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# JINDAL JOURNAL OF PUBLIC POLICY

VOLUME 6 ISSUE II
SEPTEMBER 2022

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ISSN 2277-8743

www.jgu.edu.in

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# Editorial

***Dear Readers,***

As we return to the post pandemic world, re-adjusting our lives to a 'new-normal', we realize that the devastation caused by COVID-19 has been catastrophic and perhaps long term. The past couple of years have been full of uncertainty, angst, and exhaustion, but as India celebrates 75 years of independence, we remain optimistic that we have emerged more resilient and our institutions better prepared. While we must reflect on the challenges our country faces even after having achieved and retained political freedom, it is also important to recognize that India's trajectory as a nation has been one of accomplishments, change, and progress. It is indeed a proud reality that India's democracy, although with deviations, has survived for 75 years. At this juncture, with a sanguine view, we bring to you the second issue of the sixth volume of our Jindal Journal of Public Policy.

Whilst we have made enormous economic progress in the past 75 years, the current volume brings out some key issues pertaining to India's transformation as a nation, what we have achieved and what we are yet to achieve. Our young and experienced authors discuss the Government's current science, technology and innovation policy; highlight the importance of patents in information and communication technologies for fostering innovation and development; comment on our electoral system; examine the past, present and a way forward for the coal sector; and document environmental concerns particularly relating to the status of forests. In addition, we bring to you articles that delve into India's geo-political relations with a specific focus on India and China's emphasis on the use of renewable energy, a discussion on China's dual circulation policy as well as India's crucial role in the Russia-Ukraine conflict amidst the pandemic.

Tenzin Ngawang, Naresh Singh and Namesh Killemsetty's paper sheds light on India's Science Technology and Innovation Policy (STIP) and attempts to understand the extent to which the 2020 STIP policy addresses the critiques and limitations of its predecessor policy launched in 2013. The authors provide a critical comparative analysis of policy documents across essential parameters such as the role of innovation and inclusivity, focus on informality, support for research and others. On similar lines, Anurag Verma, Neha Pandey, and Shubhankar P., in their paper describe the importance of Standard Essential Patents (SEPs) in fostering innovation and development in Information and Communication Technologies. Considering that India is said to be the second largest mobile telephone market in the world, they suggest that addressing the challenges in developing a conducive and robust IPR regime that encourages and rewards innovation is essential for the country.

With India's continued dependence on the coal sector for energy despite pressure from the north to lean more towards non-fossil fuels, Shivjeet Parthasarathy, in his essay examines the desirability of establishing a regulator for the sector. In a stimulating account narrating the history of the sector abundant with concerns of inefficiency, scams, and environmental issues, he highlights the need for an independent regulator which can steer the sector into efficiency while balancing its competing interests. Veena Mahor calls our attention to the need to protect and preserve India's forests for combating the climate crisis. While discussing the National Forest Policy, 1988 and the amendments to the Forest Conservation Act, 1980, the article underlines the risk of making forests a contested market commodity among private players and deteriorating the status of forests, taking away the element of public good. Vinod Vyasulu's commentary on how we elect the president of India indicates a need for amendments to the manner in which the process is conducted. As such, he provides recommendations with the aim to deepen our federal democracy and improve representation.



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Avinash Godbole's invited piece discusses China's dual circulation policy and the possibility that it may propel China into becoming an innovation, research and development hub in the long run. The recently-announced strategy aims to refocus China's economy towards prioritizing domestic circulation instead of external circulation. While documenting China's policies since the pandemic, and the drivers of this strategy, he contemplates the future and fate thereof given the inflationary global trends. Varunesh Singh provides a comparative analysis of India and China's policies for the use of renewable energy. Attempting to assess whether the countries are on track for meeting their energy demands while achieving their sustainable-energy targets, the paper provides recommendations for addressing some of the challenges. Jyotsna Bapat reviews the links between the COVID-19 pandemic, the Russia-Ukraine conflict and the role of India's foreign policy in the same. Considering the highly unpredictable nature of the COVID-19 shock, the paper discusses the macro trend of international security that has emerged as essential. In the context of Russia's war on Ukraine, her paper attempts to explain the outcomes at the geopolitical level and India's unique position.

We are happy to share that we are able to publish our journal at a regular intervals for fifth time consecutively in spite of the difficulties brought about by the pandemic. This would not have been possible without the numerous contributions from our colleagues. We are deeply indebted to Meenuka Matthew, for almost single-handedly managing all the correspondence with the authors, reviewers, and editors and helping us in all possible ways. Special thanks are due to our esteemed colleagues Swagato Sarkar, Manveen Singh, Pradeep Guin, Rajnish Wadehra, Debajit Jha, and Pratik Phadkule for taking the time to patiently review submissions and resubmissions. Active involvement, mentorship and encouragement from our Dean R. Sudarshan helped us at crucial junctures. We would be remiss not to mention the tireless efforts of Shweta Venkatesh for carefully reading all the articles, making language and grammatical changes and also providing critical suggestions related to the content with impeccable efficiency despite the difficult deadlines. Our heartfelt thanks to Shweta for being patient with us and responding to our repeated requests with grace. Mani Mala, Manager & Academic Co-ordinator of the Jindal School of Government and Public Policy was forthcoming with support whenever we were in need. Joydeep Mukherjee's prompt support in designing the issue. We sincerely appreciate their efforts. We are also deeply indebted to our international board of advisors for their continuous mentorship.

Our special gratitude to M. Madhan, Director of Global Library and his team for facilitating the transition to the new hosting platform of the journal, making the journal more accessible and facilitating a smooth submission and management process. The journal can be accessed on the new webpage, and we invite you to connect with the journal through our social media handles, Twitter and LinkedIn.

We have announced the call for our next issue which is a special issue focused on Migration and Refugees. Through the special issue, we are looking forward to providing young and experienced voices with a common platform for a healthy discourse on public policy.

Enjoy reading and stay safe!

Thanks, and warm regards,

***Indranil and Manini***
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# China's Dual Circulation Strategy: Origins and Progress

*Avinash Godbole*

At the start of the COVID-19 pandemic, China was undergoing a transformation in its thinking about the future of its economy, its drivers and its relation with the world economy. The early days of Covid-induced lockdowns had impacted demand everywhere and had created unforeseen challenges for governments across the world. For China, it was a double whammy since along with economic implications, Covid brought about questions regarding China's government and its tendency to suppress information and to cover up facts. Many believe that Covid could have been handled differently had China chosen transparency over information control in Wuhan in November and December 2019 (Buckley, 2020).

This form of questioning China's role and status as a responsible power happened during the ongoing US-China trade war that was the hallmark of bilateral relations during the Trump administration. China fears that deglobalization and protectionism are not short-term phenomena but are trends that are here to stay. The Trump era was not an exception in the US governments thus far and the realisation is dawning that America's hitherto strategic thinking that China would become a 'normal' power with economic prosperity was a failure. China is also acutely aware of the bipartisan agreement in Washington about this. There is a recognition that the global environment has turned negative and substantively so, thus, long-postponed plans of structural adjustments have to be implemented now.

Thus, China has sought to manage the economy in a way that recognizes the new external reality. The party leadership has been at pains to explain this to the stakeholders, to encourage the domestic actors to change course and to tell the world via recent speeches and official publications that China is not closing its doors. China began this process in the month of March in 2020. On various occasions since the start of 2020, Xi Jinping has used the phrase 'The world is undergoing profound changes unseen in a century' and that China must brace itself for the headwind by undertaking necessary changes and reforms. In fact, these reforms were long overdue (Xinhua, 2021).

Dual Circulation and other structural adjustments that China has undertaken in the last 4–5 years might have been undertaken in 2008 if it had not been for the global financial crisis. That was the time when the first major structural adjustment was initiated when it was realised that consumption rates were dropping once again after peaking for a few years since 2000. While China's economy grew rapidly since 2000 and its sale of consumer durables increased as a consequence, it experienced a slowdown once again between 2008 and 2012–13. Consequently, the pattern of large-scale, government-led growth, based on export-oriented industries, investments, and infrastructure construction continued to be the center stage of China's economy in the aftermath of the global financial crisis of 2008 (Tianyong Zhou, p.190). However, it resulted in income inequality as incomes in rural China did not grow as rapidly as in urban China. Alongside income inequalities, there was an imbalance in regional growth as well. Coastal areas south of Beijing grew rapidly while the interiors failed to obtain investments and northeastern China and resource-dependent provinces such as Shaanxi stagnated due to difficulties in transitioning to the service and high-tech sectors. China's Gini coefficient also worsened during this period.

To respond to these challenges, it was decided to focus on consumption-driven growth. Thus, the necessity of having a strategy such as dual circulation was first realised at least 15 years before it was implemented. This idea actually began in 2006 at the start of the 11th Five Year Plan with dedicated targets and plans to expand domestic demand and to upgrade the



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domestic industry in order to achieve a more balanced economy (Su and Liang, 2021). However, consumption did not become as widespread as was expected; it was also followed by the 2008 global economic crisis. This prompted Beijing to continue its infrastructure-centric growth strategy, despite being aware of the unsustainability of it in the long run. This is how China came to build its vast network of railways and highways which would later become the face of China's power as well as increase the efficiency and ease of doing business.

There were also other factors which had indicated that without structural adjustments, the Chinese economy would face stagnation, or a hard landing. Others predicted this to be a middle-income trap (Islam 2015). The three impending crises to face the Chinese economy were already looming large—taken together, the fading of the demographic dividend, increasing labour costs and the appreciating yuan— and were taking away the competitive advantages enjoyed by the Chinese economy in the preceding decade. While China's economy had grown rapidly since 2000 and its sale of consumer durables increased as a consequence, it experienced a slowdown once more between 2008 and 2012–13. Thus, the pattern of large-scale, government-led growth, based on export-oriented industries, investments, and infrastructure construction continued to be the centre stage of China's economy in the aftermath of the global financial crisis of 2008. It was well-known that this was not sustainable and in 2007, then Premier Wen Jiabao warned that China's economic structure had become 'unstable, unbalanced, uncoordinated and unsustainable' (Xinhua, 2007). Correcting this economic structure was thus one of the motives of the Xi-Li regime that took over in 2012–13.

Several new measures aimed at course correction were undertaken. Supply-side reforms were intently focused on during 2015–16 for the commodities sector and for the domestic supply chains. China has since attempted to tighten the banking and housing sector as well and serious effort was made to control domestic protectionism. The Made in China 2025 policy, announced in 2015, was loosely based on Germany's industry 4.0 strategy. Its aim was to increase China's share in innovation and research and development and reduce dependence on external providers for key sectors such as semiconductors.

There are three schools of domestic thinking in China on the country's economy and the direction that it needs to take in the years to come. The first group argues that China should prioritise reducing dependency on external suppliers for critical components such as semiconductors and for commodities such as coal and food. It would also help China climb up the value-added chain and increase China's share in high-end manufacturing. The Made in China 2025 policy was a product of this line of thought. The second group supports the expansion of the service sector, which would also create jobs and would be a way to reduce dependence on exports as a primary driver of the economy. The third way of thinking supports creating strategies that would delink China's economy from external drivers so that hostile and unilateral actions such as trade wars do not create tremors for the economy. The dual circulation strategy is a product of this line of thought.

## Policies Since COVID-19

In response to COVID-19 specifically, there were several economic policies that China put in place. Adjustments were made to reserve repo rates to help sustain the construction sector. Small and medium enterprises were offered deferred repayment plans alongside tax incentives if they retained their pre-covid workforce. A digitization incentives package was announced for SMEs. The Chinese government paid part of the insurance premiums for healthcare workers. The medical equipment production sector was supported with incentives in tax and loans. However, the zero covid policy since late 2021 has caused a significant social backlash due to the economic consequence of strict lockdowns. Similar to India, and unlike in the US and Europe, China did not undertake any direct cash transfers in response to COVID-19. However, given the fact that the average Chinese household has more liquid savings compared to the western counterparts would have helped them in responding to the pandemic. China's domestic policies have also hurt the interests of domestic and foreign university students who find it difficult to return even now. Moreover, the expat workers who were away during March 2020 for the Lunar year celebrations, also find it difficult to access their bank accounts in China now due to the regulations that require foreign nationals to share their visa and work documents annually.

Alongside global drivers such as deglobalization, China's economy was facing headwinds even before COVID-19. As a result, in the first quarter of 2020, its GDP was down by 6.8 percent and there was a significant decline in the retail sales at 19 percent. To counter these challenges, China came up with a 5-pronged strategy called the new development pattern at the start of 2020. The Dual Circulation Strategy was announced in May 2020. It aims to refocus China's economy towards prioritising domestic circulation, i.e. domestic economy instead of external circulation over the medium to long term. As a part of this strategy, China has aimed to undertake various specific programs in the fields of technological innovation, increasing domestic supply, improving financial services, increasing smarter urbanisation, and boosting employment and income. The 14th Five Year Plan was adopted in March 2021 and it included several policy initiatives that take the Dual Circulation strategy forward. This was followed by the Science and Technology Policy with its stress on 'indigenous innovation'. Within a short time, China also announced the China Standards 2035 policy. This policy has set up benchmarks for China's government and private sectors to achieve in the fields of artificial intelligence, data, and telecommunications among others. More recently in October 2021, Xi Jinping announced the goal of achieving Common Prosperity. This one is even tricker since in this, China hopes to limit 'unreasonable income' and reject 'the chaotic/disorderly expansion of capital' (Bloomberg, 2021). The policy objectives under Common Prosperity include increasing incomes in low income groups, promoting fairness in pricing, actively addressing regional imbalance, and encouraging ultra-rich individuals to contribute a share of their income to developing public welfare.

China's understanding of the meaning, as well as the necessity, of the dual circulation strategy, is also linked with the spread of COVID-19. In one of the publications on CGTN web, it is argued, 'Externally, the blow of the COVID-19 pandemic exposed the insufficiency of countries' local productivity, particularly in productions in emergency-responding goods such as protective masks and gowns. It caused countries to reevaluate domestic production capabilities and uncovered risks in the global supply chain. Compared with SARS, the COVID-19 pandemic is more infectious and persistent. It means the world may face a situation where the supply recovers faster than demand.'(CGTN, 2020).

Xi Jinping wrote a major piece in the party's policy journal Qiushi in July 2021. This was titled Understanding the New Development Stage, Applying the New Development Philosophy, and Creating a New Development Dynamic (Xi Jinping, 2021). Xi highlighted several issues in this



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article and pointed out the details that others should undertake. Xi said that China '… needed to shift the focus to improving the quality and returns of economic growth, to promoting sustained and healthy economic development, and to pursuing genuine rather than inflated GDP growth and achieving high-quality, efficient, and sustainable development'. In China's political system, language and communication are key and every idea and change is presented in a positive light. Thus, one can relook the Xi statement and reformulate it to understand China's economic priorities and its urgency since the beginning of COVID-19.

The Qiushi journal is a party document and any publication in it carries the weight of a government order or a regulation in a democratic setup. The readership of this publication is the party cadre and the government bureaucracy (Ang, 2021). However, in China's system, there is also freedom to reinterpret the ideas according to local conditions. Consequently, provinces with their compulsion to protect local interests may not be too keen to change, as it was seen in the case of the coal versus electricity sector debate .

Lastly, behind the search for new strategy is also a desire to have a Xi imprint on China's economic and social development blueprint. Thus, if the first 30 years of the party were dominated by Mao outlook and the next 30 by the Deng perspective, Xi Jinping strongly desires to guide the policy discourse in China for the next 30 years.

## What are the core drivers of the Dual Circulation Strategy?

There is a debate on whether the primary driving force for dual circulation is internal or external. The intention to re-examine the internal economy in order to encourage consumption has been on the agenda for several years now, however it has been postponed due to several reasons. Some of these include path dependency, resistance to change by profitable private companies as well as by state-owned enterprises and large infrastructure companies dependent on government projects and contracts. In particular, China's success in responding to the global financial crisis in 2008 led to it building a spectacular new model of growth by investing in high-quality infrastructure such as high-speed railways. This has become one of the reasons why structural adjustment policies that were advocated for in the 11th FYP were delayed infinitely despite several red-flags being present and despite pronouncements for said adjustments—the overall growth rendered these red flags as easy to miss. It is also assumed by some that Liu He, Vice-Premier and a Politburo member is the brainchild behind the dual Circulation strategy (Blanchett and Polk, 2020). He is a trade negotiator with the US and keeps a close eye on the external environment. China perceived that the US is not a reliable partner anymore and China cannot depend on external markets for its continued economic growth, hence the need for a new economic strategy that focuses on Science and Technology, domestic consumption, promotion of local brands and reinvestment of profits earned by MNCs.

While it is too early to predict either the success or failure of the dual circulation strategy, it is also important to discuss how this strategy would fare and the road-blocks that it faces. To begin with, structurally, China's policymaking and implementing structure still operates as Fragmented Authoritarianism as defined by Kenneth Lieberthal (1992). Thus, while Beijing may announce the most interesting and impressive policies, the success of the policies depends on how seriously the ministries and provincial governments implement such schemes. So far, based on the media statements and policy announcements there have been three kinds of responses from the provinces to the dual circulation strategy. The first kind comprises eager enthusiastic responses from provinces like Guangdong which have something to gain from this strategy, since 'indigenous innovation' helps the economically- developed provinces. The second kind is from provinces which stand to lose local protectionist strategies and their responses have been rather cold. The third kind is a radio silence—provinces with low local resources are unsure if Beijing is going to fund the newly-announced plans and thus, have not made any public announcements as of April 2022.



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## Conclusion

It can be argued that the events that have occurred since the announcement of the Dual Circulation policy indicate that the policy comes in too late. The first indicator was the bankruptcy of the Evergrande Group and the subsequent talk that it was only the tip of the iceberg as far as China's construction sector was concerned. The second was the continued falling demand and slowdown in the domestic economy. The third indicator was the Ukraine Crisis that has had its impact not only on China's status but also on global demand and on oil prices as well. This also slows down China's recovery. The ongoing new COVID-19 wave in China since March 2022 is the fourth indicator. Lastly, the global inflationary trend and the fears of a prolonged slowdown or even a recession do not augur well for a policy that intends to increase domestic consumption.

If it succeeds, the dual circulation strategy will propel China into becoming an innovation and research and development hub in the long run. However, there is a perception that Xi Jinping is trying to do too much and is chasing too many contradictory objectives, especially through the common prosperity policy as explained previously. Moreover, breaking down the resistance of the provinces and the ministries to change is a difficult game even in an authoritarian system like China's. This may ultimately decide the fate of this strategy.

