Taming the bull

Due to the cross-border spillovers of frontier technology like artificial intelligence and interconnectedness facilitated by the penetration of social media, any meaningful regulation requires international collaboration for its effectiveness. Practices adopted in various parts of the globe can be a starting point to evolve consensus in this regard.

The European Union, which is usually a first mover in the regulation of frontier tech, has started by issuing guidelines for the creation of an independent network of fact-checkers to analyse the sources and processes of content creation in artificial intelligence. The U.S. has also introduced the bipartisan Deepfake Task Force Act to counter deepfake technology. Canada focuses on mass public awareness campaigns and possible legislation that will make the creation and dissemination of deep fakes with malicious intent illegal. Here in India, we have certain provisions like Section 66D of the Information Technology Act 2000, which makes online impersonation illegal. As per IT rules,2021 platforms are required to take down such content within 36 hours. The government also instructed "social media intermediaries" to remove morphed videos or deep fakes from their platforms within 24 hours of a complaint being filed, under a requirement outlined in the IT Rules 2021.

However, there are issues with applying any of these regulations to a global scale in addition to obvious societal differences and expectations of citizens. Firstly, deep neural networks are an emerging technology. Overregulation can either kill or hamper innovations in such a pioneering field of artificial intelligence. Secondly, there is a limit to the extent regulatory systems will be able to control this genie that came out of the artificial intelligence bag. Generally, there is a lag in traditional regulatory response to the evolving technologies which is acknowledged as the 'pacing problem' in regulatory spheres.

The practical solution lies in light-touch regulation and keeping vigil on the life cycle of deep fakes. The life cycle of deep fakes can be thought

of in three phases - creation, dissemination and detection. AI regulations can help control the creation phase. Controls in this phase are crucial to prevent illegal or non-consensual deep fakes. Countries like China have strict rules such as obtaining consent from those in the videos, verifying the identities of users and offering recourse to them. Suggestions such as adding watermarks in AI-created content can be welcomed. However, those creators with malicious intent cannot be expected to simply comply with labelling requirements in the absence of a proper legal regime in this regard.

Dissemination is an important stage in the life cycle of deep fakes. The scale and severity of deep fakes are determined by their dissemination extent. Communication services, social media platforms and other online spaces play a crucial role. Controls in this phase are required to minimise the impact of illegal or non-consensual deep fakes. Privacy protection laws and legislation like the Digital Service Act of the EU can be helpful in this regard. Tracing the originator of content in social media platforms is crucial for controlling dissemination. Differences in opinion between states and big-tech companies in this regard need to be ironed out.

Detection of deep fakes is increasingly becoming difficult due to technological advancements in neural networks used for its production. So, detection mechanisms will be less effective than regulations in earlier phases. Certain platforms like Sentinel, Intel's FakeCatcher, and WeVerify project are offering solutions in this regard. Though it is difficult to detect deepfakes with certainty, looking for possible signs of manipulations can be helpful for common users at times. Analysing the quality and consistency of the image is one step in this regard. Signs of blurriness, mismatch, or artefacts can be an indication of editing. Looking for unnaturalness or incongruence in facial expressions, eye movements, lip sync, voice, emotions, or context is also suggested by experts.

Above all, cyber literacy and cyber hygiene are required to ensure personal data protection and to keep oneself aware of the deep fake threat while leveraging on its potential applications. A developing country like ours, which has the dichotomy of low cyber hygiene and high digital penetration requires paternalistic state intervention at least for a period for the betterment of society. Let us not forget that technology is a value-neutral tool. It is we the users, that inculcate value in it. Stephen R. Covey perhaps had this genie in mind while saying "Remember, technology is a great servant, but a terrible master".

Antimicrobial Resistance

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Antimicrobial Resistance (AMR) occurs when **bacteria, viruses, fungi and parasites change** over time and **no longer respond to medicines** making **infections harder to treat and** increasing the risk of **disease spread, severe illness and death.**

World health Organisation, WHO, released top 10 threats to global health in 2019, among which antimicrobial resistance (AR) accounted for a 1.6 million deaths every year. The study 'Understanding drivers of antibiotic resistance genes' by Environment International journal shows that a total of 131 Antibiotic-Resistant Genes (ARGs) material were detected, among which the blaNDM-1 gene, first found in surface water in India in 2008, has spread to the Arctic in just 11 years. This reflects that antibiotic resistance is a new epidemic threat of 21st century.

Rising challenge of Antimicrobial Resistance:

This is no more a local problem and has to be looked at as a global health concern. Annually, 700,000 deaths occur worldwide due to the AR bacteria, says a report titled "Anti-Microbial Resistance Benchmark".

Bacteria are carried in the gut of animals and people, and are likely spread through the faecal matter of these animals, humans as well as migratory birds.

India has witnessed an increase in antibiotic consumption- about 65 per cent in - 2015 compared to 2000, while the rate of consumption increased from 3.2 to 6.5 billion daily defined doses (DDDs) in the same period.

What are the Reasons for the Spread of AMR?

- **High Prevalence of Communicable Diseases:** High burden of communicable diseases, such as tuberculosis, diarrhoea, respiratory infections, etc. that require antimicrobial treatment.
- **Overburdened Public Health System:** This limits the laboratory capacity for etiology-based diagnosis and appropriately targeted treatment.

- **Poor Infection Control Practices:** Hygiene lapses in hospitals and clinics facilitate the spread of resistant bacteria.
- **Injudicious Use:** Overprescribing by doctors under pressure from patients (often self-medication), incomplete antibiotic courses, and broad-spectrum antibiotics used unnecessarily create selective pressure for resistant bacteria.
- **Easy Access:** Unregulated over-the-counter availability and affordability of antibiotics fuel self-medication and inappropriate use.
- **Lack of Awareness:** Low public understanding of AMR and proper antibiotic use encourages misuse.
- **Limited Surveillance:** Lack of adequate monitoring systems makes it difficult to track and understand the scope of AMR.

What are the Implications of the Spread of Antimicrobial Resistance?

- **Healthcare Impact:**

AMR can render previously effective antibiotics ineffective against bacterial infections. This complicates the treatment of common illnesses like pneumonia, urinary tract infections, and skin infections, leading to prolonged illnesses, more severe symptoms, and increased mortality rates.

- **Increased Healthcare Costs:**

Treating resistant infections often requires more expensive and prolonged therapies, increased hospital stays, and sometimes more invasive procedures. This leads to higher healthcare costs for individuals, healthcare systems, and governments.

- **Challenges in Medical Procedures:**

AMR makes certain medical procedures riskier. Surgeries, cancer chemotherapy, and organ transplants become more hazardous due to the increased risk of infections that are resistant to standard antibiotics.

- **Limitations in Treatment Options:**

As resistance grows, the **available arsenal of effective antibiotics diminishes.** This limitation in treatment options may lead to a scenario where previously manageable infections become untreatable, reverting medicine to a pre-antibiotic era where common infections could be fatal.

Prevention and Control Measures:

Individuals: To prevent and control the spread of antibiotic resistance, individuals should:

- Only use antibiotics when prescribed by a certified health professional.
- Never demand antibiotics if your health worker says you don't need them.
- Always follow your health worker's advice when using antibiotics.
- Never share or use leftover antibiotics.
- Prevent infections by regularly washing hands, preparing food hygienically, avoiding close contact with sick people, practising safer sex, and keeping vaccinations up to date.

Policy makers: To prevent and control the spread of antibiotic resistance, policy makers should:

- Ensure a robust national action plan to tackle antibiotic resistance.
- Improve surveillance of antibiotic-resistant infections.
- Strengthen policies, programmes, and implementation of infection prevention and control measures.
- Regulate and promote the appropriate use and disposal of quality medicines.
- Make information available on the impact of antibiotic resistance.

Health Professionals: To prevent and control the spread of antibiotic resistance, health professionals should:

- Prevent infections by ensuring that their hands, instruments, and environment are clean.
- Only prescribe antibiotics when they are needed, according to current guidelines.
- Report antibiotic-resistant infections to surveillance teams.
- Talk to their patients about how to take antibiotics correctly, antibiotic resistance and the dangers of misuse.