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# *Challenges to the Disclosure and Licensing of Standard Essential Patents in the Context of Evolving Trends in ICT Technologies*

***Anurag Verma, Neha Pandey, Shubhankar P***

***Abstract***

*Describing the importance of Standard Essential Patents in fostering innovation and development in Information and Communication Technologies, the article traces the implications and interpretations of the Fair, Reasonable and Non-discriminatory (FRAND) Agreement and emerging issues in the context of Standard Essential Patents in the United States, Europe and China through a brief analysis of recent judicial pronouncements—Microsoft v. Motorola, Apple v. Motorola and others—and systems.*

## Introduction

The new age, with global interconnectedness as its characteristic feature, is assisted and achieved by standards. Patented technologies that enable devices and machines to communicate effectively with each other act as building blocks for these standards. These technical standards ensure connectivity, and the patents protect the inventor's rights to such technology, especially ICT (Information and Communication Technologies) including those for battery mode solutions, data transmission, and carrier aggregation.

Technologies protected by patents that are essential to standards are called standard essential patents (SEPs). 'Standard' here refers to a standard derived from technical specifications for specific technologies, such as radio technology (Li 2016).

Standards are typically developed by Standard-Setting Organizations (SSOs), such as 3GPP (3rd Generation Partnership Project) which is a consortium of such SSOs and is responsible for setting standards for telecommunication technologies such as LTE for 4G networks.

There are important differences between SEPs and non-SEPs, which stem from the very fact that SEPs involve patents that are indispensable for the implementation of technology standards, and that they are not governed only by the Patents Act, but by the contractual aspect of Fair, Reasonable and Non-Discriminatory (FRAND) (Tyagi and Chopra 2017). The other difference between non-SEPs and SEPs is that SEPs have additional declaration information, such as:

- SEPs that have been declared at SSOs will have a declaration number (InQuartik 2021).
- The technology covered under SEPs is mapped to its declared technical standards or specifications (Ibid.).

An SEP owner is entitled to be rewarded fairly for their invention and to seek injunction against the use of their patent without a licence in a particular jurisdiction; these entitlements need to be balanced with the need to ensure fair competition through consistent interoperability. In order to achieve this balance, SEP holders are bound by SSOs to offer their standards on Fair, Reasonable and Non-Discriminatory (FRAND) terms in exchange for royalties. However, the meaning and scope of the concept is subject to constant reinvention and reinterpretation given the dynamic nature of the field. Further, the terms of patent enforceability can limit international interoperability. When interoperability is then to be actualized, and relevant standard essential patents are to be made available for international operation, the jurisdictions of multiple nations must operate under common constraints.

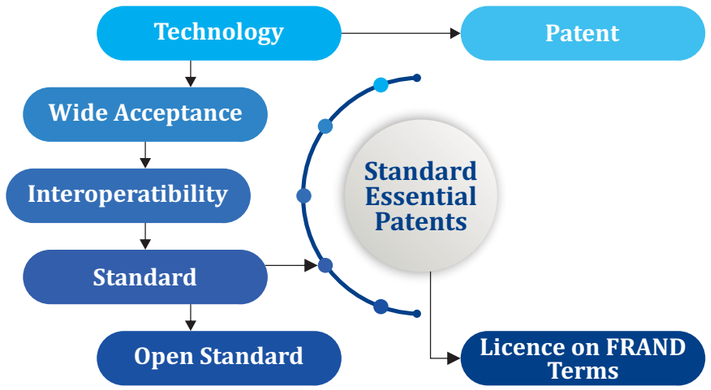


*Figure 1: Flowchart showing the evolution of SEPs (Source: Tyagi and Chopra 2017)*





In what follows, recent trends in SEP enforcement are traced for three territories: the United States of America, Europe, and China. Familiar issues such as hold-ups, hold-outs and anti-competitive behaviours are identified, along with unfamiliar, emerging tendencies that are positioned to shape the direction of SEP enforcement practices across the world in the near future.

## FRAND licensing, challenges and the American approach

With the advent of standardisation, India can claim to be the second largest in the world in the mobile telephony market, in addition to being the fourth largest in Asia in mobile infrastructure. A study shows that 1 percent increment in broadband penetration has a direct impact on the growth in registrations of new businesses by approximately 3.8 percent (Tyagi and Chopra 2017). Furthermore, according to research conducted by British Standards, the standards can contribute as much as 0.3–0.9 percent to the nation's Gross Domestic Product (GDP) (Ibid.).

It is in the above context that there is an urgent need for India to address the challenges related to developing a conducive and robust IPR regime that encourages and rewards innovation, as well as ensures recognition by introducing appropriate alterations at the policy level that are capable of converting 'unwilling licensees' into 'willing licensees' (Tyagi and Chopra 2017).

## The significance of FRAND licensing within the context of SEPs

Primarily, the policy objectives that feed into SEP licensing resemble those for other patents. Patent law envisions encouraging technological advancements by benefiting inventors, while also attempting to safeguard the public domain by ascertaining accessibility to patented technologies. Therefore, the range of the patents that are granted to patent-holders needs to be sufficient enough so as to be able to incentivize them for their forward-looking contributions, but not such as to allow the patent-holders to take possession of an entire technological field, thus discouraging follow-up inventions that may make use of the same patented features.

However, SEPs are different from other patents in the sense that a major part of their worth is drawn from an across-industry consensus of adopting the patented technology constituting an interoperable standard. Such standards were often developed because of collective efforts made by various members of the industry and were adopted only after the SEP-holders' commitment to FRAND licensing (Contreras 2015). Once the industry adopts the standard, non-SEP-holders then often operate with the assumption of the SEP's availability for a licence and invest considerable resources to include the patented technology as a part of their products (Contreras 2015). Hence, it would be obtrusive to provide an SEP-holder the right to exclude its competitors from entering related technological fields altogether, as is usually provided by a particular patent.

Moreover, even when an SEP-holder honours the commitment of licensing its SEP patents, there may still be an exercise of leverage of an unjustifiable amount in the post-adoption phase of negotiations. An SEP-holder could, therefore, essentially monopolise the entire field of technological advancement by asking for unreasonably high royalties. Consequently, a non-SEP holder would then be confronted with the option of either agreeing to excessive licensing fees or of stepping out of the technological field altogether, which could be after having spent millions of dollars on developing products which featured the required SEP property (Chien

2014). A considerable number of SSOs have, as a result, adopted FRAND policies to keep SEP-holders from adopting this kind of unjustified leverage.

It is in this context that businesses that develop SEP-encumbered products must face challenges given the evolving trends in ICT technology. These challenges can be broadly categorised into three domains: hold-up, hold-out and royalty pricing.

## Hold-Up

SSOs often need their members to extend offers to licence as well as disclose patents under the terms of FRAND to restrict SEP owners from 'holding up' patented technologies in the case of ex-post licensing agreements (Li 2016). With respect to post-Rambus cases, the Indian judiciary has almost always enforced a FRAND agreed-upon term by both the SSOs and SEP owners as being legally binding in nature (Li 2016). Such a course of events reflects that SEP owners who have entered into a FRAND commitment are not in a position to exercise the extent of control over their SEPs which may otherwise be exercised by patent-holders normally.

However, given the paucity of lucid guidelines with regards to what constitutes 'fair and reasonable' licensing, individual SEP-owners could still be able to retain substantial leverage when it comes to negotiating exorbitant royalty rates when the standard that includes the SEP has been adopted widely (Lemley and Shapiro, 2007). Implementers of SEP may therefore, confront the complex choice of either consenting to the SEP owner's impractical asks or exiting a particular technological field completely. SEP-holders can thus develop a functional 'hold-up', obstructing technological and industry growth due to it being excessively expensive for other actors to attain the licences required for operating within that technological capacity.

## Hold-Out

FRAND licensing should adequately diminish an SEP owners' right to disbar and restrict its post-adoption agreement leverage, but the SEP owner should also be protected from patent infringement because of people who may be reluctant to work out a FRAND licence. In case an SEP owner is prevented from obtaining injunctive relief because of FRAND commitments, it does not provide a remedy that is robust enough to enforce the rights as damage awards often get capped at the level of FRAND royalty decided in the case of infringement (Li 2016). Ambitious implementers may hence, determine to 'hold-out' from the procedure of licensing negotiations, being cognisant of the fact that the maximum reprimand is simply what should have been paid for licensing itself initially (Li 2016). Regulating institutions have identified the issues initiated by these 'hold-outs', otherwise known as 'reverse hold-up' scenarios, and courts have usually sustained an SEP owner's capacity to ask for injunctive relief (Li 2016).

## Royalty Pricing

The judicial system has substantially provided that a FRAND rate must be drawn from the incremental value of the patented attribute, but there is still uncertainty with respect to the manner in which an SEP's value is to be properly apportioned in relation to the worth of the whole SEP-enabled technology[2].

[1] *Rambus v. FTC, 522 F.3d at 466 - Rambus was initially committed to join the Joint Electron Device Engineering Council (JEDEC), an SSO-developing dynamic random-access memory (DRAM) standard. Before JEDEC approved one of its standards covered by Rambus's SEPs, however, Rambus withdrew from JEDEC and thus evaded its obligation to commit to the SSO's patent policy. Rambus offered to license its SEPs to several memory chip manufacturers, but while some agreed to its royalty demands, others did not and instead elected to sue. Although Rambus's failure to disclose its pending patent applications led to fraud and antitrust claims, the Federal Circuit reversed a district court's finding that Rambus had committed fraud and the D.C. Circuit reversed the FTC's holding that Rambus had violated antitrust laws.*

[2] *Ericsson, Inc. v. D-Link Sys., Inc., 773 F.3d 1201, 1226 (Fed. Cir. 2014)*



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In addition, a specific technology may involve hundreds of disparate patents, leading to 'royalty stacking' challenges[3]. For instance, research carried out in 2011 by a patent aggregator RPX noted that there are over 250,000 patents related to an average smartphone (Li 2016). Therefore, even though the rate of royalty for an SEP may seem reasonable in itself, interested people may end up spending on hundreds of licences in order to operate the relevant standard. Furthermore, SEP owners may even transfer this royalty burden onto the consumers, driving the end product price upwards to an unsustainable level. The challenge of royalty-stacking has resulted in an argument relating to how the royalty base is to be calculated for properly addressing the inputs of individual patents when it comes to a particular end product (Li 2016).

This argument is aided by two opposing considerations. On one side of the spectrum, there is the problem of 'over taxation', which refers to an exorbitant royalty fee that is based on the end product's price and may end up over-burdening the licensee, ultimately over-burdening the end consumer. The other side comprises the concern of 'under reward' which implies a minor royalty charge that is related to the SSPPU (Smallest Saleable Patent Practising Unit), and may not accurately depict the technological inputs of an SEP and under reward, by extension, the SEP-holder for its input to the end product's value (FTC 2011). Therefore, what is evident is that FRAND licensing terms have developed new considerations that directly impact the high-level decision-making of businesses in technology development.

## USA's approach to Hold-Up and Hold-Out issues

Legal issues relating to FRAND licensing have become common in most countries with high technology industries, given the global market for interoperable technologies. Most jurisdictions are converging on how they want to address these issues i.e., ensuring that they maintain a delicate balance between preventing SEP holders from gaining excessive leverage in post-adoption negotiations and incentivizing potential SEP owners to innovate.

In the United States, hold-ups have been prevented by the courts by treating an SEP holder's agreement with an SSO to licence its SEPs according to FRAND terms as a legally-binding contract. Further, courts have held that a FRAND commitment follows an SEP and is not severable even upon a transfer of ownership (Li 2016).

Since a FRAND commitment is considered to be a legally-enforceable contract, an SEP owner's violation of its FRAND obligation is considered to be a breach of contract and the SEP implementer may be entitled to damages. Microsoft Corp. v. Motorola, Inc. ("Microsoft")[4], discussed below, is an example of this approach.

### a. Microsoft v. Motorola

In October 2010, Microsoft sued Motorola for breach of contract when Motorola refused to license out its smartphone patents to Microsoft in accordance with its RAND obligations to the International Telecommunication Union (ITU) and the Institute of Electrical and Electronics Engineers (IEEE). Microsoft later amended its complaint, bringing a distinct breach of contract claim against Motorola for suing it in Germany. Motorola had sued Microsoft for patent infringement and had sought an injunction against Microsoft in Germany[5]. The district court found that Motorola's FRAND commitment created binding contracts enforceable by Microsoft, as a third-party beneficiary of the contract[6]. At trial, the jury held Motorola liable for breach of contract, awarding 14.52 million USD to Microsoft.

[3] *See In re Innovatio IP Ventures, LLC, No. 11 C 9308, 2013 WL 5593609, at *10 (N.D. Ill. Oct. 3, 2013); Ericsson v. D-Link Sys., 773 F.3d at 1209.*

[4] *Microsoft Corp. v. Motorola, Inc., 795 F.3d 1024 (9th Cir. 2015)*

[5] *Microsoft Corp. v. Motorola, Inc., 795 F.3d at 1033*

[6] *Microsoft Corp. v. Motorola, Inc., 854 F. Supp. 2d at 999 (W.D. Wash. 2012)*

Upon appealing, the Ninth Circuit sustained the jury's grant of damages as per the considerable evidence standard of review as Motorola's steps reflected that it breached its responsibility of good faith as well as fair dealing. During September 2015, the en banc hearing was refuted by the Ninth Circuit for reconsidering its decision, thus rendering its decision as being final.

The Microsoft decision of Ninth Circuit has two critical implications. Both of these connotations work towards the reduction of an SEP owner's capability of engaging in hold-up: (1) affected third parties enforce the FRAND obligations of an SEP holder in the form of a binding contract; in addition, (2) a counterclaim for breach of contract may be filed by an implementer-defendant against an SEP owner who attempts to hold up SEPs and be awarded substantial damages. Therefore, an SEP owner may be discouraged from strongly asserting the FRAND-committed patents through the process of seeking either large royalties or injunctive consolation. It was, however, carefully noted by the Ninth Circuit that the jury in the Microsoft case was 'instructed that seeking injunctive relief was not a per se violation of the RAND commitment . . . .'[7] The refusal of the court to provide a default rule restricting FRAND-committed SEP-holders from asking for injunctive relief in opposition to patent-infringers is supportive of a policy that discourages opportunistic implementers in their quest to hold out of attaining FRAND licences.

### b. Apple v. Motorola[8]

In fact, the Federal Circuit in the case of Apple Inc. v. Motorola, Inc., here on referred to as 'Apple', disregarded a closely resembling per se rule, asserting that even when it came to the context of FRAND, the presence of injunctive relief needs to be based on the four-factor test[9] outlined by the apex court in the case, eBay v. MercExchange[10]. The Apple decision of the Federal Circuit is pertinent because it essentially dissuades uncooperative licensees from holding out on attaining FRAND licences from SEP owners.

The cases of Microsoft and Apple exemplify how the American justice system handled the issue of balancing the rights of SEP-holders as well as those of implementers when addressing the challenges of hold-up and hold-out. While once an SEP is committed by a patent-holder to FRAND licensing, there is prohibition from holding up the technology that has been patented, thus posing a risk of liability for breaching of claims stated in the contract if there are unreasonable demands of licensing fees or seeking of injunctive relief. However, these decisions prevent implementers from essentially holding out from licensing debates as injunctions could still be handy as per the eBay test.

## FRAND trends in Europe

European jurisprudence has seen sharp shifts in locating dominance, while also placing itself at the forefront of emerging trends in the SEP landscape. Starting from 2009, this section aims to trace the big shifts and trends up till 2020.

The Orange Book[11] judgement by the German Federal Court of Justice in 2009 stated conditions under which a potential licensee, under EU and German law, would be able to use a competition law defence against a potential injunction. Effectively, the judgement placed very high demands on the potential licensee. Only after a potential licensee had made an irrevocable, unconditional offer (where an 'unconditional offer' was taken to mean that the validity and infringement of SEPs were not to be challenged) under FRAND terms, and had also begun to make payments (in escrow or through royalty fees) as though the use was licensed, could the SEP holder even be seen as abusing the dominant position. In case the amount of payment was disputed, the potential licensee would need to offer to pay a licence fee that the SEP holder decided on,

[7] *Microsoft Corp. v. Motorola, Inc., 795 F.3d at 1045 (9th Cir. 2015)*
[8] *Apple, Inc. et al. v. Motorola, Inc., et al., Case No. 12-1548; -1549 (Fed. Cir., April 25, 2014)*
[9] *The 4 factor test requires a plaintiff to demonstrate: (1) that they have suffered an irreparable injury; (2) that remedies available at law are inadequate to compensate for that injury; (3) that considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.*
[10] *eBay, Inc. v. MercExchange, L.L.C., 547 U.S. 388, 389 (2006)*
[11] *KZR 39/06 of 2009*



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although subject to court review. At this point, the rights of an SEP holder were given tremendous weight, and hold up was not a serious consideration.

In 2012 however, the European Commission sent a Statement of Objections to Samsung, containing a 'preliminary view' that its actions to seek injunctions against Apple in multiple instances where Apple had shown willingness to license on FRAND terms had constituted an abuse of dominant position (European Commission 2012). By this time, the demands on willingness were being made much weaker than the Orange Book standard made them, thus making injunction less accessible. The European Commission had begun to develop a standard wherein a 'willing licensee' was one that would give a declaration to be bound to royalties through litigation, to then enter a 'safe harbor' (European Commission 2012). The licensee could also challenge the validity and infringement of SEPs.

Importantly, in Huawei Technology Co. Ltd v ZTE Corp[12] in 2015, a balance between the rights of the SEP owner and the implementer was introduced to try and identify instances of abuse of dominant position in a more nuanced manner. Huawei alleged that ZTE had infringed its SEPs in Germany, had declared its irrevocable willingness to license on FRAND terms to ETSI[13], and the patent suit had been declared essential by ETSI. The Court of Justice of the European Union (CJEU) held that this 'creates legitimate expectations on the part of third parties that the proprietor of the SEP will in fact grant licences on such terms[14]' that made the refusal to grant a licence close to abuse. Notably, refusal to license on FRAND terms would have been capable of invoking abuse under Article 102 of the Treaty on the Functioning of the European Union (Vaisanen 2011). Further, conditions under which abuse would not be found began with the SEP holder alerting the potential licensee that infringement had taken place, recognizing that the latter may reasonably not know of their infringement. Next, once the potential licensee expressed 'willingness' to enter a FRAND agreement, the SEP holder would have to present a written offer with methods of calculation of royalties. Next, the potential licensee would need to respond 'diligently' in accordance with 'recognized commercial practices' 'without delaying tactics' and in 'good faith'[15]. Importantly, conditions that may define willingness on the part of the potential licensee were fleshed out at this point. Next, the potential licensee would need to submit a written counter offer that was FRAND. Additionally, using teachings of SEPs without the conclusion of an agreement would place a burden on the potential licensee to provide security (bank guarantees or deposits in escrow) 'from the point at which its counter-offer is rejected'[16]. Finally, when an agreement cannot be reached, the parties can have an independent third party set FRAND terms. Furthermore, the right to appeal the validity of SEPs would need to be held in the 'public interest'[17]. The decision placed constraints on both the SEP owner and the potential licensee.