Agriculture Sector: To prevent and control the spread of antibiotic resistance, the agriculture sector should:

- Only give antibiotics to animals under veterinary supervision.
- Not use antibiotics for growth promotion or to prevent diseases in healthy animals.

- Vaccinate animals to reduce the need for antibiotics and use alternatives to antibiotics when available.
- Promote and apply good practices at all steps of production and processing of foods from animal and plant sources.
- Improve biosecurity on farms and prevent infections through improved hygiene and animal welfare.

Various Initiatives Adopted in This Aspect

Global Efforts

- **Global Action Plan on Antimicrobial Resistance (GAP):** Globally, countries committed to the framework set out in the **Global Action Plan1 (GAP) 2015** on AMR during the 2015 World Health Assembly and have committed to the development and implementation of multisectoral national action plans.
- **Tripartite Joint Secretariat on Antimicrobial Resistance:** Tripartite joint secretariat (FAO, OIE and WHO) has been established and is hosted by WHO to drive multi-stakeholder engagement in AMR.
- **Interagency Coordination Group (IACG) on AMR:** It was convened by the Secretary-General of the United Nations after the **UN High-Level Meeting on Antimicrobial Resistance in 2016.**
- The IACG brought together partners across the UN, international organizations and individuals with expertise across human, animal and plant health, as well as the food, animal feed, trade to formulate a plan for the fight against antimicrobial resistance.
- **World Antimicrobial Awareness Week (WAAW):** WAAW was previously called the **World Antibiotic Awareness Week.** From 2020 onwards it is called the World Antimicrobial Awareness Week.
- It is a global campaign that aims to **raise awareness of antimicrobial resistance worldwide.**
- **Global Antimicrobial Resistance and Use Surveillance System (GLASS):** WHO launched it in **2015** to continue filling knowledge gaps and to inform strategies at all levels.
- GLASS has been conceived to progressively incorporate data from surveillance of AMR in humans, surveillance of the use of antimicrobial medicines, AMR in the food chain and the environment.

- **Global Antibiotic Research and Development Partnership (GARDP): A joint initiative of WHO and the Drugs for Neglected Diseases Initiative (DNDI),** GARDP encourages research and development through public-private partnerships.
- By 2025, the partnership aims to develop and deliver five new treatments that target drug-resistant bacteria identified by WHO as posing the greatest threat.
- **Country wise initiatives:** A multi-sectoral $1 billion **AMR Action Fund** was launched in **2020** to support the development of **new antibiotics,** and the U.K. is trialling a subscription-based model for paying for **new antimicrobials** towards ensuring their commercial viability.
- **Peru's efforts** on patient education to reduce unnecessary antibiotic prescriptions.
- **Australian regulatory** reforms to influence prescriber behaviour, and initiatives to increase the use of point-of-care diagnostics, such as the **EU-supported VALUE-Dx programme.**
- **Denmark's reforms** to prevent the use of antibiotics in livestock have not only led to a significant reduction in the prevalence of resistant microbes in animals, but also improved the efficiency of farming.

India's Initiative

- To prevent the Over-the-counter sales of antibiotics, the **central drug standard control organization (CDSO)** prohibits medical stores from selling 24 key antibiotics without a doctor's prescription.
- **India's Red Line Campaign:** Which demands that prescription-only antibiotics be marked with a red line, to discourage the over-the-counter sale of antibiotics– is a step forward.
- **National Health Policy, 2017,** terms antimicrobial resistance as one of the key healthcare issues and prioritizes the development of guidelines regarding antibiotic use and check on restricting the growth of antibiotics.
- **The National Action Plan on Antimicrobial Resistance (NAP-AMR) 2017** has assigned coordinated tasks to multiple government agencies involving health, education, environment, and livestock

to change prescription practices and consumer behaviour and to scale up infection control and antimicrobial surveillance.

- FSSAI has set certain guidelines limiting the antibiotics in food products such as fish and honey.