Producing a dramatic turn towards the need for safeguards against hold out, Unwired Planet International vs Huawei Technologies[18] reveals the potential for abuse of position at the hands of implementers. Unwired Planet (hereafter Unwired) had been a product company, only to lose its share of the market following the onset of smartphones. It went on to become a non-practicing entity (hereafter NPE) with its potential licensees being much larger companies like Apple, Google and Samsung. These companies were not just in a vertical relationship with Unwired as potential licensees, but as owners of their own patent portfolios as well; they were also in a horizontal relationship with Unwired as competitors. Unwired had purchased over 2,000 patents from Ericsson, with whom it would share future benefits. Samsung, Huawei, and similarly big players then were in a position to simply wait for Unwired to run out of funds to sustain itself, given that it had no sources of revenue other than patent licences (Mesel 2018). Hold out, then, can represent not only an unwilling potential licensee, but also anti-competitive

[12] *Huawei Technologies Co. Ltd. v. ZTE Corp., et al., Case No. C-170/13 (July 16, 2015)*
[13] *The European Telecommunications Standards Institute (ETSI), which is a French association formed in 1988 ,has adopted an intellectual property rights (IPR) policy and contractual framework governed by French law. ETSI is recognised as the SSO in the European Union telecommunications sector.*
[14] *Ibid.,9.* [15] *Ibid.,9.* [16] *Ibid.,9.* [17] *Ibid.,9.*
[18] *UKSC 37 2020*

intent exceeding the scope of licensing term negotiations as well. Indeed, NPEs in general were shown to be at a particular risk of domination through hold out.

The same judgement in Conversant v Huawei and ZTE[19] dealt with the issue of jurisdiction of UK courts, specifically the question of the exercise of the court's jurisdiction in determining global FRAND terms and with making Huawei enter a worldwide licence to avoid injunctions in the UK. Huawei maintained that it would have to compromise the rights to challenge the validity and the SEP statuses of foreign patents in other jurisdictions, and the scrutiny that these patents could and should ideally receive would thus be compromised. Further, UK courts were setting terms that foreign courts could make different decisions on, denying commercial actors the option to negotiate horizontally. However, the court reasoned that when faced with the uncertainty of the SEP statuses of some patents within a large portfolio, an implementer is able to still buy a degree of certainty by committing at once to an entire portfolio with a range of SEPs. Further, the ability to challenge individual patents in other jurisdictions remained available, to whatever degree the implementer had previously found the option practical. Importantly, the position to enforce ETSI contracts on patents in the UK gave the court jurisdiction. Additionally, on issue two of forum non conveniens, on whether Huawei (China) and ZTE (China) should have been left out of the proceedings, the court reasoned that in the absence of at least an agreement by all parties, that it should be the Chinese courts that must decide; thus the jurisdiction of the Chinese courts could not be established. UK courts, however, needed to adjudicate on injunctions for UK patents. Additionally, on the scope of remedies, the court reasoned that the grant of an injunction and not payment of damages was essential since, from the point of view of the SEP owner, the cost of both negotiating licence terms and carrying out proceedings to enforce its rights for each patent in each country would be 'impossibly high'[20]. Hence, the concerned party would have incentive to continue infringing until they were compelled to pay royalties, likely a long and comfortable wait for said party, and consequently an incentive to avoid FRAND licences altogether. Accordingly, the court found it appropriate to issue an injunction against the willingness to enter a worldwide licence instead of assigning damages and adding to the costs of operating in the UK. Importantly, the injunction would apply to essential, valid and infringed patents as per UK law. The coercion involved in making the implementer accept global licences was then found to be the only way to ensure the licences were FRAND. This reasoning was also found to be consistent with restraints on the abuse of dominant position by the SEP holder, since current jurisprudence dictated that they could not apply for an injunction unless they were willing to offer terms that the courts deemed FRAND.

On the charge of discrimination, Huawei wanted an interpretation of the non-discrimination leg in FRAND that meant the most favourable of the terms given to other licensees would apply for all like situations, unless objective grounds for a difference in situations could be identified. This would mean that the significantly lower royalty rates previously offered to Samsung (a 'fire sale'[21]) would need to apply. Unwired employed three lines of defence. It argued that the previous Samsung license was not comparable, that the interpretation of non-discrimination would need to include a 'true value'[22] for the SEP being offered, and a difference in outcome would need to be justified based on EU competition law (Article 102 TFEU). The court ruled that the non-discrimination clause was 'general' and not 'hard-edged'[23] in the way that Huawei had interpreted it, and that the FRAND requirement had to be read as a single, composite whole with the non-discrimination leg. This would ensure the fair and reasonable elements are determined without regard for the characteristics of individual licensees, along with a single royalty price list available to all. The court also pointed out that ETSI had previously rejected the 'most favourable licensee'[24] interpretation. Accordingly, a previous rate may not represent the value of a licence.

[19] *UKSC 37 2020*
[20] *Ibid.*
[21] *Ibid.,11.*
[22] *Ibid.,11.*
[23] *Ibid.,11.*



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Notably, the court was concerned about including the variety of ways in which discrimination has a positive impact on competition. The court acknowledged that a first mover advantage may mean a value lower than the real value of an SEP portfolio may be offered initially, the advantage becoming meaningless if subsequent offers are to match the first. Also, 'fire sales'[25] to ensure survival by an SEP owner, as in the case of the Samsung licence referenced in the judgement, would be made untenable if the same terms were offered. After acknowledging that differences in individual offers in individual circumstances were capable of being desirable, the court finally decided that the value of an SEP license calculated without regard for the characteristics of individual licensees meets the obligation to treat like cases alike and hence achieves the non-discrimination requirement. On one hand, reasoning that relies on the value of an SEP divorced from the characteristics of a licensee lies strongly on the side of fairness. However, the court's reasoning relied heavily on seeing the boundaries of non-discrimination relying on competition law. An interpretation that treats non-discrimination in a non-prescriptive, narrow way may be capable of both promoting the desirable varieties of discriminatory treatment, but also the undesirable ones, and risks saying what is intuitively incredibly convincing, but only by saying too little. However, the requirement that a single royalty price list be made available to all adds significantly to the demands of transparency, and is capable of making FRAND negotiation processes far more meaningful. Interestingly, in Samsung v. Unwired Planet[26]in 2016, Huawei had argued that after the transfer of over 2800 patents and patent applications to Unwired, license terms offered would have to be consistent with terms previously used by Ericsson and not just with terms used in other Unwired licenses as part of the non-discrimination requirement. The court had agreed, saying Unwired should not be able to 'obtain more favourable terms from its licensees than Ericsson could itself have obtained.'[27] It then becomes meaningful to ask how big a difference in consistency would indeed invoke requirements for similar terms.

The question of abuse of dominant position under Article 102 of TFEU remained. The judgement, invoking the Huawei Technology Co. Ltd v ZTE Corp standard, found Huawei had only offered terms that were qualified in unreasonable ways (requiring that only patents valid and infringed be part of licensing, that only a UK portfolio could be made part of a licence). However, Unwired had also provided key terms of its FRAND offer a few weeks after proceedings began in the High Court, and Huawei never made an unqualified offer to accept. On the matter of proceedings being brought forth by Unwired before FRAND terms were offered, the court held that the nature of notice would depend on the circumstances involved, introducing flexibility in interpretation of requirements for consent, and taking Unwired's side.

Despite the Court of Justice of the European Union being a common platform across the EU, significant substantive differences in laws as well as procedural differences in adjudication remain. Countries such as Germany, Austria, and Hungary assess infringement and validity in separate courts. Many countries do not have special patent courts with technically-qualified judges, and the time taken to adjudicate varies greatly as well (Stach et al. 2015). A Unitary Patent System, meanwhile, is set to begin in the second half of 2022 (EPO nd) from which the UK has withdrawn (UPC 2020). Litigation is expected to be made simpler and less costly, and coordination for other jurisdictions simpler as well. In the move towards worldwide licences, the Unitary Patent System would prove useful and promises a common platform both within and outside Europe.

[24] *Ibid.,11.*
[25] *Ibid.,11.*
[26] *[2016] EWCA Civ 489*
[27] *[2016] EWCA Civ 489*

## Emergence of China: SEPs and FRAND

China started its Intellectual Property trajectory as a latecomer in the Information and Communication Technology (hereafter, ICT) market but over the years it has managed to surpass major competition to be the powerhouse of patent filing in the world. The World Intellectual Property Indicators 2020, a report by the World Intellectual Property Organization (WIPO) indicated that its China office received the highest number of patent applications annually since 2011. In 2019, China filed 1.4 million patents, which was 43.4 percent of all patent applications and twice of that filed by the United States for the year. It was the first time since 1978, when WIPO's Patent Cooperation Treaty System was adopted, that the US did not file the highest number of International Patent applications. It was bettered by China with 58,990 applications to its 57,840 (WIPO 2020).

The IP protection system in China has gained in strength and efficiency from consistent legal and administrative reforms—gradual increase in damages, swift judicial processes, IP specialist judges, automatic injunctions and patentee-favouring rules. By the end of 2019, there were more than 100 Standard Essential Patents infringement cases being heard under the Chinese IP protection system, most of which were in regards with telecommunication. The Chinese cell phone manufacturing industry, producing 9 out of every 10 new phones in the world, is one of the most important reasons for the hike in cases and patent filing. Another reason could be the shift from a traditionally labour-intensive economy to a service and enterprise based economy which mandates higher levels of standardizations—more 4G related patents than 3G (Managing IP 2019). The developments in China, in the context of standardisation for ICT, may emerge as a challenge to other economies guiding and structuring the future pronouncements and frameworks for FRAND-based SEP usage across the world.

## Analysis of SEP litigation in China

China is a civil law system with only two major binding authorities—the law and judicial interpretations of China's Supreme People's Court (hereafter, SPC). The laws pertaining to SEPs are the contract law, the Patent law, the Anti-Monopoly law and the Standardisation law. These laws, along with Interpretation Concerning Certain Issues on Application of Law for Trial of Cases on Disputes over Patent Infringement by the SPC, are used for SEP litigations. Under the Chinese legal system, the interpretation of the SPC alone is binding to all the courts, the guidelines by the High People's Court (hereafter, HPC) are not binding to any lower court. Nevertheless, the guidelines of the HPC are used in pronouncing judgements, although they are not cited. Therefore, many additional instructions such as Guidelines for Patent Infringement Determination, 2017 by the Beijing HPC and Work Guidelines on Adjudicating Cases of Disputes over Standard Essential Patents (Trial), 2018 by the Guangdong HPC are also a part of the IP protection systems. Case laws from across the world such as Unwired Planet v Huawei,United Kingdom; Microsoft v Motorola, the US; and Huawei v ZTE,Germany, have been cited in SEP-related pronouncements. This IP protection system, which largely pertains to the telecommunication sector in China, is frequently reformed based on academic and market research and consultations. A case of infringement admitted under this system proceeds as shown in Figure 2 (Deng, Jiao and Xie 2021). Here, "JO" in Figure 2 refers to the jurisdictional objection proceeding, which is an option to be exercised by the defendant(s).





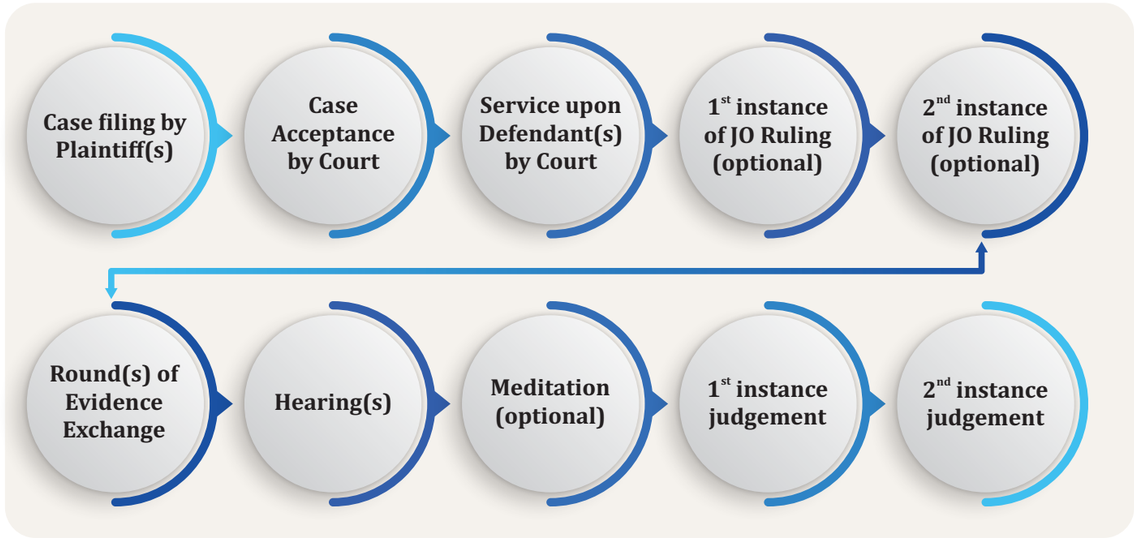


*Figure 2: Life Cycle of SEP Litigation in China*

The suits requesting patent invalidation have a different route. The potential licensee requests the Intellectual Property Protection Department of the China National Intellectual Property Administration (hereafter, CNIPA) to rule in favour of invalidation. CNIPA decides on the request, its decision could be challenged at the Beijing IP Court as first instance, and later at the SPC as the final instance. Primarily, there are three varieties of SEP litigation or cases in China—Patent Infringement leading to injunction or damage service to a patentee or licensee, Anti-Monopoly emerging from price hikes, bundling, differential treatment and so on. and Rate Setting leading to adjudication as per FRAND rules.

There are instances across the world where courts have acknowledged the public interest aspect associated with SEPs in restricting the smooth granting of an injunction (Osenga 2018, Riley 2014). In the first instance, the courts in China attempt to assess the scope of obvious faults during the licensing negotiation process, either by the patentee or the implementer. The obvious fault consists of deviation from general commercial practices, process, time and content. To prevent any such obvious faults, the courts provide a set of guidelines on behaviours during licensing negotiations, most of which are outcomes of general best market practices. As per the Supreme People's Court of the People's Republic of China, on the initiation of any negotiation, the patentee should provide a written notice to the implementer explaining the scope of patent and infringement acts. Upon noting any signs of willingness from the implementer, the patentee must provide claim charts, licensing fee calculation methods and reasonable terms while also indicating a turnaround time limit. Similarly, the implementer must respond to the notice from the patentee in a proactive manner. On receipt of licensing terms, an implementer must respond in substance, adding additional terms if any. When parties disagree, the courts take great care to avoid any possibility of a patent hold-up. For cases seeking injunctions based on obvious faults and FRAND rules, the logic provided in Table 1 as per the court guideline is used. based on obvious faults and FRAND rules, the logic provided in Table 1 as per the court guideline is used.

| Patentee Status | Implementer Status | Injunction Status |
|---|---|---|
| Not FRAND | No Obvious Fault | Not Granted |
| FRAND | Obvious Fault | Granted |
| FRAND | No Obvious Fault | Not Granted |
| Not FRAND | Obvious Fault | Combined Evaluation |

*Table 1: Logic of Injunction in FRAND related adjudications*

The courts have the authority to suspend the parties to return to negotiations on an agreement to work in favour of striking a negotiation. However, suspensions are a one-off thing to prevent their usage as a delaying tactic. The proceedings of the court resume as both parties decide to discontinue the negotiation process. There are certain emerging issues with SEP litigation in China, one of which is related to the authority of Chinese courts to decide SEP licensing cases outside of China. Ideally, like most nation-states, the courts in China allow judicial authority over its land only, though as per the guidelines issued for SEP litigation by SPC, a court in China may decide global licensing rate if there is no objection from the parties involved or the court understands the defence to be unreasonable (RX Corporation 2021).

## SEP case Laws in China

### Huawei v Samsung[28]

The two major telecommunication entities were engaged in a negotiation over the licensing of patents related to 4G long-term evolution technology. The dispute came to the fore in 2016 as Huawei filed for violation of FRAND rules by Samsung. The court initially found Samsung to be at fault for delaying the negotiation process by not responding to the claim chart served by Huawei. However, instead of directly arriving at a judgement based on clear violation of FRAND terms by Samsung, the court not only suspended the proceeding but also organised for both the parties to re-enter the negotiation process which lasted for nearly 100 days without much progress. As the proceedings resumed, the court found that Huawei made active efforts to reach out to Samsung with a patent list, claim charts and comments. The first instance judgement by the Shenzhen Intermediate Court was never implemented due to a settlement between the parties. Nevertheless, the instance of the court in adjudicating as per FRAND rules and giving space for negotiation was displayed in the case.

### Huawei v InterDigital[29]

InterDigital filed a suit against Huawei in July 2011 in the US International Trade Commission and in the US District Court for patent infringement. Huawei filed a counter suit before the Shenzhen Intermediate People's Court pleading violation of FRAND rules and China's Anti-Monopoly Law. Huawei claimed that InterDigital had misused their dominant market position and that they were unable to arrive at a reasonable negotiation for a FRAND licence for its SEP of 3G wireless communication technology. The Shenzhen Intermediate Court found InterDigital to be at fault for seeking discriminatory and excessively high royalty rates for its

[28] *Huawei Techs., Co. v. Samsung Elecs. Co., Case No. 3:16-cv-02787-WHO (N.D. Cal. Apr. 27, 2017)*
[29] *Interdigital Commc'ns, Inc. v. Huawei Inv. & Holding Co., 166 F. Supp. 3d 463 (S.D.N.Y. 2016)*





SEPs and non-SEPs. It was also at fault for seeking an injunction in a US court of law. The court ordered InterDigital to pay 3.2 million USD to Huawei. InterDigital appealed against the judgement in a second instance but to no avail as the Guangdong HPC upheld the earlier ruling of the Shenzhen Intermediate Court, therefore deciding an international case as per the law in China.