Way Forward

- **Public Education Campaigns:** Inform the public about AMR, its dangers, and how to prevent it. This can be done through mass media, community outreach programs, and educational materials in local languages.
- **Antibiotic Stewardship Programs:** Implement programs in hospitals and clinics to track and optimize antibiotic use, ensuring they are prescribed only when necessary and for the shortest effective duration.
- **Regulation of Antibiotic Sales:** Implement stricter regulations on the sale of antibiotics over the counter, requiring prescriptions for all antibiotics.
- **Expand AMR Surveillance:** Establish a **nationwide AMR surveillance system** to track the prevalence and spread of resistant bacteria in humans, animals, and the environment.
- **Develop New Technologies:** Explore the potential of new technologies, such as **Phage Therapy,** to address AMR challenges.

There is need to urgently address antimicrobial resistance through the lens of one (human, animal and environment) health. All countries need to work together to limit the spread of ARGs and antibiotics between humans, animals and the environment in the globalised world where we live. Even though national action plans have been laid down by most countries, these plans have yet to move from paper to the ground as antibiotics continue to be freely used.

Catwalking on the Peninsular Ramp of Cyclonic danger: An Examination of Increasing Incidence of Cyclones in India

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A tropical cyclone is an intense, circular low-pressure system that originates over warm tropical oceans. The low-pressure centre called 'eye' of the cyclone attracts winds from neighbouring regions. These winds develop into a strong circulatory storm, accompanied by heavy rain. The tropical low-pressure systems in the Northern Indian Ocean are given the name 'cyclones' whereas they are called Willy -Willies in Western Australia, Typhoons in Western Pacific Ocean and Hurricanes in the Western Atlantic Ocean.

The word cyclone is derived from the Greek word ' cyclos' meaning the coils of a snake. It was coined by Henry Paddington because the tropical storms in the Bay of Bengal and the Arabian sea appear like coiled serpents of the sea. Tropical cyclones are compact, circular storms with an average diameter of 320 kms and a windspeed of 120 kms. The circulatory winds of the cyclone rotate in the anti- clockwise direction in the Northern hemisphere and clockwise in the Southern Hemisphere due to the Coriolis Force of the earth. They occur between 5 degree and 30-degree latitudes. Tropical cyclones are categorised into 5 categories based on increasing windspeed. Category 1 cyclones have around 100km windspeed whereas Category 5 cyclones are the most destructive with around 300 km windspeed. Cyclones occur during summer season. On an average, 5 to 6 tropical cyclones form in the Bay of Bengal and 2 to 3 cyclones form in the Arabian sea every year.

Tropical cyclones occur in the months of May- June and October-November. That disaster potential of severe cyclones is very high during landfall due to the accompanying destructive wind, storm surges and heavy rainfall. The naming of the Indian Ocean cyclones started from 2004 and 13 Rimland countries of the Indian Ocean take turns in alphabetical order to provide names to major cyclones. The intensity and frequency of cyclones in the North Indian Ocean have increased rapidly

in the past two decades because of global warming. Abnormal warming of the ocean is observed in the Western Pacific and Eastern Indian Ocean region. This tropical ocean region is known as the Indo-Pacific Warm Pool (IPWP) and it is a dominant factor influencing the weather in Asia and in particular the Indian subcontinent. The warmer oceans not only make the cyclones stronger and longer, but also disturb the rainfall pattern leading to longer dry periods. IMD has reported 27 cyclones from 2019 to 2023 which is greater than the average reported earlier.

The North Indian Ocean accounts for only 6% of the global cyclones every year. However, they are most devastative and cause more than 80% of the global deaths due to cyclones. Cyclones of the Indian Ocean are caused by high sea surface temperatures of magnitude 28- 29°C and above. After their formation, cyclones in turn, cause cooling of the ocean waters. Large sea surfaces having a temperature more than 27 °C and with a strong Coriolis force, preexisting weak, low-pressure area with small variations in the vertical wind speed and divergence of air above the sea level system are the conditions required for the formation of tropical cyclones.

Recent cyclones in the Indian Ocean include Cyclone Biparjoy and Tej in the Arabian sea and Cyclone Jasper, Michaung, Midhilli, Fabien, Mocha and Hamoon in the Bay of Bengal. The cyclones originating in the Bay of Bengal have relatively been more frequent and intense than those of the Arabian sea. This has been because the Bay of Bengal has higher sea surface temperatures, especially during the pre - monsoon and post-monsoon seasons. It provides the necessary energy and moisture for cyclone formation and intensification. However, this trend is slowly changing as more and more cyclones are reported from the Arabian sea.

A recent study about Arabian sea cyclones by CUSAT Centre for Atmospheric Radar Research, has been published in 'Nature' journal. The study is part of the 'Forecasting with Fisher's' project of CUSAT. The study says that the frequency and intensity of tropical cyclones in the Arabian sea are increasing due to changes in the ocean and atmospheric warming. During the last four decades the maximum intensity of Pre-monsoon cyclones in the Indian ocean has increased by 40% and that of post monsoon cyclones has increased by 20%. Therefore, India's Western coast is also facing the threat of cyclones especially because of the high density of coastal population. The study also says that human induced climate change is also contributing to the intensification and higher

frequency of cyclones in the Arabian sea. Thus, Indian ocean cyclones are recently witnessing a Westward drift in terms of intensity and frequency. This has necessitated meteorological and early cyclone warning Centres to be opened in the Western coast.

Another feature of Indian Ocean cyclones is rapid intensification. Cyclones are intensifying rapidly due to warming of oceans associated with global warming phenomenon. For example, cyclone Amphan intensified from a category 1 cyclone (about 100 km/ hr) to a category 5 cyclone (about 250 km/ hr) in less than 24 hours. This makes monitoring and forecasting more challenging.

In the North Indian Ocean every fourth cyclone during the pre-monsoon season and every 7th cyclone in the post monsoon season intensify to a severe cyclone of category 3 or more. In order to provide the warning of cyclones, there are 7 established cyclone warning centres covering the east and west coasts of our country. Among them, three are Area Cyclone Warning Centres located at Chennai, Mumbai and Kolkata. The remaining 4 are cyclone warning centres located in Ahmedabad, Thiruvananthapuram, Visakhapatnam and Bhubaneswar.

Indian Meteorological Department (IMD) is the nodal agency for forecasting of cyclones. They have sophisticated and accurate tools for providing early warning of cyclones. IMD has schemes such as ACROSS (Atmospheric and Climate Research - Modelling Observing Systems and Services) for improving the accuracy of weather forecasts. Further, the Government of India, under the National Disaster Management Authority, has started the World bank assisted National Cyclone Risk Mitigation Project (NCRMP) for addressing the cyclone risks in the country.

There are many structural and non-structural measures for effective disaster management of cyclones. The structural measures include construction of cyclone shelters, cyclone resistant buildings, drains, canals, bridges, embankments etc. Non-structural measures like early warning dissemination systems, management of coastal zones, awareness generation and disaster risk management and capacity building. Indian Ocean Cyclones are a cause of Meteorological concern today because the North Indian Ocean is rapidly warming and has contributed more than 25% of the total increase in the ocean heat content. In a global warming scenario, Arabian sea temperature is increasing faster in comparison with that of the Bay of Bengal.

The forecast of cyclone tracks and landfall points are more or less accurately predicted these days. This has reduced the number of cyclone disaster deaths significantly. However, the prediction of intensity and rate of intensification of a cyclone, remains a challenge even today. There are several gaps in data and hence, weather prediction models often go wrong. Today about 65% of the Indian cyclones occur within 200 km from the coast. This means that we need high resolution data along the coastline. Regulations of Exclusive Economic Zones (EEZs) often restrict and scatter the installation of observation systems. Once these regulations are amended through political will, we can make our Peninsular India free from cyclonic disasters through accurate prediction and management.