The nature of disputes of SEPs in a global world will cross borders. Most of the major ICT companies operate from multiple locations to deliver one quality product, wherever their markets are. The emergence of nationalism in these cases involving organisations registered at different locations could hamper the entire global manufacturing ecosystem. The provision of SEPs must build a better environment for innovation and invention, and it is of the highest priority to arrive at a reasonable royalty and fee calculation method along with a flawless and transparent negotiation process.

## Conclusion

A move towards larger and larger patent portfolios being leveraged by single entities and the emergence of NPEs such as Unwired Planet, when combined with the changing statuses of validity and infringement inherent in intellectual property, is bound to lead to circumstances where large patent portfolios and the aggregated risk-taking they come with become more and more commonplace. Courts, in turn, may leverage greater discretion depending on the interaction of the particularities of a case and the jurisdiction of concern. At the same time, such a move represents a blending of jurisdictions owing to the impracticality of adjudication everywhere and the resulting threat to compliance with FRAND. Like the UK Supreme Court did in 2020, other courts would find it justified to determine global FRAND terms as well. Crucially, this would also mean that courts belonging to a particular jurisdiction would, in deciding on FRAND terms that would apply globally, speak on behalf of other jurisdictions. Chinese courts could now easily become the ones setting global FRAND rates (Clark 2020). Two new issues then arise. First, it matters who the jurisdictions that speak on behalf of others are, political currents in one jurisdiction that may underpin decision making can be an imposition on other jurisdictions. Second, costs may also be borne by the jurisdictions that speak up. Chinese implementers may not value the smaller post-Brexit market in the UK, and may go to Chinese courts to set global FRAND licences.

Further, when a choice to give up sales in China or enter a global FRAND licence will be leveraged, few will be willing to give up Chinese sales. As per Huawei defendants, if Chinese patents in the case were not to be infringed or invalidated, 75 percent of the worldwide royalty would no longer hold. UK sales on the other hand, constituted only 1 percent of its royalties. For an NPE in particular, where product sales are not part of leverage, threats to seize assets (their patents) may be invoked given that stopping sales will not be an option (Clark 2020). Simultaneously, in deciding that the UK will make decisions on what are largely Chinese patents, diplomatic tensions may arise. Leaving the EU has put the UK in a weaker spot in terms of trade leverage, thus putting the British executive in a position where it has to choose between greater technology access for its people and its relationship with China on one side and its defence of the UK courts on the other side (Schindler et al. 2019). The trends of leveraging large portfolios inspiring judicial discretion and judicial overreach in speaking on behalf of other jurisdictions may threaten the compliance with FRANDS and international relations, especially in the domain of SEPs.

## Statement of Competing Interest:

The perspectives are expressed voluntarily by the authors without any external financial support. We possess no conflicting or competing interests.



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# *Analyzing India's Science and Technology Policy – A Comparative Perspective*

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***Abstract***

*The Government of India has been formulating science policies since the 1950s, with the latest version of the policy formulated in 2020. The paper aims to understand the extent to which the 2020 Science Technology and Innovation Policy (STIP) addresses the critiques and limitations of its predecessor policy launched in 2013.Therefore, this paper compares the 2020 STIP document to the 2013 version across essential parameters such as the role of innovation and inclusivity, focus on informality, support for research and others. The paper also brings in global comparison by elaborating on science policies of Brazil and South Africa.*

***Keywords- Science, Technology, Comparative, Policy, Analysis, Innovation***

## Introduction

The former Prime minister of India, Jawaharlal Nehru, once said, 'It was science alone that could solve these problems of hunger and poverty, of insanitation and illiteracy, superstition and deadening custom and tradition, of vast resources running to waste, of a rich country inhabited by starving people'(Davar 2021).The global advancement in science and technology has proved effective, especially when it comes to facing the global pandemic due to the spread of COVID-19 in 2020.The development of vaccines, engagement of education digitally through online platforms, and the spread of information digitally are all made possible due to advances in communication and medical technology.

India has come a long way since the first science policy and has become far more advanced technologically to become one of the global competitors in the scientific world. The foresight of the Indian leadership that bringing overall development is possible only through advances in science and technology was clear since independence. Since the formulation of the first science policy in 1958, India has seen a considerable increase in research centers, science-oriented academic institutes, and advancements in atomic and space technology. The vast production of vaccines during the pandemic from India's Serum institute is evidence of progress in the field. While the advancement in science has borne fruits in terms of the country's development across vast areas, it has failed to eradicate root issues such as poverty and insanitation completely. There is a dire need to formulate a guiding science policy that is balanced in its approach and is deliberate in its effort to address the complex issues of our society. The need of the hour is to observe if the recently-formulated Science Technology and Innovation Policy of 2020 by the Department of Science and Technology, Government of India (GOI) attempts to address these pressing issues.

Therefore, the primary purpose of this paper is to see whether the Science Technology and Innovation Policy of 2020 addresses the complexity of various problems, be it research, socioeconomic, political, innovation, economic and societal issues, and provide some recommendations to better it. The paper starts by looking at the evolution of the science policies and then compares the 2013 STIP with the STIP 2020 through various themes. Subsequently, the paper elaborates the case studies of two developing nations—Brazil and South Africa—and evaluates their progress in science policy and discusses them with respect to the STIP 2020 document. Finally, the paper shares a few policy recommendations to augment the existing policy document.

## Evolution of Science Policy in India

This section tracks the evolution of science policies in India from the first version in 1958 to the current version of 2020. The foundation for the first science policy in India was laid in 1958, following which there have been five such policies in the last six decades. The scientific policy resolution of 1958 set the pathway for scientific development in India, which led to technological advancement and development across various sectors. The key area of focus was the development of pure, applied, and educational science to develop the scientific temper of the country. Implementation of the policy led to the creation of many scientific labs and organizations such as ISRO (Indian Scientific and Research Organizations), new laboratories under DRDO (Defense Research and Development Organization),and expansion of the scientific community. However, the policy faced many hurdles in terms of social challenges, political will, and the exclusion of critical stakeholders such as the social-scientist in the decision-making of policy formulation and implementation(Sharma 1976). The policy aimed



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to eradicate poverty, but it focused mainly on the development of urban areas and excluded rural areas, allowing deviation from its primary motivation(Ibid). The gap allowed for the formulation of the second Technology Policy Statement of 1983, which was driven by a motive to achieve self-reliance through the development of indigenous technologies. It recognized the role of technology in the betterment of people's living conditions. The policy brought science and technological development together under the same umbrella. It managed to gain an increase in funding to 0.7 percent of the country's GDP(Gross Domestic Product), and saw an increased publication from the R&D (Research and Development) community. The limitation towards the policy came in the form of the 1991 economic liberalization, which increased FDI (Foreign Direct Investment) and contradicted the ideology of self-reliance (Kaushik, Basha and Ganesan 2021).

The 1983 Technology Policy Statement was succeeded by the Science and Technology policy of 2003 that recognized the importance of funding in the research, development, and innovation to improve the scientific ecosystem and pushed for increased funding. It also mentions the need for the development of indigenous technology along with modern technology. The science technology and innovation policy implanted in 2013 emphasized the development of the science and technology-led innovation ecosystem. The policy was different in its motive to engage science and technology with innovation. It aimed to put India among the top five global scientific powers. However, the policy faced criticism in its approach to innovation and inclusion. The 2013 policy was finally succeeded by the STIP 2020, which aims to position India among the top three global scientific powers by doubling its GERD (Gross Expenditure of Research and Development) and increasing the GDP expenditure on research and development. The policy's implementation and impact will be seen in the upcoming years.

The STIP 2013 focused on the creation of an innovation-led scientific ecosystem. The policy document's primary feature was the incorporation of understanding of Innovation with the Science and Technology policy. It was driven with a significant aim to increase funding on R&D to 2 percent and increase the contribution of the private sector in it through various initiatives. The various stakeholders involved in the delivery of the policy are the concerned public and private bodies, the central ministries, the state government, the Research and Development body, the ministry of Science and Technology, and the NGOs (Non-Governmental Organizations) at the grassroot levels.

The policy received numerous criticisms such as the vagueness of the objectives regarding the ground reality (Mukhopadhyay 2015), lack of significant commitments from the public sector in research and development, and limited discussion on the National Innovation System in the policy document (Krishna 2013).The concept of innovation in the 2013 STIP has a linear approach(Sheikh 2014).The policy document has a narrow approach and fails to cover the complexity and nuances of India's developing economy(ibid) The one-pronged approach of considering innovation at par with R&D fails to consider the informal economy that plays a big part in the economy as a whole. The policy lacked the articulation of an inclusive innovation ecosystem (Joseph2013), the inclusion of innovation at the informal sector level (Sheikh 2014), and the lack of proper thought process in the implementation and the way forward, with no mention of the evaluatory bodies within the document (Mani 2013).

The next section elaborates the STIP 2020 policy document in detail.

## Comparison of the STIP 2020 and STIP 2013 policie

The onset of the 2019 COVID-19pandemic brought global suffering, creating further economic, socioeconomic, health, and political challenges. The challenges also meant the showcasing of new opportunities for the scientific, academic, research, and industrial communities to link up and engage in new innovative measures to bring about a holistic solution to the complexity of the various problems faced by society at large. The 2020 STIP document is a re-visitation of the critiques and drawbacks of the 2013 STIP, and takes into consideration the above complex challenges at hand.

The STIP 2020 document is comprehensive document covering various issues across 11 chapters and discusses the aims, stakeholders, strategies, and mode of implementation. The driving force of the policy is the creation of a self-reliant, technologically-advanced nation that ranks among the top three scientific superpowers in the decade to come, and the doubling of spending and enrollment of full-time researchers every five years. It has a decentralized approach.

This section will particularly focus on the five essential themes of innovation, research and development (R&D), informality, inclusivity, and collaboration with stakeholders to compare the extent of changes brought about by the 2020 policy document. These themes are generally considered the primary components of any STIP policy.

### a. Innovation

'Innovation is complex, uncertain, somewhat disorderly and subject to changes of many sorts' (Pinheiro 2015).

The 2013 document on Science and Technology was made unique from the predecessors of the policy through its focus on innovation. Its approach was to improve the research and the overall scientific temper of the country through innovation-led science policy. However, the detailing concerning innovation is very vague. The approach has been critiqued to be a linear process and fails to consider the overall complex nature of society (Sheikh 2014). The conceptualization of innovation is on par with research and development and does not include important ingredients such as the informal economy that is a significant part of innovation, especially in a country like India.

Compared to the 2013 policy document, innovation is dealt with as a separate chapter along with entrepreneurship in the STIP 2020 document. It is discussed in comparatively greater detail as to the importance, needs, and the implementation process. The 2020 STIP document tries to address the socioeconomic challenges and involves various stakeholders so that the policy is inclusive in nature. It aims to attain sustainable economic growth and higher global rankings in science and technology. The policy talks about increasing programs between academia and industry so that there is a mutual benefit and the development of the scientific temper of the country. Emphasis is given to promoting gender equity by encouraging women. Incentivized mission-oriented projects for addressing the regional issues through innovation clusters are discussed, which allows the realization of the SDGs (Sustainable Development Goals).

### b. Research and Development (R&D)

The area of R&D has seen tremendous progress since the country's independence in 1947, leading to increased publishing of papers, new discoveries, and increased patents. As per the





National Science Foundation (NSF) Science and Engineering Indicators database 2018 ("S&E Indicators 2018 | NSF - National Science Foundation", 2022). India was globally ranked 3rd in scientific publication in 2018(White 2021). There has been a considerable jump in the number of higher education institutes and research organizations established in the country. However, to be among the top countries in R&D, there has to be backing from increased funding. There has been constant mention of the need to increase the funding towards research and development in order to take India to greater heights in terms of its contribution to global knowledge in the various predecessors of the science policy document. However, the percentage of spending has remained stagnant for a long time due to a lack of financial commitment.

The 2013 STIP document emphasizes the need to improve the GDP expenditure on research and development from 1 to 2 percent. However, it was observed that the spending for 2013 was just 0.74 percent (India, Technology & Infographic 2021).The goal to increase expenditure has failed to materialize due to a lack of commitments. The latest 2020 STIP also repeats the same need for improving funds from the GDP, but the spending has declined further from 0.74 to 0.65 percent (2018–2019). Regarding funding, the policy seems to be just a flashy one with big aims such as the previous one (ibid).

The STIP 2020 document is comprehensive in its goal setting and process of implementation. The policy specifies the areas of research topics to be engaging with that overall cover the spectrum from the rural to urban issues, climatic aspects, and indigenous issues to create a holistic knowledge system in R&D. The key area of focus is on the improvement of the foundational and translational research by taking up areas that will make India a leader in research, solving problems concerning rural communities, and issues that allow collaboration of industries and academia.

The policy brings about the concept of 'one nation, one subscription' wherein a single registration would suffice for a wide array of research papers would be accessible for free to researchers in India. It is inclusive in nature. This will increase the access to journals, domestic and international, for researchers and people who are interested in them. It removes the barrier of accessibility due to funding issues for researchers. The policy also mentions the formation of an online platform called INDSTA (Indian Science and Technology Archive of Research) that is STI regulated. It is an open book that shows the various outputs of research, provides notifications of opportunities in different research fields, and updates the vast science and technology community.

### c. Focus on Informality

As per the Government of India report on Employment in Informal Sector and Conditions of Informal Employment (2013–2014), the informal economy contributes 50 percent of the GDP, and 90 percent of the total workforce are from this section of the economy (Ministry of Labor and Employment 2014). The role played by the informal sector in the economic growth of our nation is crucial. The 2013 STIP recognizes that the SME (Small and Medium Enterprises) has a meager presence in the Research and the Development area and highlights the need for some schemes to be instituted to encourage research in that area.

There is an interlinking of innovation with the informal sector in the 2020 STIP. This is done through incentivisation of private bodies and entrepreneurs who contribute towards innovation-based projects that are oriented towards finding solutions to social issues and challenges. The 2020 STIP document also recognizes the role of the informal sector but goes a step further. It draws out some mode of implementation at the ground level as well. It states

explicitly for reservation of part of the R&D fund towards MSME (Micro, Small, and Medium Enterprise) projects. It also clearly highlights the importance of the MSME in understanding the issues and challenges present at the ground level and their inter-linkage with academia and startups as a crucial mode to facilitate innovation.

### d. Inclusivity

A national policy of any magnitude should be led by some inclusionary foresight. Inclusiveness brings in a holistic purview of things and ensures that decisions are taken in due consideration for the greater good of all.

The 2013 STIP mentions the Global Innovation System and highlights the need for the innovation system to be inclusive. It points to various instruments of STI for ensuring the inclusion of stakeholders. However, the approach towards inclusivity has been critiqued as not having a proper understanding of the various forms of exclusion while pushing for inclusive innovation.

The STIP 2020 document was published at the later stage of the first wave of the pandemic, when technology served as an essential tool be it in the form of information accessibility, discovering vaccines, or continuing with online education. The policy recognizes the importance of digitization and technology. It talks of expanding the online platforms of teaching and increasing the reach and the quality of education. Considering that a significant share of the country's population resides in the rural areas, it becomes crucial to first increase the reach of technology and electricity to the far corners of the country. The emphasis on indigenous technology and the policy's commitment towards developing and encouraging these forms through some entrepreneurial engagement contributes to the rural community development.

The document considers the varied forms of socioeconomic issues such as gender parity. It mentions the formulation of an E&I (Ethics and Inclusion) charter that will address issues related to socioeconomic disparity. Regarding the inclusion of women, it is mentioned that the representation of women is 30 percent in the evaluatory and the decision-making bodies. The document also talks about the inclusion of indigenous group representation. The policy aims to remove barriers to participation, promotion, and incentivization and ensure the recruitment, retention and effective engagements of excluded groups and marginalized communities (Ministry of Science and Technology, 2020)

### e. Collaboration with Stakeholders

The major stakeholders in both the policies remain the same, involving the Central and State ministries, schools, higher education institutions, private and public organizations, MSMEs, NGOs, and the indigenous communities. However, the role and the mandate seem to change as the 2020 STIP document prepares for a more decentralized system as compared to its previous counterparts. Involvement in the grassroot and regional areas is considered as significant as involvement at the top level.

The formulation of the STIP 2020 document has been a bottom-up approach(Department of Science and Technology 2020). It has taken a four-track methodology wherein consultation with the public has been given major importance. This involved:

1. The drawing of ideas and perspectives from the stakeholders, i.e. public and experts
2. Categorisation of these ideas into various themes
3. Holding consultations with ministries and states and
4. An apex multi-stakeholder consultation.





The central and the state ministries contribute to allocating funds towards the development of science and technology. They strategize various schemes and regulate various institutions. Through the collaboration of multiple stakeholders, the centre and the states are expected to initiate different missions under the ADMIRE (Advance mission in Innovation, Research Ecosystem is a portfolio-based funding mechanism. It is a platform that supports innovation at the regional and national levels by funding projects that share the same motivation and goals as the STIP 2020) program that are innovation-oriented and contribute towards the scientific as well as holistic development of the community.

The 2020 STIP recommends the participation of people from the ministry of science and technology in revising the curriculum for the NEP (National Education Policy) 2020.This allows for the shaping of the science curriculum in alliance with the aims and motives of the STIP 2020. One of the primary motives of the STIP is the creation of a scientific ecosystem with a proper foundation.

The comparative analysis at the national level of the 2020 STIP with the 2013 STIP provides comprehensive insights on where the current STIP policy document stands with regards to its predecessor. To gain a holistic perspective and to bring in learning from the global implementation of such policy, case studies of science policies from two developing nations—Brazil and South Africa—have been elaborated upon in the next section.

## Case study of science policies in Brazil and South Africa

The global development of science and technology has been unprecedented, and the policymaker's primary motive towards such progress is to resolve the many challenges faced by society such as poverty. The development and advancement of the science and technology of a nation are addressed through various indicators such as the R&D investment and innovation index among others. Innovation Index provides a ranking of countries based on a number of indicators to show where a country ranks globally in terms of innovation. Still, it does not necessarily cover the outcome of policy implementation. The Technology Achievement Index(TAI) is an indicator used globally, and through which a nation's actual progress in technological development can be monitored. It considers four parameters, i.e. creation of new technology, diffusion of new technology, diffusion of old technology, and increase in human skill(FAO 2002). India has a TAI score of 0.201 as per the 2001 UNDP report, thus ranking 63 out of the 72 countries (Desai, Fukuda-Parr, Johansson and Sagasti 2002).Developing countries such as Brazil and South Africa have a higher ranking of 43 and 39 respectively(Ibid).Brazil and South Africa, along with India, have a similar course of development in science and technology. Across other indicators such as publication, India does well but fails to perform well in the TAI rankings. This could be due to many reasons, but the most rational is the spread of technology to the rural community. A significant section of the global population resides in rural areas. Thus, the advancement of science should benefit not only the people in urban areas but also the rural community.