The Unequal Burden of Human-Wildlife Conflict

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"As a farmer, I've experienced the poignant consequences of human-wildlife conflict. Imagine elephants devouring our crops, a struggle that strikes at the heart of our livelihoods. Each season, we plant our hopes, only to witness them crushed by the wild's unyielding presence. It's not just a loss; it's a heartfelt plea for solutions that harmonize our needs with the untamed forces of nature." -Araku (Farmer, Wayanad – Kerala)

Wildlife interactions, though captivating, can have profound implications, directly jeopardizing the safety, livelihoods, and overall well-being of individuals. Instances where elephants feed on crops, seals damage fishing nets, or Jaguars' prey on livestock result in significant losses for people, impacting their means of sustenance and often leading to retaliatory measures against the implicated wildlife species.

Traditionally, the term "human-wildlife conflict" has been used to describe adverse encounters between people and wildlife. However, this terminology implies intentional actions by wildlife species, overlooking conflicts among human groups regarding potential resolutions. The World Wildlife Fund (WWF) neutrally defines human-wildlife interaction as any encounter between people and wildlife. Human-wildlife conflict (HWC) refers to struggles arising when wildlife poses threats to human interests, leading to disagreements and negative impacts on both people and wildlife.

The escalating global population has heightened human influence on wildlife, primarily due to expansive agricultural practices and land fragmentation. These actions pose considerable challenges in effectively managing wildlife, with negative repercussions for both humans and wildlife, emphasizing the need for comprehensive solutions.

Diverse Facets of Human-Wildlife Interaction

Human-wildlife conflict occurs whenever actions by humans or wildlife adversely impact the other. Coyotes killing sheep, raccoons

damaging gardens, or mice chewing through cereal boxes exemplify such conflicts. Humans converting wildlife habitat into asphalt parking lots also contribute to the problem. Concerns should extend beyond anthropocentrism, as wildlife provides numerous benefits to society. In conflicts, both parties (humans and wildlife) suffer losses, emphasizing the need for harmonious coexistence.

India, home to the largest population of wild Asian Elephants, faces escalating conflicts due to the depletion of traditional foraging environments. In the 2020s, conflicts surged, resulting in over 500 human fatalities and more than 100 elephant deaths annually. Similar challenges exist with human-tiger conflicts, often leading to heightened tension and demands for the elimination of tigers deemed man-eaters.

Wider Implications and Global Perspectives

The exacerbation of conflicts is linked to shrinking animal habitats caused by activities like mining, quarrying, and developmental projects. Encroachments and disruptions in animal movement corridors significantly contribute to escalating conflicts.

In Kerala, conflicts between humans and animals have surged due to rapid human population growth, anthropogenic pressures on forests, changes in land use, and human encroachment into wildlife areas. A 2023 report listed 1004 conflict areas, reflecting growing discontent among local residents. Here, the human-wildlife conflicts have manifested vividly, with instances like the translocation of 'arikomban' and the tragic saga of 'thanneer komban' serving as poignant examples. The depletion of traditional foraging environments for wild animals, symbolized by 'arikomban,' underscores the escalating challenges. Additionally, the ill-fated 'thanneer komban' illustrates the dire consequences of conflicts, shedding light on the urgent need for comprehensive solutions to address the complex dynamics between humans and wildlife in the region.

Current strategies often lack effectiveness and coordination, primarily focusing on conservation. The widespread nature of the problem demands more comprehensive, integrated approaches and coordinated efforts from various sectors and organizations.

Challenges in Wildlife Management

Due to a variety of factors, such as river valley projects, the conversion of grasslands into plantations, forest encroachments, and the use of forest lands for non-forestry purposes like building electric lines, railroads, and

highways, elephants have been involved in the greatest number of these incidents, resulting in shrinking habitats.

The scope of the issue is not being adequately addressed by the current strategies and solutions, and management initiatives are frequently applied piecemeal and primarily with a conservation focus. Despite the fact that the problem is so widespread, there is also a lack of effective and coordinated help from the several other sectors and organizations involved.

Towards Sustainable Solutions

Conflict between humans and wildlife is inevitable, but efficient management strategies and comprehensive approaches can mitigate its impact. These approaches can have positive effects on biodiversity, affected communities, society, sustainable development, the economy, and production. International cooperation and resources are essential in addressing the problem at the necessary scale.