The paper will now look into the science policies of Brazil and South Africa as case studies, taking into consideration the evolution of the science and technology policy in the respective countries.

### a. Brazil

Global industrialization led the development in science and technology during the 1930s in Brazil. With the establishment of educational institutes such as the University of Sao Paulo in 1934, there was a shift towards building a knowledge system that not only catered to 'applied research' but also 'basic research'.(Dias and Serafim 2011). Basic research allows for developing a knowledge system that leads to discovery and innovation. The 1950s saw a concentrated surge towards modernization and saw the institutionalization of the Science and Technology policy in Brazil. It led to the formation of two important institutes, the Campaign for Improving Higher Educational Institutes (CAPES) and the National Council for Scientific and Technological Development (CNPq), which served as funding agencies to develop the scientific temper of the nation. Through the CAPES and CNPq, thousands of students have graduated, contributing to the knowledge system(Dias and Serafim2011).The program initiated by them is hardly evaluated relative to other government-led programs. The government appears to strongly believe that ensuring autonomy and funding for these institutions will automatically result in the overall development. Proper evaluation strategy and monitoring is necessary to bring efficiency to the system. The policies focus on resolving issues related to social issues is significantly less. In 2008, only 1.1 percent of total spending from the S&T funding was used for research related to the redressal of social challenges (Thomas, Fressoli and Becerra 2012).

The period of inflation in the 1990s saw a reduction in the funding from government agencies, thus the science and research community had to greatly rely on collaboration with industries for funding(Reyes-Galindo, Monteiro and Macnaghten 2019). Based on the political scenario and the investments, there seems to be a continuous shift in the policy. Still, the primary motivation appears to remain unchanged because of the position enjoyed by the research community(Dias and Serafim 2011).

Considering the global initiation and work concerning climate change and ecological challenges, a group of scientists in Brazil came together independently to form the Brazilian Platform on Biodiversity and Ecosystem Services (BPBES) in 2015. Global strategy to tackle challenging issues such as climate change may not suit the implementation at the regional level, so the BPBES was roped in to develop reports based on regional contexts. Their work allows for the formation of networks with boundary organizations thus resulting in the formation of a boundary chain. Boundary organizations are various stakeholders that serve as a bridge of knowledge of science and policy. Their primary role is to create robust networks with various stakeholders of the science policy. BPBES develops an assessment report such as the Biodiversity on Climate Change special report, which is later shared with the concerned parties for re-evaluation to make the system efficient. The involvement of various stakeholders makes the assessment wholesome as does the bottom-up approach(Scarano et al. 2019).

Brazil's science and technology sector is performing well globally. Its ranking with regard to the Global Innovation Index stands at the 57th position in 2021(Innovation 2022). As per the Ministry of Science and Technology Brazil 2010 report, Brazil contributed to 50 percent of the overall scientific publications in Latin America (Thomas, Fressoli and Becerra 2012).

### b. South Africa

A growing consensus on the need for a robust science policy in South Africa started to grow in the 1990s.The shift in the country's political scenario towards a democratic government led to some drastic changes. National level initiatives to construct a policy through public opinions and discussion were started in 1995, which led to the drafting of a white paper in 1997 that pointed out the flaws in the system and provided recommendations for the new science and



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technology policy. The policy was developed under the framework of the National System of Innovation (NSI)(OECD2022). NSI rests its rationale in the variation of national institutions that shape the diffusion of technologies through the process of shared knowledge creation and the development of learning outcomes' (Lehmann and Schenkenhofer 2020). In 2002, the Department of Science and Technology (DST) was formed whose main aim was to transform South Africa from a 'resource-intensive to a knowledge-intensive' country(Swilling 2014). Later in 2007, the formulation of the ten year innovation plan was initiated by the Ministry of Science to fulfill the aim of the DST(Salami and Soltanzadeh 2012).

The work of implementation that resulted from the white paper is commendable. To enhance policymaking, the National Advisory Council of Innovation was formed in 1997.Its primary work was in guiding the various ministries concerned with science and technology development. Various such groups were formed to increase inclusivity and increase the involvement of different stakeholders in the policy processes. To train the unskilled and increase employability, the government has come up with a skills development act where they levy 1 percent of the staff payroll of all employers for training unskilled people. In relation to health care, the government is using its diplomacy tools to bring in Cuban doctors (OECD 2022).

The GERD spending has improved from 0.60 percent in the 1990s to 0.83 percent in 2017(World Bank 2017). The Global innovation index positions South Africa at 61st out of 132 countries(Office of Science and Innovation, Brazil 2022). South Africa is the leading country in terms of publication and research strength in the African continent but still falls behind the developing countries of India and Brazil in terms of global ranking such as the Innovation rankings.

## Discussion

The STIP 2020 document is a comprehensive document attending to the major critiques of the STIP 2013 document. The STIP 2020 is a detailed and upgraded version of the 2013 document. Each chapter in the 2020 STIP document discusses various modes of guiding ideas and the key actors and how it plans to implement said ideas. There is an emphasis on evaluation and governance, which is very important for any policy.

Some goals of the STIP 2020 seem very ambitious and far-fetched, such as the doubling of full-time enrollment of researchers and Gross Expenditure on Research and Development (GERD).It also seeks to double the contribution of private sectors every five years and aims to position India among the top 3 global scientific powers which seems improbable.

One of the common things laid out in the policies is the increase in investment in science and technology. However, the GDP expenditure over the years either remains stagnant or decreases. Initiatives need to be taken to ensure contributions from the private sectors. The 'One nation One subscription' is an important scheme under the STIP 2020. It makes it unique in its effort to increase accessibility and its inclusive concept.

The growth of science and technology in developing countries such as Brazil, South Africa and India seems to be a favorable development. Considering that science and policy development primarily happened in the later phase of the 20th century, the contribution of these countries in terms of global scientific knowledge and discourse is commendable. India's STIP 2020 document coverage of the accessibility of academic resources through 'One nation one subscription' is a unique initiative considering the policies in place in the other two countries. The formulation of the STIP 2020 document, which involved discussion across stakeholders before the development of a national level policy, serves as an example of inclusivity. Brazil's

scientific community coming together and forming the BPBES could lead a way for scientific communities in other nations to innovate measures to raise concerns over ecological issues and other critical issues. The innovation funding and the formation of the National Advisory Council for Innovation is a crucial step towards achieving holistic science policy with a strong scientific and policymaking interface.

## Policy Recommendations

The paper provides a thorough insight into the science and technology policy development in India along with developing countries such as Brazil and South Africa. A policy analysis paper without policy recommendations would not be able to provide learning for future policy reform. The following is a set of recommendations that might be beneficial for the betterment of science and policy development in the Indian context:

- The initial brains of the science-policy saw it as a tool to eradicate poverty, insanitation, and rural challenges. However, the Global Hunger Index released by Concern Worldwide and Welthungerhilfe ranked India at 101 out of 116 countries in the year 2021(Concern worldwide and welthungerhilfe 2021).While scientific developments have taken place, the majority of the country's population is still in the grip of poverty, hunger, and sanitation concerns. The rural community contributes towards approximately 65 percent of the population with agriculture as the major source of subsistence. Focusing on the use of technology in improving food production, its storage, and its marketing can help the farmers, the rural community, and the public. The science and technology policy should consult with departments such as the FICCI (Federation of Indian Chambers of Commerce and Industry) and the Ministry of Agriculture to engage in collaborative initiatives(FAO2002).Working in silos is not productive and inter-sector engagement should be pursued.
- Indigenous technology needs to be recognized in the legal and formal sectors. They serve as an important regional form of knowledge systems. The entrepreneurial engagements that the 2020 STIP policy mentions with regards to the promotion of indigenous knowledge systems and technologies should centralize the value of being human in their approach. They should strive to create livelihoods, empower the vulnerable to harness new technologies, and synergize economic, environmental, and social securities4.
- The assessment of the 2020 STIP policy in terms of its evaluation and implementation is very important and is rightfully given due importance in the policy document. There could be a specific independent body that communicates with the various stakeholders in preparing an assessment report. This has proved to be useful in the Brazilian context where the Brazilian Platform on Biodiversity and Ecosystem Services (BPBES) is an independent body that communicates with various stakeholders of the science policy and prepares an assessment report. It has prepared a few reports such as the Biodiversity and Climate Change special report. It has proven to be an important linkage between the various stakeholders(Scarano et al. 2019). Similar linkages could be forged in the Indian context to improve the evaluatory capacity of the body as well as collaboration among the stakeholders.
- The policy does not mention the pressing issue of brain drain where thousands of young students and scholars have approached foreign universities and settled abroad. There should be measures to engage in government-to-government agreements such as the one in South Africa where they bring in Cuban doctors to improve their health systems. Initiatives should be taken by the government to reduce the human drain from our country (OECD n.d).
- The Indian scientific community could come up with metrics such as the TAI that measure the outcome of a policy. This could be done across different states and providing incentives for high-achieving states may in turn prove beneficial for the overall development of the state and the country.



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# *Regulating India's Coal Sector: Lessons for the Future, from the Past*

*JEL Codes- Regulated Industries and Administrative Law K23, Regulation and Industrial Policy L50*

***Shivjeet Parthasarathy***

***Abstract***

*This essay will examine the desirability of establishing a regulator for the coal sector, and demonstrate its essentiality. The argument is centrally premised on the Government's policy towards the coal sector, and how these policies are poised to turn the sector into the biggest contributor to India's 5 trillion USD economic goal. With such lofty ambitions, it becomes imperative to ensure that there is an independent regulator, who can steer the sector into efficiency while balancing competing interests. Analysing the need for a coal-sector regulator becomes all the more important when considering how the history of the sector has been coloured with concerns of inefficiency, scams, human rights abuses, and environmental concerns. This paper will look at the historical context of the sector's operation in India and the current policies, evaluate the efficiency of the sector by looking at the policy for allotments of coal blocks and the surrounding litigation, and attempts to chart out a way forward.*

***Keywords- Coal Sector, Regulation, Nationalisation, Privatisation***

In 2020, the Indian Government promulgated a policy wherein it would exit completely from sectors it deemed to be 'non-strategic' and leave these in the hands of private players. Even in the 'strategic' sectors, it has chosen to reduce the number of state enterprises to allow more private players to operate (Gupta and Nair 2020). Such a move harks back to the bifurcation of public sectors into 'strategic' and 'non-strategic', and divestment from notified 'non-strategic' sectors as had been done in the Budgets of 1998-1999 and 1999-2000 respectively[30]. The move is said to be the most ambitious move since the Vajpayee government's similar attempt of disinvestment back in the 2000s (Gupta and Nair 2020). The aim of this move is to boost efficiency in these sectors, and to channel these investments into social and development agendas. One such sector that the Indian state has deemed to be 'strategic' is the coal sector. The state has adopted a very gung-ho approach to the coal sector, deeming it crucial to India's target of a 5 trillion USD economy. State-run and private firms are expected to invest 4 trillion INR in the areas of surface coal gasification, new mining plans and cleaner coal projects (Bhaskar 2021). Given this bullish approach to the coal sector and the incremental approach towards privatisation, the time seems ripe for the establishment of a regulator to govern the coal sector. This paper argues for the same, and notes that it is time an independent regulator was established in order to act as a check on activities in the coal sector. Historically, the coal sector has been marred by inefficiency, opacity in the allocation of coal fields, environmental degradation, opacity in the rehabilitation of affected communities, and human rights abuses. Establishing a regulator can help set certain standards for the operation of coal mines which can help reduce the economic and social harms that their operation results in (Baldwin, Cave and Lodge 2012, 15-23).

Regulation theorists posit various factors which are conducive to the facilitation of a regulator. Hancher and Moran note that there can be various factors that lead to the rise of regulation namely, national, political and legal contexts, historical timings, and the character of the markets (Hancher and Moran 1989, 271). Majone states that it is the goal of bringing in efficiency by correcting market failure, informational asymmetry and negative externalities that leads to the creation of a regulatory state, and privatization can in fact strengthen the regulatory capacity of the state (Majone 1994, 79). The merits of these arguments are manifested in the coal sector in India, and it is these factors which have been conducive to the development of the sector as it moved from a nationalised setup to a privatised one. However, if the full potential of the sector is to be realised, a stable regulator is the need of the hour. This paper will focus on the historical context of the coal sector in India, look at the concerns of efficiency and the opaque methods of allotment that have plagued the sector, and then plot a way forward for India to truly take advantage of its coal deposits.

## Historical context of coal in India

In the period post Independence up until 1970, coal mining and production in India were performed by both private players and government undertakings such as the Singareni Collieries Company Limited (SCCL) and the National Coal Development Corporation (NCDC) in India[31]. However, due to concerns of unplanned growth, shortage of coal on account of having to cater to the needs of the growing steel and iron sectors, and unscientific mining and exploratory techniques, the result was the nationalisation of private players in the coal sector (Nayak 2014, 2). This was first done in a phased manner by taking over Coking Coal and Coal Mines, and then subsequently by the nationalisation of coal mines[32]. Privatised coal mines came under the umbrella of the Bharat Coking Coal Ltd. (BCCL) and the NCDC subsidiaries of the Coal Mines Authority Ltd. (CMAL) was formed in 1973. The mandate of this nationalisation project was to reorganise and restructure coal mines to ensure that there was a rationalised, coordinated, and

[30] *A historical overview of the Past Disinvestment Policies enacted in India can be found on the Department of Investment and Public Asset Management's (DIPAM) website. <https://dipam.gov.in/past-disinvestment-policy>*
[31] *A historical overview of the history of coal and its nationalization in India can be found on the Ministry of Coal's website. < https://coal.gov.in/en/about-us/history-background>*
[32] *The Coking Coal Mines (Emergency Provisions) Act 1971; Coal Mines (Taking Over of Management) Act 1973.*



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scientific utilisation and development of coal resources in line with what was required for the development of the country[33]. By transferring the ownership of the coal sector to the Indian state, it was hoped that there would be better utilisation of resources to protect the interests of both the coal industry itself and ancillary industries such as the steel and iron industry. In addition to this mandate, it was also hoped that nationalisation would help serve the common good of the development of the nation.

Coal was conferred with a statutory monopoly and brought under the umbrella of Coal India Limited (CIL), an entity spawned out of the CMAL in 1975. CIL would have exclusive rights to perform exploration, prospect, mine, and produce coal. Relevance to Majone's work can be found in attempting to understand the process of nationalisation of coal in India. Majone notes that the rationale for public ownership of utilities is to ensure economic development, employment opportunities, regional income distribution and technical improvements (Majone 1994, 79).

The justification for nationalisation also fell under these broad themes as Kumar notes (Kumar 1981, 824). The private industry was unable to keep up with the demands of the metallurgical industry for coking coal, and it was believed that only the government could 'properly exploit' the resource to serve the common good under Article 39(b) of the Indian Constitution[34]. The mismanagement of employees' wages as well as violations of additional safety standards forced the government to step in to resolve these issues. Lastly, it was also felt that the private sector would not make the requisite investments on its own for output expansion, and would require substantial public funding for the same. It seemed more prudent for the government to take control of the sector and thus ensure better utilisation of resources, a stronger watch over safety and labour matters, and generation of the requisite investments to boost productivity in the sector. This move was also in line with Sah and Daintith's argument of explicit constraints on regulatory arrangements (Sah and Daintith 1993, 468). This argument seemed well justified, as after nationalisation, output from the sector grew from 78 million tons of coal in 1974–75 to 230 million tons in 1995–96 (Sengupta 1999, M25).

However, despite the leap in production, nationalisation brought along with it other inefficiencies that were far below international industry standards. Output quality, movements in productivity, and mining techniques were some of the indicators on which India was not on par with the rest of the world, and it meant that the experiment with nationalisation was turning out to be a failure. Thus began the move towards disinvestment and the liberalisation of the coal sector.

The larger economic liberalisation of the 1990s included the coal sector as well. The first set of reforms came in 1992. The sector was opened up to allow private players, but only in captive mines of end-using industries such as steel, power and cement. There was a decline in the growth rate where from 1992–1996, it clocked in at 4 percent per annum compared to the 6 percent per annum rate during the nationalised years. This was due to a decline in output from 45.36 million tons in 1992–1993 to 40.10 million in 1995–1996 (Sengupta 1999, M26). Consequently, there were high levels of coal being imported despite India having over 200 billion tons in reserves at the time. The reforms were not going according to plan and soon the gears were shifted.

Under the aegis of the Planning Commission, a Committee on Integrated Coal Policy was established by the government in 1995 (Sengupta 1999, M27). The report submitted by the Committee had the following recommendations[35]:

[33] *The Coking Coal Mines (Nationalisation) Act 1972; The Coal Mines (Nationalisation) Act 1973.*
[34] *The Constitution of India 1950, art. 39(b).*
[35] *Report of the Committee on Integrated Coal Policy, Planning Commission, 1996.*

- Open up mining to private investors not only for captive use but also for sale.
- Foreign equity being brought in would receive automatic approval if the foreign equity was up to 50 percent. Amounts higher than that would require requisite clearance by the Foreign Investment Promotion Board and the involvement of the Registrar of Companies.
- Permit foreign investors to set up 100 percent subsidiaries to undertake mining and exploratory ventures.
- Install a competitive bidding mechanism for coal and lignite blocks to determine mining activities.

Given that one of the premises of establishing a regulatory state is the inefficiency of the state in providing certain goods and utilities, liberalisation and allowing private actors entry into the sector seemed like an opportune moment for the establishment of an independent regulator within the sector. As Hancher and Moran have also argued, national timing and political outlook can create a conducive environment for regulatory activity (Hancher and Moran 1989, 279–80). The same can be viewed in the context of the coal sector in India. The liberalization period allowed private players to enter the market and this forced independent regulatory bodies to govern economic activity from an arm's length rather than have the government be directly involved in the activity itself. Moreover, given that liberalization was in line with the kinds of economic policies being adopted by the rest of the world at the time, the manifestation of Hancher and Moran's argument can be seen once again in the restructuring of the Indian economy. Unfortunately, despite there being a very conducive environment created to establish a regulator in the coal sector, it remained uncapitalised. .

Moving ahead in time to the present day, a regulator still has not been established. The closest attempt to establish a regulator was in the form of the Coal Regulatory Authorities Bill 2013 (hereinafter 'the Bill') laid in the Lok Sabha by the Minister of Coal. Unfortunately, the Bill lapsed, highlighting yet another missed opportunity. The aim of the Bill was to establish a regulatory authority that would oversee and conserve resources in the coal sector, protect the interests of coal consumers and producers, and perform any ancillary functions related to the coal sector[36]. Its functions would be to specify methods of testing for quality of coal, monitor and enforce mine closure in accordance with the mine closure plan, regulate standards of operational efficiency except for mine safety, specify the principles of pricing coal and its by-products, and advise the Central Government in the formulations of various related policies[37]. The Regulator also allowed for dispute resolution[38], as well as for appeals at the Appellate Tribunals for Electricity[39].

The present push to further liberalise the sector presents another opportune moment for the establishment of a regulator. Leaving operations within the coal sector to an unregulated free market might not lead to the desired outcomes of efficiency that the government seeks to achieve by opening up the sector. Moreover, given that the sector has already been rocked by the 2012 scandal concerning opacity in allocations (which will be looked at in the following section), it is all the more important to have an independent oversight mechanism in place to prevent market failures.

[36] *Coal Regulatory Authorities Bill 2013.*
[37] *Coal Regulatory Authorities Bill 2013, s 18.*
[38] *Coal Regulatory Authorities Bill 2013, s 20.*
[39] *Coal Regulatory Authorities Bill 2013, s 21.*



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## Analyzing the opacity of coal mine allocations

The allocation of coal mines has historically been such that non-arbitrary, just and reasonable methods employed to allocate resources as long as they are in the ambit of public good and public interest, have been constitutionally acceptable. Despite the Mines and Minerals (Development and Regulation) Act outlining that the process of allotment has to be done through auction[40], judicial decisions have held that the government might dispense with the need to have an auction and can directly work with a private player who approaches the government.

In Kasturi Lal Lakshmi Reddy v. State of J&K, the petitioners argued that the state of Jammu and Kashmir did not advertise for inviting offers and created a monopoly in favour of the company who was allotted the resin extraction blaze. The Supreme Court observed that it was discretionary for the state government to advertise for inviting offers, but it would not breach constitutional or other legal obligations if it were to directly negotiate and agree to provide resources to a party approaching it to set up an industry[41]. However, the Court also qualified that state action had to be within the confines of Articles 14 and 19, and any arbitrary and unreasonable actions or actions contrary to public interest would invalidate such state action. These principles of non-arbitrariness, reasonability and larger public interest have been the guiding hand for the Supreme Court to decide that as long as there exists a rational basis that is not mere convenience for departing from fixed principles of public tenders and auctions, the government may do away with these mechanisms in its pursuit of socio-economic goals[42]. However, 'pursuit of socio-economic goals' is a very wide ambit, and doing away with public auctions in favor of closed-door transactions are sure to allow rent-seeking behaviour to occur. The fact that India has seen scams relating to allotment of resources is an indictment of the same.

After the 2G Scam and the Coal Allocation Scam (also referred to in common parlance as 'Coalgate'), urgent reviews of the allocation of resources had to be done. Through a special Presidential Reference under Article 143, the Supreme Court analyzed the constitutionality of auctions and whether they were the only acceptable method of allotting resources. The Court held that while auctions were not the only permissible means, it should not be interpreted to mean that resources cannot be allotted through auctions. It observed that 'an auction as a constitutional mandate would distort other constitutional principles such as those enshrined in Article 39(b), that ownership and control of resources be so distributed to serve the common good.'[43] The effect of this observation continues to tilt the position towards allowing the Indian state to directly provide allowances to parties who approach the state, with the belief that such a position of direct allotment would further the interests of Article 39(b). However, this would only have the opposite effect. In addition to being opaque, direct allotments might not really be expedient to the socio-economic objectives of the state, and might incentivize rent-seeking behavior by companies and reduce public confidence in governance and state capacity. The Supreme Court's cancellation in 2014 of the allotments of 204 coal blocks which had been allotted since 1993 given that 'there was no fair and transparent procedures, resulting in the unfair distribution of national wealth' is a scathing indictment of the manner in which rent-seeking behavior can manifest itself, and why allowing the state to directly contract with parties is not a feasible idea[44].

As Gupta and Goyal argue, the lack of specified criteria for allocations have resulted in the creation of a festering inefficiency within the space (Gupta and Goyal 2018, 14–17). Even after the government's damage control mechanisms to revamp allotment to private and public

[40] *Mines and Minerals (Regulation and Development) Act, s 11A.*
[41] *Kasturi Lal Lakshmi Reddy v State of J&K, 1980 4 SCC 1, [22].*
[42] *See Sachidanand Pandey v. State of W.B., (1987) 2 SCC 295 [40]; T.M. Hassan Rawther v. Kerala Financial Corpn., (1988) 1 SCC 166; Netai Bag v. State of W.B., (2000) 8 SCC 262; 5M&T Consultants v. S.Y. Nawab, (2003) 8 SCC 100.*
[43] *Natural Resources Allocation, In re, Special Reference No. 1 of 2012, (2012) 10 SCC 1, [129].*
[44] *Manohar Lal Sharma v. Principal Secy., (2014) 9 SCC 516 [163].*

companies, there are still concerns regarding the efficacy of such moves. The auctions could not be considered a success as multiple blocks had to be withdrawn due to a lack of qualified bidders (multiple bids were withdrawn and many blocks currently do not have clearances), and the direct allotments to public companies allowed for backdoor privatisation and further whittled down protections in the public interest[45]. Allocations, if performed in a more transparent manner keeping in mind defined criteria, can be far more efficient and can further the common good.

Establishing a regulatory authority would help in laying down definite standards that ought to be followed and can definitely help in providing a level playing field for operators. It can also ensure that natural resources are allotted in ways that are in keeping with the Constitutional Scheme of Article 39(b).

## Establishing a regulator: the way forward

The coal sector is in dire need of a regulator for many of the complex processes involved in the activities of the sector. Leaving it in the hands of the free market might not lead to the desired competition and will not take into account the social costs of coal mining. Currently, the output of the sector has been poor, for despite having the fourth-largest reserves in the world, nearly 250 million tons of coal are imported into India. Many unscientific exploratory and mining practices are adopted by companies, and there have been concerns at the creation of natural monopolies in the past, due to the quality of coal produced and prices for the end results varying across different grades of coal. With larger participation of private actors, these concerns are greatly exacerbated in the absence of a regulatory framework. There is also the need to clearly define and outline the allotment process, as that has been a historical sore point. Lastly, the impacts of coal mining are widespread: there are concerns of emissions and toxic gases, worker safety, and concerns of lack of rehabilitation for people displaced from the land under which coal blocks lie.

A regulatory regime would be greatly beneficial if it outlines certain parameters. Such a scheme could draw on existing regulatory regimes such as those in the telecommunications, electricity, and oil and natural gas sectors. Firstly, relating to allotments, the scheme should specify minimum technical criteria required for players to be eligible to participate in the auctioning of coal blocks. There also ought to be curbs on direct allotment to government companies due to reduced government participation. Apart from technical criteria, keeping in mind the large amounts of displacements, the regulator ought to require that plans for rehabilitation are put into place with evidence that rehabilitation will occur at the earliest rather than it being an empty promise. There also ought to be specified safety and quality standards (such as washing of coal), for if it is to be sold on the open market, it would mean more use of coal and an increase in carbon emissions. Ensuring these minimum quality standards would be beneficial to the environment and improve the quality of life in the long run.

Structurally, keeping the regulator independent of ministerial or governmental control allows the requisite autonomy for functioning and prevents regulatory capture from within the government (Sengupta 1999, M30; Stigler 1971, 3). This does not mean an abdication of governmental oversight and giving the regulator unbridled power. The statute that establishes the regulatory body must contain a clause that mandates the laying of regulation before Parliament, which will act as a check on the power of the regulator (Massey 2018, 111-13)[46].

However, it would be inaccurate to suggest that no regulation is taking place within the sector. This is not the argument the essay seeks to make, rather it is the establishment of an independent regulatory body that is required. Regulation can be done either through

[45] *Coal Mines (Special Provisions) Rules 2014, Rule 11 (10).*

[46] *Within the realm of administrative law and delegated legislation, every delegate is subjected to the control and authority of its principal and the delegate's actions can be modified or cancelled at the behest of the principal. The principal is the Parliament, and the control over the regulator's functions is done by laying the created regulations before Parliament. Such mechanisms go towards ensuring that the legislature does not abdicate essential legislative functions and upholds the core tenets of separation of powers and the rule of law.*



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ministerial administrative departments or independent regulators. The coal sector is presently regulated through a few instruments and bodies which perform different regulatory functions.

There exists the Directorate General of Mines Safety (DGMS) and the Coal Controller's Organization (CCO) which come under the Ministry of Labour and Ministry of Coal respectively. The DGMS enforces the Mines Act, 1952 and is entrusted with ensuring adequate safety standards within all mines including coal mines. The CCO is entrusted with enforcing the Colliery Control Rules, 2004 which specify how categorization of coal is to be done, examine the quality of coal, lay down procedures pertaining to the opening of coal mines and their closure[47].

While these organisations do perform important functions pertaining to regulation of the sector, one issue is the large extent of ministerial control over these bodies. It leaves these bodies open to capture, as many of the players governed would have direct access to the ministerial staff and the most powerful players would use their political power to control the entry of new firms or seek relaxed regulation on themselves (Stigler 1971, 5). Therefore, it becomes more desirable to have an independent regulator, situated at an arm's length from state machinery as it introduces layers of separation and can go towards preventing capture by vested interests. In the Indian scheme of things, it becomes all the more important for such a separation as Coalgate and the 2G Scandal exposed the cronyism occurring with ministerial control of the sector. Moreover, it simply becomes more efficient to consolidate and create a single entity that performs multiple functions within the sector, rather than having multiple different entities for each function which can lead to overlapping and encroachment of jurisdiction between these numerous entities (Sengupta 1999, M-30). Accordingly, this would mean that the CCO would need to be disbanded and replaced by a coal regulator, and the DGMS would have to cede jurisdiction over coal mines and coal safety to the newly-established coal regulator in order to prevent capture and to promote efficiency in functioning. Additionally, these changes will prevent a conflict in objectives of fair pricing for the consumers along with setting an optimum rate of return (Sengupta 1999, M-30).

Another important piece in the regulatory framework of coal is the Mines and Minerals (Development and Regulation) Act, 1957 (amended most recently in 2021)[48], and its allied Mines (Auctions) Rules, 2015 (which was again amended most recently in 2022). While these legal instruments do lay down the parameters and standards for auctions of coal, they are carried out by the government directly and once again create conditions that favour cronyism[49]. Having an independent regulator would create a much-needed separation, and prevent such capture of ministerial staff.

When looking at the trajectory of the sector from nationalization to the current day, it is puzzling why a regulator has not been established yet. There have been demands for a regulator at various points in time, and yet the times when the sector was conducive to the same have not been taken advantage of properly. Perhaps it was hoped that the existing set-up would be capable enough to regulate the sector without the need for an independent regulator. However, this has not been the case. The ramifications of this have been seen in the various scams that have crippled the economy, unchecked practices of mining which have not yielded the expected output, and many social externalities by way of pollution and displacements. The frequent amendments to many legislations and rules of the sector also indicate that a scattered, piecemeal approach is being adopted in the hope that it would be sufficient. However, if India is to truly harness the power of being one of the largest producers of coal, it must learn from its past mistakes and establish a regulator at the earliest, lest past mistakes be exacerbated more than they already are in the present day.

[47] *The Colliery Control Rules, 2004.*

[48] *Mines and Minerals (Development and Regulation) Act, 1957.*

[49] *Mines (Auctions) Rules, 2015.*

## Acknowledgement:

I am a 5th year student of Jindal Global Law School. I am grateful for the conversations and feedback given by Prof. Adithya Chintapanti, in whose elective course this paper saw its genesis. My sincerest gratitude flows to my parents, who have always encouraged and supported me in all my endeavors. I would also like to thank the editorial team for their meticulous reviews and comments, which have helped shape my writing. Any errors and oversights are solely mine. - Shivjeet Parthasarathy



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# *Brundtland Commission: A Comparative Analysis of the Energy Gap between India and China*

***Varunesh Singh***

***Abstract***

*Both the India and China have set renewable energy targets to be achieved by 2030 and 2060 respectively as India has refused the 2060 zero emission targets. The countries have adopted different initiatives such as implementation of targeted policies for enhancing investment in the development of renewable energy plants. However, India is still facing issues in achieving its desired energy targets due to the absence of a proper policy framework and other significant issues including financial constraints and a lack of manpower training and skills development.*

*The literature review has provided clear details of the progress of India and China in achieving their targets as well as the challenges they are facing for the same. The methodology section looks at the effectiveness of selecting secondary data. This is followed by an analysis approach. This provides an overview of how these methods have been helpful for the collection of reliable information regarding green-energy initiatives in India and China. An analysis is also provided on how different renewable energy policies are guiding India and China to achieve their energy targets and the ways in which different issues are becoming obstacles to achieving desired growth. The conclusion provides suggestions for addressing the challenges faced by India and China in achieving their energy targets.*

***Keywords- Carbon Trading Scheme, Sustainable development, Energy efficiency, GDP (gross domestic product), fuel consumption, CAGR, NAPCC,***





## Introduction

### *Overview of the context*

China and India are the largest polluters across the world as these countries account for a big portion of the total GHG emissions. India emits 7.1 percent of the global emissions and per capita emissions of India are about 2.47 Tco2e (Nandi, 2021). In the year 2019, the per capita emission of China reached 10.1 tons (Larsen et al., 2021). The huge population growth in these two countries is intensifying this issue (BBC, 2021).

This study is focused on determining the possibility of China and India achieving their renewable-energy targets. India has set a 2030 Renewable energy target for reducing GHG emissions to a huge extent by 45 percent. However, the Indian government's continued investment in the development of the non-renewable energy sector has led to no significant improvement in achieving this target. As shown in the figure below, 138 GW of renewable energy has been generated in India in 2021, whereas the target is to achieve 175 GW (Energy.economictimes, 2021).

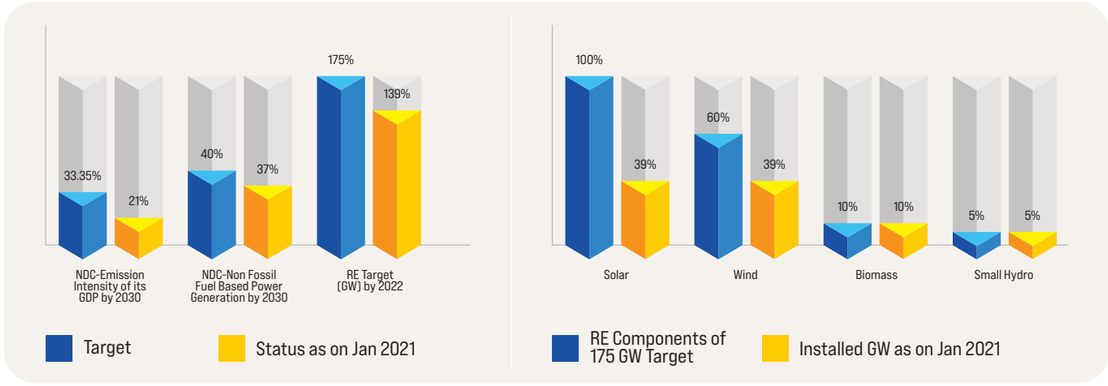


*Figure 1: Renewable energy capacity (Source: Energy.economictimes, 2021)*

Different strategies have been adopted in China for achieving renewable energy targets by reducing GHG emissions. It has set a net-zero emission target to be achieved by 2060. However, China too is facing significant issues in achieving its targets as a large portion of its energy comes from non-renewable sources. The Chinese government also continues to invest in the development of new coal plants to ensure economic development (Energy.economictimes, 2021). Figure 1.2 shows that the gaps between current and projected wind and solar energy targets in China are huge; hence, it will take considerable effort for China to achieve its projected target (Carbonbrief.org, 2020).

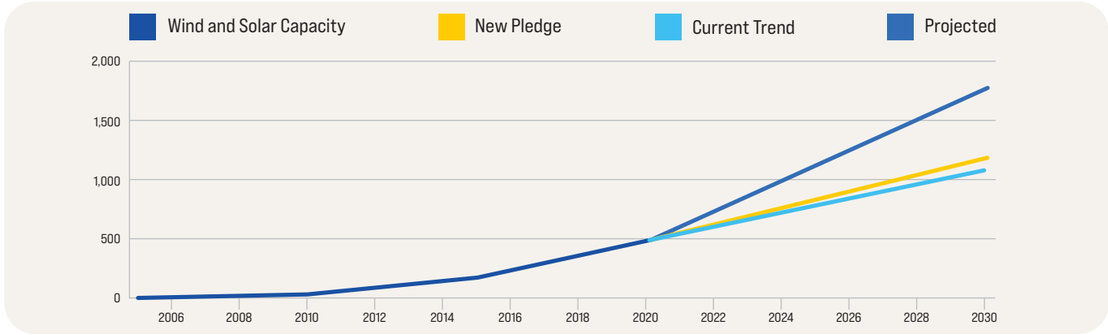


*Figure 2: Differences in projected and current capacity-target in China (Source: Carbonbrief.org, 2020)*

In India and China, the huge growth of industries and population are leading to a corresponding demand for energy that will increase significantly by 2025. Analyzing the manner in which the two countries are focusing on the renewable energy sector and attempting to reduce GHG emissions will prove useful.

***The Brundtland Commission*** has been given the responsibility of proposing effective long-term solutions to enhance opportunities for countries to ensure sustainable development (Britannica, 2022). The report published by the commission on renewable energy has provided significant insight into the role of population and economy of countries such as China and India in the development of sustainable energy. By providing factual and numeric data, the report has helped in gaining a proper understanding of the ways in which both countries are trying to reduce their emissions and achieve the renewable energy targets set by them by signing the Paris Agreement.