To enhance future cooperation and reduce conflict, reevaluating the relationship between people and animals is crucial. Implementing context-specific solutions that recognize and address the underlying causes of conflict, and involving impacted communities as equal partners is necessary for systemic change.

A Call for Global Collaboration

As our planet becomes more populated, conflicts between humans and animals will continue to arise. Over time, these conflicts can be avoided or reduced with efficient, well-thought-out management strategies and comprehensive, integrated approaches. These approaches can not only minimize conflicts but also positively impact biodiversity, affected communities, society, sustainable development, the economy as a whole, and production.

In conclusion, we must reevaluate the relationship—and particularly the direct interactions—between people and animals in order to enhance our future cooperation and lessen conflict between humans and wildlife. Establishing systemic, context-specific solutions requires embracing strategies that recognize and address the deeper, underlying causes of conflict, involving the impacted communities as equal and active partners in the process.

El Nino and Its Effects on the Monsoon

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A complex phenomenon, the Indian monsoon is influenced by several internal and external elements. The intensity and the geographical dispersion of the monsoon are influenced by an external force called El Nino. It is crucial to remember that El Nino cannot fully explain all the fluctuations in the monsoon. Monsoon dynamics are also greatly influenced by other local phenomena, such as the Madden-Julian Oscillation and the Indian Ocean Dipole. El Nino is linked to less than normal rainfall than usual and feeble monsoons in India. India's rainfall statistics for 132 years indicate that El Nino years have consistently been associated with severe drought and drought-like conditions. The El Nino event's location also impacts on how it affects the Indian monsoon; warming in the Central Pacific Ocean has a greater impact than warming in the Eastern Pacific Ocean.

El Niño, as widely acknowledged, denotes an anomalous warming of surface waters in the equatorial Pacific Ocean and is known to inhibit monsoon rainfall. Conversely, its counterpart, La Niña, involves the abnormal cooling of sea surface waters in the same region and is responsible for enhancing rainfall over India. A third phase, the neutral phase, also exists, wherein sea surface temperatures generally align with long-term averages. These three phases collectively constitute the El Niño Southern Oscillation, commonly referred to as ENSO.

Scientists first observed the El Niño phenomenon in the 1920s although local populations in Peru and Ecuador were already aware of the periodic warming much earlier. However, the discovery of the La Niña phenomenon occurred only in the 1980s. Even though anomalies in sea surface temperatures are the main way that ENSO is addressed, it is vital to remember that ENSO is more than just an ocean system. In actuality, ENSO is the result of atmospheric and oceanic interactions. The word ENSO refers to a specific atmospheric condition that measures the difference in sea-level air pressure across the eastern and western sides of the Pacific Ocean. This condition is known as the "southern oscillation." The strength and direction of winds are another atmospheric factor that is crucial to ENSO.

An El Nino or La Nina event cannot be caused by the Pacific Ocean's surface waters warming or cooling abnormally on their own. There must also be synchronization of the related atmospheric conditions.

The ENSO's oceanic component is quantified using the Oceanic Niño Index (ONI), while the atmospheric facet is observed through the Southern Oscillation Index (SOI). The oceanic and atmospheric conditions during El Niño or La Niña events typically mutually reinforce each other, generating a cyclical process. This implies that the warming of sea surface waters during an El Niño event has an impact on atmospheric conditions, which, in turn, contribute to further warming of the waters. Similar processes occur during La Niña events. The interconnections between oceanic and atmospheric conditions were elucidated in the 1960s.

The stage for this entire system is set in the equatorial region of the Pacific Ocean. To the east are Ecuador and Peru in northwestern South America, and to the west are the islands of the Philippines and Indonesia. Spanning almost 17,000 km is an uninterrupted expanse of ocean. This region receives the most sunlight on Earth, a significant portion of which is absorbed and stored as heat in the ocean. To comprehend the mechanisms behind abnormal warming or cooling, it is beneficial to examine the conditions during a typical year when ENSO-neutral conditions are in place. In these instances, the tropical regions, encompassing the area just above and below the equator, feature a consistent wind system known as the trade winds. These trade winds consistently move from east to west at relatively low altitudes.