## 2. Discussion with the alignment of literature

Concept of sustainable development through the use of renewable energy in China and India Low per capita income is fairly predominant in both India and China. Rising poverty as well as unemployment in these countries have further increased pressure on potential environmental resources, as economic activities in both countries rely directly upon those sources (Sustainabledevelopment.un.org, 2021), and the deepening environmental crisis can be a potential threat to the national securities because it can result in a humanitarian crisis, scarcity of water, political instability, and civil war in respective countries.

The three crises of environment, energy, and development are interlocked as one large global crisis (Sustainabledevelopment.un.org, 2021). The current global economy of 13 trillion USD is projected to grow 5-10 times its current size in the next 50 years. Industrial growth and production have further reflected as well as presaged a profound impact on the biosphere as global investment in transport, industries, houses as well as farms is increased (UNDP, 2010).

Initiatives adopted by India and China in achieving their energy targets and the challenges faced

India has set certain renewable energy targets and has aimed at the achievement of these targets through constant focus on generating a substantial portion of electricity from renewable sources including wind and solar energy. It is essential to note that out of India's 3119 different towns as well as cities, only 209 contain partial sewage treatment plants and only 8 of them contain full form of sewage treatment facilities. India's largest river, the Ganges, passes through 114 cities and 50,000 inhabitants' sewage or untreated sewage is dumped directly into its waters on a daily basis (Sustainabledevelopment.un.org, 2021). Additionally, coal and Dichloro-Diphenyl-Trichloroethane (DDT) which factories, paper mills, tanneries, fertilizer as well as petrochemical complexes and rubber industries depend upon the river to get rid of their potential wastes.

On the contrary, Chinese industries utilize coal in outdated boilers as well as furnaces, which are situated in nearly 20 cities in China. This contributes to a high level of air pollution and causes major diseases such as lung cancer. In this context, it is significant to note that mortality on account of lung cancer in Chinese cities increases the mortality rate of the country by 4 to 7 times . In general, urban growth in India has resulted in the development of a solid as well as a diversified economic base for supporting the building of housing, employment, as well as infrastructure (Sneddon et al. 2006).





As cited by Zhou et al. (2018), the demand for electricity in China has increased significantly due to the significant increase in the population and the GDP of the country. The population in the renewable energy sector of this country has increased rapidly in recent years and the considerable mobility of human resources in this sector has always been a huge contributor in the development of the renewable energy sector of China. India has signed the Paris Climate agreement as per which it has set an energy target of reducing the use of fossil fuels by a significant percentage within 2030 as it has refused the 2060 zero emission targets. By 2030, India aims to generate a substantial portion of its electricity from renewable energy sources such as wind and solar energy.

The impact of China's economic transition on sustainable development of the economy of this country

The economic development and transition of the economy of China have influenced the growth of renewable energy sectors. China has been making significant progress in terms of reaching its climate goals and targets. While India has been on track towards exceeding its renewable energy goals for 2022, with the acceleration of solar as well as wind installations, China has been efficient in terms of advancing its 2030 targets along with goals. China has been effective in terms of making more than 40 percent progress towards its potential emission intensity as well as clean energy targets and forest stock-volume (Mabel and Fernandez, 2008). India has been maintaining an annual rate of economic development of nearly 6.8 percent while on the other hand China has been efficient in terms of illustrating a 7.1 percent rate of annual economic growth as well as development, which is responsible for sustaining the largest population in the global context.

### *Literature gap*

It is important to note that this research has aligned suitable literature towards enhancing the research outcomes. However, due to the unavailability of proper sources on this research topic, a potential gap emerges while implementing the literature in the research context. This allows for upcoming research on similar contexts to identify any prevailing literature gap and work towards bridging the gap for ensuring better context delivery to the research audience.

### *Philosophy of the study*

An optimal research philosophy helps in the proper identification of the nature of the research by developing research assumptions. Interpretivism philosophy has been employed in this study as it has aided in the interpretation of different information regarding the paths taken by China and India to their renewable energy targets and their current positions regarding the same.

This study has employed a deductive approach for designing proper hypotheses based upon information gathered from various sources. Different variables of population growth, the use of non-renewable energy, and the use of renewable energy have been considered for developing the hypotheses.

### *Design*

A research design provides researchers with an effective framework for identifying proper research methods to ensure error-free results; an exploratory design was chosen for this study. As cited by Camargo et al. (2020), this design can help explore and identify new ideas or concepts that in turn help add new dimensions to a study. This problem has never been studied with this specific research design, and hence, this study has supported proper investigation.

### *Sampling*

The sampling method selection should be suitable for collecting the requisite information in the desired manner. The purposive sampling method has been chosen for this study. As cited by Herawati and Putra (2018), purposive sampling allows researchers to select information sources based upon different criteria. In the present study, the sample was selected based upon criteria such as current trends in renewable energy development and so on.

### *Collection of data*

Secondary data-collection has been considered in thid research for collecting authentic data on the current trends of renewable energy development in India and China. Secondary data has been helpful for reducing significant time in collecting valuable information. Data has been collected from different secondary sources including journal articles, websites, and newspapers online articles and so on. This information has been beneficial for the collection of evidence-based reliable information that has ensured the authenticity of the research outcomes.


*Figure 3: Research Paradigm*

### *Data Analysis*

Thematic data analysis in the current research has been appropriate for framing different themes based upon various concepts regarding opportunities and challenges for India and China in sustainable renewable energy development. It supports the reporting and analysis of different themes for generating meaningful results (Chen et al. 2020). It helped in developing proper arguments in a convenient manner by comparing existing theories with collected information for ensuring the development of proper outcomes. In this research, it has helped in the identification of descriptive themes for effectively analyzing collected information for ensuring the reliability of research outcomes. From the information collected from various sources, the themes have been extracted in the results section for establishing proper relations amongst the variables including the achievement of sustainable energy targets, steps taken by both countries, political aspects and so on.



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## Results and Discussion

### *Results*

China has set its net-zero targets for reducing its dependence on coal and increasing the use of renewable energy by 2060 and has taken numerous steps to significantly curb CO2 and other greenhouse gas emissions by 2060. However, India has not set its net-zero targets yet in spite of taking many initiatives for ensuring sustainable and renewable energy development activities (Kiesecker et al. 2020).

India and China are facing significant challenges in ensuring the achievement of their sustainable energy targets within a given timespan as their energy mix is inefficient. Apart from this, the absence of proper funding and planning, and a lack of social acceptance are other challenges too. Therefore, proper planning at the political level is necessary for addressing these challenges to achieve the net-zero target of China and other renewable-energy targets of India.

It is highly difficult for a largely coal-dependent country such as India to achieve its renewable energy target. However, strategic actions such as the creation of social demand, development of proper infrastructure and so on can be beneficial for ensuring the achievement of India's renewable energy target by 2022 and 2030. However, the achievement of net-zero would require India to stop the development of coal plants or reduce coal-energy production to a significant extent.

Development of robust policies can aid in the achievement of China's renewable energy target. As cited by Shao et al. (2019), the Chinese government needs to take proper action for reinforcing its coal energy-saving and renewable energy development policies by introducing market-oriented policies for meeting energy demands at an industrial level.

In-depth analysis and discussion

### *Theme 1: India and China's initiatives to achieve sustainable energy targets*

India has started investing in renewable energy-sources for meeting the demands of its huge population while ensuring sustainability. For instance, it invests in wind energy as an alternative energy source for satisfying its energy demand. The Indian government is supporting the wind-energy sector by developing innovative schemes and contributing to this industry through financial incentives. For example, the Indian government has come up with the Solar Energy Subsidy scheme and the Development of Solar Park Scheme for encouraging the efficient use of solar energy. The Solar Park Scheme has been launched with the aim of enhancing solar energy production by facilitating the development of standardized infrastructure (Chawla et al. 2020). The Indian government has started providing a subsidy of 30 percent for installing solar panels as per its MNRE Solar subsidy scheme[50].

China is the top environmental pollutant in the world (BBC, 2021). However, the declining population growth is projected to positively influence climate, as there is a chance of a significant reduction in energy demand and hence, a significant reduction in the use of non-renewable energy. However, increasing industrialization and agricultural development are resulting in a huge demand for fossil-fuel energy and other non-renewable energy in China

[50] *According to the MNRE-Solar subsidy-scheme, India wants to increase solar power capacity of the country in order to increase the generation capacity of eco-friendly energy resources and reduce the overall GHG emission percentage in the near future.*

(Sustainabledevelopment.org, 2021). The Chinese government lacks a fully-developed subsidy scheme for renewable energy unlike India; moreover, it has developed a five-year plan to pay special attention to climate change and the scarcity of non-renewable energy due to its high demand.

China's Thirteenth Five Year Plan aims to reduce the consumption of coal significantly by setting renewable energy goals. After the enactment of the renewable energy law in China, several incentive schemes have been introduced for the promotion of renewable-energy development (Li et al. 2019). The plan is meant to ensure that a major portion of the country's electricity would come from renewable non-fossil fuel sources by 2030 for satisfying energy demands in a sustainable way.

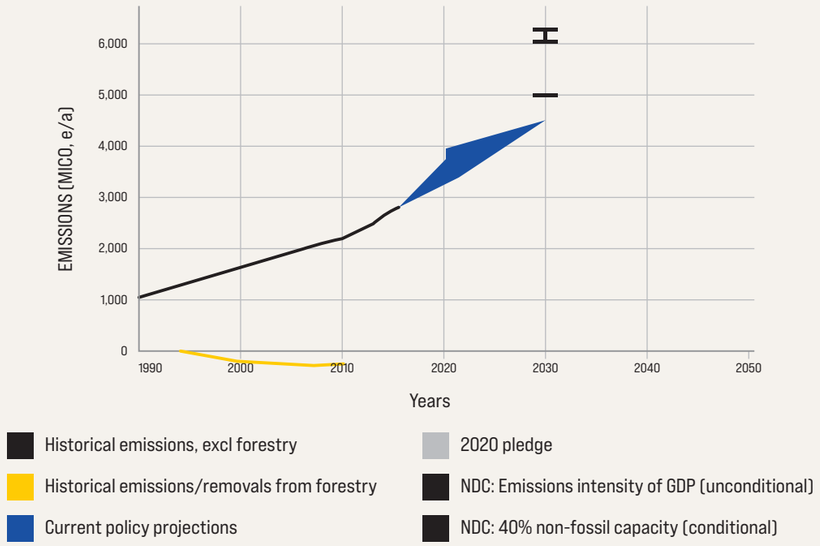


*Figure 4: India's inclining graph of emission and its projected target till 2030 (Source: Nrdc.org, 2019)*

The Indian government has set a wind-capacity target of 60 GW. It is aiming to achieve this target by 2022 (Majid, 2019). India has already added approximately 86 GW in 2019. It has further set a renewable energy target of 450 GW approximately by 2030. Therefore, based on the data, it can be said that India is not too far from sustainably achieving its energy target. The government of China has set a target of reducing dependence on coal significantly by 2030. Besides that, it has set a net-zero target that hasbeen projected to be achieved by 2060. China has also set an energy target of enhancing renewable energy production capacity significantly by 2025 to support its emission goals. As per the recommendations of the Brundtland Commission, to bring energy use of developing countries such as India and China up to the industrialized nation levels by 2025, there will be a requirement for the enhanced use of energy. If this increase is based entirely upon non-renewable energy sources, the world ecosystem will be unable to withstand it (Sustainabledevelopment.org, 2021).

### *Theme 2: Net-zero target and achievement of renewable energy targets*

As mentioned previously, India has aimed at achieving 227 GW of sustainable energy capacity



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by 2022. Based on the desired progress being achieved, the Indian government has further set another target of reducing non-renewable energy dependence by 2027 (Gielen et al. 2019). During the pandemic, policy initiatives taken by the Indian government such asmaking solar-energy plants' Operations and Maintenance (O&M) an essential service and removal of tariff caps on the tenders of solar as well as wind energy generation capacities clearly indicate enhanced support by the Indian government for meeting the enhanced energy demand by intensifying green energy efforts (Economictimes, 2021). Considerable investment in the development of hydro, solar and wind energy has set the goal of 175GW renewable energy capacity.

Although India has rejected net-zero targets, it is making good progress in achieving its short-term energy targets. Strong domestic action largely supports the renewable energy ambition of this country. For example, in 2019, Rajasthan introduced a new solar-policy with the intention to build approximately 50 GW of solar-capacity within the next 5 years. Apart from this, Gujarat, has taken an initiative to enhance its renewable energy-capacity significantly by 2022 through which the state government has agreed not to give new permission to develop new coal-plants (Nrdc.org, 2019). It therefore appears that India is not too far from achieving its energy targets.

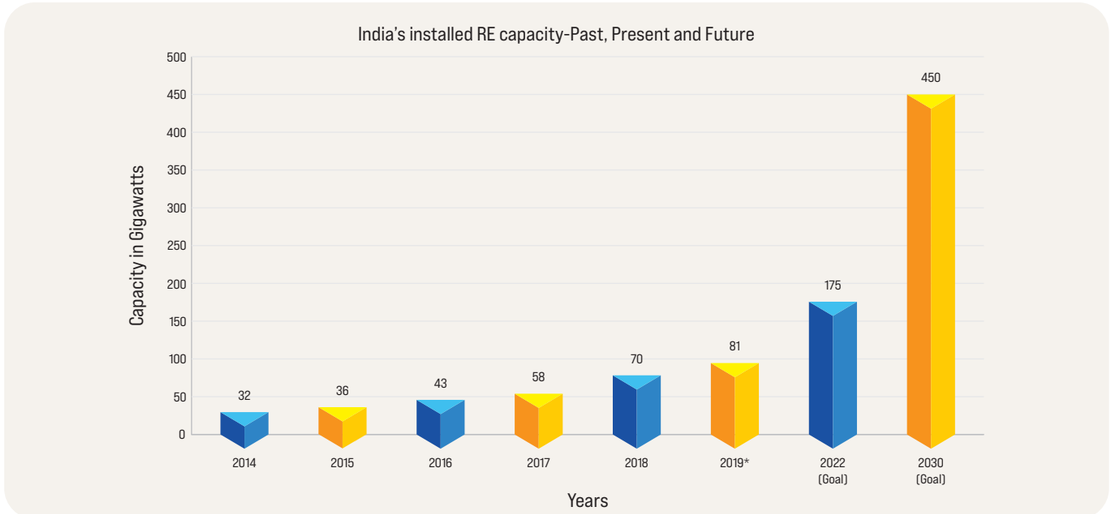


*Figure 5: India's renewable energy targets (Source: Nrdc.org, 2019)*

On the other hand, China has set a clear pathway for building a secure and sustainable energy future. It has aimed to reduce CO2 emissions significantly by 2030 and achieve carbon-neutrality by 2060. Micro-grid technologies, wind-power consumption-technologies, and low-wind power-generation technologies have made huge progress in recent years (Liu, 2019). China already has a solid foundation for growing its renewable energy sector as it has been one of leading developers of renewable energy in the past decades. Total installed renewable energy capacity in China had reached 184 GW in 2018 as it had strengthened both local and national planning systems for facilitating utilisation and development of renewable energy. China has made a considerable investment in the renewable energy sector development by depositing 0.9 percent of its GDP in it. Currently, approximately 23 percent of energy in China

comes from different renewable energy sources. Hence, from this data, it is evident that China has also made significant progress in achieving its energy target until date.

However, it is projected that India would be able to achieve only a certain portion of its 2022 renewable energy target due to several challenges. Even if it were to achieve the 2060 target, it would not achieve the 2022 target as well. According to the Brundtland Commission's recommendations, developing a sustainable and safe energy pathway is vital for ensuring sustainable development. For pursuing sustainable development, population growth and size need to be in symmetry with changes in the productive potential of the ecosystem (Sustainabledevelopment.org, 2021). In India, the population is growing at a rapid pace due to high birth rate and low mortality rate.

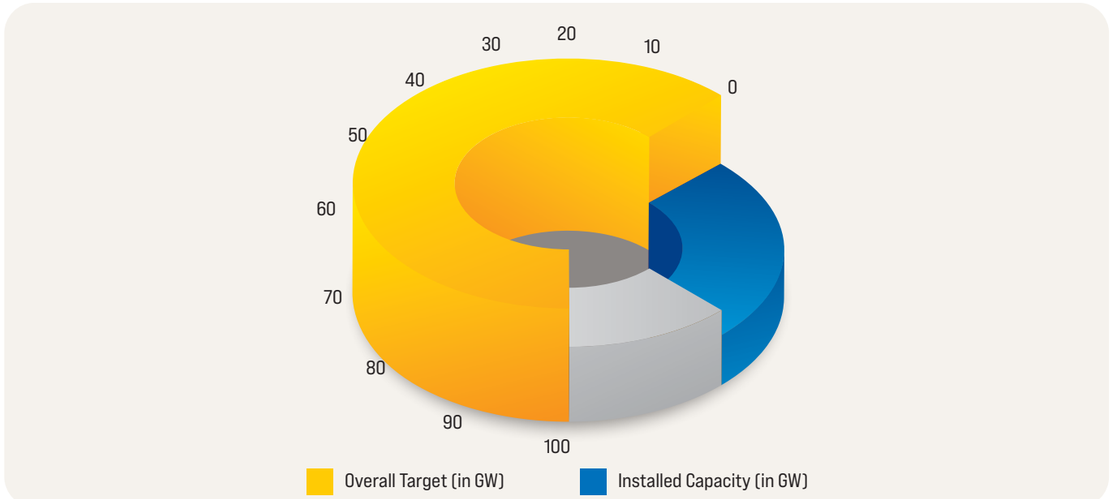


*Figure 6: Proportion of installed capacity and overall target in India (Source: Mnre.gov, 2021)*

Thus, with constant growth in population, the demand for energy is also rising rapidly. With the rise in middle-class economy and urbanization, it is estimated that there will be a 25 percent rise in the total energy demand by the year 2040. Consumption of fossil fuel has also increased in recent years that has further presented significant challenges for achieving sustainable energy targets. Hence, the revolutionization of the energy mix of this country is essential for estimating if it will be able to achieve its renewable energy target. In India, there also exists a lack of social acceptance of renewable energy, presenting a significant challenge towards achieving India's short-term energy goals. Social acceptance of sustainable energy systems is not encouraging in India despite the government's effort in providing huge subsidies for installing solar power in power plants. 7 percent of the urban population is not in favor of implementing renewable energy plants for power generation (Patel et al. 2016). They have opined that this will not provide any major benefit to them. This lack of acceptance is due to poor facilities, poor manpower training, and lack of upgradation of skills, skill shortage, and low level of efficiency in operating these systems. In comparison to China the situation is also not promising. Therefore China is likely to miss its target regarding improvement in renewable energy building capacity. If China reduces the development activities of new coal plants, then the Chinese government will be able to achieve renewable-energy target by 2065-2070 (Yang et al. 2021). China also faces significant difficulties in ensuring desired growth in renewable energy development that is also making it challenging to achieve its net-zero targets.