The Pacific Ocean's Sea surface is very warm due to exposure to sunshine. These relatively warm and lighter seas are pushed westward by the trade winds as they pass across the Pacific Ocean. Consequently, the surface waters of the eastern Pacific Ocean—which is close to the coast of South America—are forced westward. The waters from below, which are comparatively colder, take the place. The warmer surface waters keep being forced until they come into contact with the islands of Indonesia and the Philippines. It is impossible to push them farther. This process leads to the gathering of relatively warm waters in the vicinity of Indonesia, referred to as the Western Pacific Warm Pool, and cooler waters near Ecuador and Peru. The movement and accumulation of surface waters contribute to a noticeable increase in sea levels near Indonesia. Specifically, the sea levels on the eastern coast of Indonesia

are approximately half a meter higher than those on the western coasts of Ecuador and Peru.

The presence of warmer surface waters near Indonesia gives rise to a low-pressure area, prompting the upward movement of air. This, in turn, leads to the formation of clouds and substantial rainfall. The airflow generated by this system also plays a role in the development of the monsoon system, which brings about significant rainfall over India. This air begins to flow toward the eastern Pacific Ocean at higher altitudes, which is the opposite direction of the trade winds that originate at lower altitudes. This wind pattern forms a loop and strengthens the temperature differential between the east and west Pacific Oceans. It blows from east to west near the surface and from west to east at higher altitudes.

There are certain years when the trade winds diminish for unclear reasons. It has an impact on the trade winds' capacity to drive warmer surface waters in the direction of the Indonesian shore. Not enough warmer water is carried into the Pacific Ocean's western region. This indicates that the Pacific Ocean is getting warmer than usual in the central and eastern regions, near the shores of Ecuador and Peru. El Nino is now in effect. Due to the increased sea level along the Indonesian coast and the weaker trade winds, part of the collected warm water starts to gravitate backward towards the coast of South America. This contributes even more to the eastern Pacific Ocean's warming.

The air circulation loop changes as a result, leading to a reduction in precipitation over Indonesia and neighbouring regions. This alteration in the atmospheric conditions also influences the Indian monsoon. Conversely, during a La Niña event, the trade winds intensify, pushing more warm waters towards the Indonesian coast and causing the eastern Pacific Ocean to become colder than usual. The energy transfer involved in the movement of waters and winds during different phases of the ENSO system is immense. While the most significant impacts of ENSO events are observed in tropical regions, weather patterns worldwide are affected. Both El Niño and La Niña typically begin to develop in the March to June season, peak in strength during winters, and gradually dissipate in the post-winter season. These phases usually last for about a year, with La Niña, on average, having a longer duration than El Niño. Although these phases alternate over two to seven years, with a neutral phase interspersed, it is possible to experience two consecutive episodes of El Niño or La Niña.

Generally speaking, El Nino tends to warm the earth whereas La Nina tends to chill it. El Nino years are typically the warmest in a decade. 2016 was the warmest year on record and was a part of the Godzilla El Nino, one of the strongest and longest El Nino occurrences in history. It's crucial to remember that the planet's warming only affects the temperatures close to the surface. The enormous amount of heat trapped in the oceans is not taken into consideration. El Nino and La Nina years affect much of the system's heat in the ocean, but they do not affect the system's total heat. During the La Niña phase, an unusually large amount of warm surface water from the Pacific Ocean is pushed toward the Indonesian coast. In this region, the entire ocean column, extending several hundred meters deep, consists of relatively warm water. On the opposite side of the Pacific Ocean, colder water from deeper layers emerges to the surface, creating a large area with cooler water over the eastern Pacific Ocean. This cold water can absorb heat from the atmosphere, leading to a slight cooling effect. This is how La Niña produces a cooling impact.

Conversely, El Niño operates in the opposite direction and results in a warming effect. El Niño intensifies the global warming phenomenon and contributes to climate change. However, the reciprocal influence, where climate change affects ENSO—the specific impacts climate change has in the Pacific—is not yet entirely clear.

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