China is one of the biggest coal consumers in world and many people would lose their jobs in case of closure of non-renewable energy plants. Hence, it presents a significant challenge for the Chinese government which continues to invest in coal energy plants. Besides that, China's GDP is largely dependent upon fossil fuel for which the Chinese government is still investing a huge amount for building new coal plants (The Guardian, 2020). However, as it contributes approximately 28 percent of the total GHG emissions worldwide, it needs to reduce its non-renewable energy use by 90 percent or more to be successful in achieving its net-zero targets by 2060.

| Year | India's Target | China's Target |
|---|---|---|
| **2022** | 175 GW of energy generation from wind and solar energy sources | 58 percent of energy generation from renewable energy sources |
| **2030** | 450 GW of energy generation from wind and solar energy sources | 40 percent of energy generation from nuclear sources |
| **2040** | 50 percent of power generation from solar energy sources | 40 percent of electricity capacity development from non-fossil renewable energy sources |
| **2060** | Rejected 2060 renewable energy target | Zero emission |

*Table 1: Countries' targets in different years*

### *Theme 3: Ways in which India and China can meet their energy goals*

India is facing challenges in achieving its renewable energy target as it lacks proper planning for making non-renewable energy sources popular amongst society and industries. The government needs to focus on the effective promotion of renewable energy for creating social demand by investing significantly in promoting the use of renewable energy. India should also focus on implementing a green growth strategy for promoting sustainable growth of renewable energy to reduce depletion of natural resources and environmental degradation as China has (Economic times, 2020). China has adopted a green finance strategy for the development of its renewable energy as per the Brundtland commission report. Most importantly, China needs to develop a proper sustainable path for renewable energy development for enhancing social acceptance for renewable energy. Apart from this, companies have an issue of non-acceptance depending largely upon non-renewable energy. As shown in above figure, there have been 1.55 increases in GHG even during COVID-19, indicating the Chinese Indian government's efforts to continue with non-renewable energy-production.

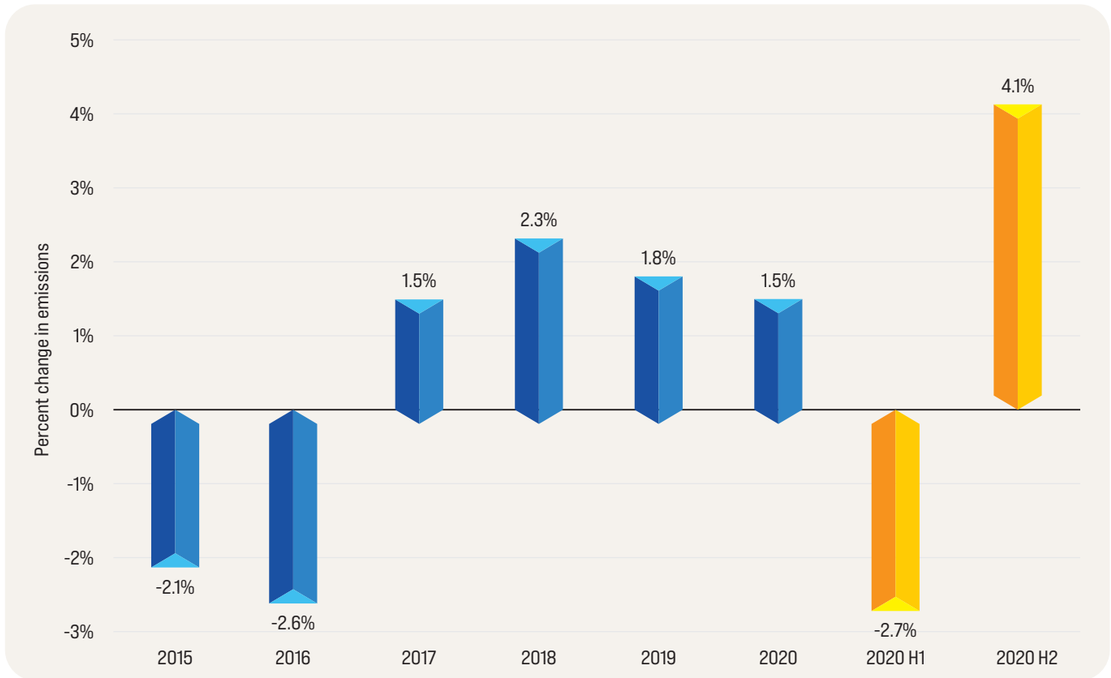


*Figure 7: CHINA: Increase in CO2 emissions by 1.5 percent after recovery of non-renewable energy industries- (Source: Statista, 2021)*

As many people would lose their jobs in case of closure of non-renewable energy production plants, they are reluctant to accept the use of renewable energy sources for meeting energy demands. Hence, the Indian government needs to focus on creating jobs in the renewable energy-sector for ensuring the acceptance of renewable energy amongst society and energy plants (Al-Falahi et al. 2017). However, it is also important to note that the inadequate skills of workers in operating renewable energy-systems are also becoming barriers in the achievement of renewable energy targets by India . Therefore, the fundamental focus needs to be on providing proper training to the workers, who are currently working at non-renewable energy plants, while making them aware of the long-term benefits of renewable energy.

China is facing challenges due to the absence of a robust policy framework for achieving sustainable energy targets. Hence, it is essential to reinforce its existing policies through the development of a robust sustainable strategy framework. It should further focus on designing an effective investment framework for making planned investment in development and research activities, employee training and infrastructure development for promoting its sustainable energy initiatives and implementing them successfully. It should prompt the use of renewable energy not only at the industrial level but also at the domestic level. China has started using nuclear energy, as it is a clean energy source.

However, as per the recommendations of the Brundtland Commission, the use of nuclear energy would only be justifiable if proper solutions for mitigating unresolved risks associated with this are implemented (Sustainabledevelopment.org, 2021). The fundamental objective should be to invest in alternative renewable sources to meet growing demands in a safe and sustainable manner. In order to mitigate financial challenges, the Chinese government will have to facilitate and attract a flow of international capital that would require China to encourage participation of foreign investors in different events (Ft, 2020). This way it will be possible to





achieve energy targets in a sustainable manner while reducing the risks associated with the use of nuclear sources for energy production.

## *Conclusion*

Finally, it can be concluded that India and China are in challenging positions in achieving their energy targets by 2060. The Indian government has adopted various initiatives for sustainably achieving energy targets. In the introduction section, it has been found that India and China have set ambitious goals for developing renewable energy and reducing dependence upon non-renewable energy. However, they are still facing issues in achieving energy-targets. In the literature review of this study, different concepts and theoretical frameworks have been provided to analyse ways in which renewable energy development is challenging and beneficial for reducing detrimental environmental impact while facing various economic challenges. This section has provided a proper understanding of the ways in which renewable energy targets can be achieved to ensure proper reduction of GHG emissions in the environment for addressing climate change issues. India has made significant progress in terms of reducing GHG emissions through the launch of different schemes such as the solar park scheme; however, India also invests significantly in the non-renewable energy sector for economic development.

In the methodology section of this study, ways of generating proper assumptions have been analysed through the selection of proper data-collection and analysis methods. This section has also analysed ways in which interpretivism philosophy has been beneficial for ensuring proper interpretation of data regarding renewable energy development challenges and progress in China and India. Secondary data collection has aided in understanding challenges such as the absence of proper policies, lack of social acceptance and so on that are hindering the development of renewable energy in India and China and the ways in which they are addressing these challenges. It has also been found that India has set short-term targets for reducing its GHG emissions and developing renewable energy. On the other hand, China has set a five-year plan to achieve its long-term renewable energy development targets by 2060. India and China are striving for renewable energy development; however, they are simultaneously developing non-renewable energy plants to meet their huge energy demands. As per the guidelines of the Brundtland Commission's report, inappropriate industrialization should be stopped for curbing excessive demand for developing the economy of India in a sustainable way and achieving its zero-emission target.

### *Limitations, recommendations and future research*

The outcomes of this study will help future researchers to study how renewable energy is being developed for achieving China and India's targets. Researchers will not have to make considerable effort in the collection of authentic information. However, thematic data analysis often raises questions regarding the reliability of research outcomes. Hence, a different data-analysis technique could have been selected.

Renewable energy development in China and India to reduce GHG emissions to a zero target is challenging as both of these countries depend largely upon non-renewable energy to meet their huge demands and develop their economies. Hence, to achieve their sustainable energy targets, the governments of both countries should take proper steps. For instance, the Indian government should focus on implementing its solar-energy schemes effectively through proper promotion of its schemes and benefits. It should also promote household installation of solar plants for reducing GHG emissions as the use of this energy at an industrial level alone might not be beneficial for reducing GHG emissions to zero.

Investment in development and research activities should be considered for determining the

best ways of installing renewable energy systems in a cost-effective manner. Besides that, proper funds for the same should be maintained. The governments of both India and China can collaborate with international investors and local energy plants for ensuring support for promoting renewable energy effectively. It allows upcoming research to bridge any identified research gaps and continue research for ensuring better outcomes of the research contexts.

## Acknowledgement:

I would like to express my gratitude to my mentor Prof. (Dr). Mohan Kumar for guiding me and assisting me on this topic "Brundtland Commission: A comparative analysis of energy gap between India and China". This study has provided me with an in-depth knowledge of the importance of enhancing reliance upon renewable energy sources for ensuring a green world by reducing GHG emissions to a significant extent. I got the opportunity to study China and India's initiatives for reducing GHG emissions, which helped me gain new knowledge regarding the significance of focusing on renewable-energy production for reducing the negative impact on the environment. This study will help me in future to conduct further research on this topic or a topic related to this.



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# *Forests as a Public and Free Good*

*Forests run the risk of getting privatized with the proposed Forest Conservation (Amendment) Act, 2021.*

***Veena Mahor***

***Abstract***

*The need of the hour for any country is to protect and preserve its forest for combating the climate crisis. Although India is nowhere close to achieving its target of ensuring that 33 percent of its geographical area is under forest cover as laid in its National Forest Policy, 1988, it does not appear to be making much effort towards it. The recent proposed amendments in the Forest Conservation Act, 1980 run the risk of making forests a contested market commodity among private players and big corporations like railways and highway authorities. It further runs the risk of deteriorating the status of forests, taking away the element of public good, and putting it in the category of private goods and thus making it excludable and rivalrous.*

***Keywords- Forest Conservation Act, 1980, Public Good, Private Good***





This article critically analyses the recently proposed amendments by the Ministry of Environment, Forest and Climate Change in the Forest Conservation Act, 1980 by applying the economic principles of public and private goods, and establishes constructive critique on how the amendments run the risk of changing the economic character of the forest and making it a private good.

A public good, also called a social good or collective good, is a good that is both non-excludable and non-rivalrous (Oakland, 1987). Forests can be considered a public good because of the benefits they produce such as oxygen, flora-fauna diversity, maintaining the food chain, a carbon sink, water retention, balancing the climate change, protection against hazards like tsunamis (mangrove forest) and many others. Everyone is using these benefits without hampering the usage of the other, thus usage by one does not exclude usage by another and hence it is also non-rivalrous.

It is important to have an understanding of how the recently proposed amendments in the Forest Conservation Act (FCA), 1980 by the Ministry of Environment, Forest and Climate Change of India (MoEFCC, October 2, 2021) can not only deteriorate the status of forests but also run the risk of putting forests in the category of private goods thus making it excludable and rivalrous. The proposed amendments are complex and are designed to provide a cushion to influential agencies, both government and private. The amendment puts the public good component of forests at risk.

The Forest (Conservation) Act (FCA) 1980 was an outcome of the Centre's realization in the 1980s that deforestation causes ecological imbalance and leads to environmental deterioration. The FCA provides for the conservation of forests and matter connected therewith or ancillary or incidental thereto. The Act restricts the powers of the State Government or other authorities to de-reserve forests or use them for non-forest purposes. Under the Act, non-forest purpose means the breaking up or clearing of any forest land or portion thereof for any purpose other than reafforestation (Forest Conservation Act, 1980). A clear definition of forests was not provided in the Act. Until 12 December 1996, forests that were notified under the Indian Forest Act, 1927 or any other local law and managed by the Forest Department were considered forests by the State Governments, Union Territory Administrations, and the Central Government. It was only in 1995 when T.N. Godavarman Thirumulpad approached the Supreme Court of India with a writ petition for protection of forest land in the Nilgiris district of the state of Tamil Nadu that the definition of the word 'forest' changed (Writ Petition (Civil) No. 202/1995, T.N. Godavarman Thirumulpad vs. Union of India and Ors). In response to the petition, the Supreme Court emphasized that the word 'forest' must be understood according to the dictionary meaning of the term irrespective of the nature of the ownership and classification thereof. The Oxford English dictionary meaning of forest says 'any large area covered chiefly with trees and undergrowth' (Hornby, 1995). This verdict brought private lands and land acquired by the Railways, Ministry of Road Transport and Highways, National Highways Authority of India, and many such agencies under the purview of the Act, thereby making it mandatory to seek permission from the Central Government for any non-forestry purpose of the land. Thus, these authorities lost full control of their land.

The consultation paper on proposed amendments to Forest Conservation Act, 1980 (MoEFCC, October 2, 2021) strongly highlights two points: first, private landowners and agencies harbour resentment because they are unable to use their own land, and second, even when they get permission to use their own land they have to arrange for and provide an equivalent land area of non-forest land or pay compensatory levies. Therefore, even when the land is suitable to undertake plantation activities, private landowners and agencies opt to keep it devoid of

vegetation so that it never gets included in the definition of 'forest'. According to the Ministry, this is suppressing a lot of opportunities for forestation (MoEFCC October 2, 2021, Consultation Paper on Proposed Amendments to FCA, 1980). Here, it can be argued and noted that the present private owners of forest lands are looking for avenues to get exclusive property rights over the land so that it can be used for non-forest purposes. If private owners are hunting for such opportunities, why would private owners whose land is still not considered a forest, look forward to growing vegetation on their land? In the present context, private owners understand that land is the most valuable asset one can own and they will not undertake any plantation activities which run the risk of putting their land at stake. If the government truly intends for private owners to take up afforestation activities, it could have tried to provide an incentive to those private owners whose land is not classified as 'forests' yet, to grow vegetation to support timber development and the carbon sink.

Further, the consultation paper on proposed amendments in FCA, 1980 reflects that large-scale plantations are required in all the possible lands outside the government forests for creating additional carbon sinks of 2.5 to 3.0 billion tons of CO2 equivalent by 2030 and reducing the foreign exchange for import of wood, which presently amounts to 45,000 crore INR. The paper also acknowledges the fact that the country has just 24.56 percent of land as forest cover as against the required 33 percent which was the target of the National Forest Policy, 1988 (MoEFCC, October 2, 2021).

Through the proposed amendments, the government is trying to avoid the most contentious part of the Act which is Sub-sections 2(ii) and 2(iii) which provide restrictions on the dereservation of forests or the use of forest land for the non-forest purposes and provide the Central Government with the authority to make decisions on matters of mining and non-forest matters.

The consultation paper on the proposed amendments to the FCA, 1980 favours new technologies such as Extended Reach Drilling (ERD) which enables the exploration and extraction of oil and natural gas by drilling holes deep beneath the forest land without entering it. The Ministry of Environment, Forest and Climate Change in the consultation paper considers this process as 'environment friendly' and claims to not disturb the soil and water aquifers of the forests (MoEFCC, October 2, 2021). However, the Ministry is unable to provide any supporting example or data of instances when the technology was used and scientific evidence of not disturbing the forest's natural resources. The consultation paper also does not talk about any regulatory measures that would be applied to make ERD activities less disturbing to the ecosystem. However, there are ample examples where the companies do not conduct biodiversity assessments and public hearings as mandated by the Environment Impact Assessment (EIA) Notification of 2006 which emphasizes illegal practices and flouting of rules during such explorations and extractions. The recent case of the Assam gas and oil leak (Baghjan gas leak) that took place on 27 May 2020 provides strong evidence of how oil companies flout the laws once they acquire permission for oil exploration and extraction (Karmakar, 2020).

The Ministry also considers that activities like ERD must be kept outside the purview of the Act. It is difficult here to establish criteria according to which certain activities can be exempt from the application of the Act. The Ministry further considers activities such as zoos, safaris, forest training infrastructures as ancillary to the conservation of forest and wildlife and argues that these should not be considered 'non-forest-activity'. In short, the government has argued on behalf of various agencies and has considered justifying the usage of forest land for activities with non-forestry purposes.



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The government through the consultation paper on proposed amendments in FCA, 1980 proposes to allow private owners to construct structures for bonafide purposes including forest protection measures and residential units up to an area of 250 sq meters as a one-time relaxation (MoEFCC, October 2, 2021). It needs to further elaborate on the term 'bonafide purposes by giving a proper definition and examples as the term is presently very arbitrary. This arbitrariness will be used as a loophole by private parties to ensure that trading and exploitation of forest land become easy.

India has lost over 1.6 million hectares of tree cover between 2001 and 2018 according to the non-profit organisation World Resources Institute. This information was established by using datasets collated by the University of Maryland, Google, US Geological Survey, and NASA, besides satellite images (Moudgil Manu, 2019). Forests generate public and free goods for society. Non-rivalry means that one person's consumption of a good does not diminish the ability of another person to consume and benefit from the same good at the same time. Diluting the existing provisions of the FCA will make forest land a tradable market commodity and hence will leave it vulnerable to profiting, manipulations, and exploitations. With this vulnerability, forest lands will move from the hands of one private party to another, at times corporations will buy forest land for private agencies and this will lead to a lot of market distortion. Gradually, it will move to the hands of large private influential players having diplomatic relationships with government officials and politicians. The state would lose control of this trading.

Zoos and safaris in excess disturb the biodiversity of forests and make them vulnerable to anthropogenic activities, especially of the urban populace who do not understand the fragility of forests and biodiversity. With these interventions, the forests will be full of plastic, the most dangerous negative externality of urban entertaining in forests. The disturbed biodiversity will lead to an imbalance in the intricate web of the ecosystem, leading to a deteriorating forest belt. This will lead to poor oxygen production capacity, disturbed food chains, poor carbon sink, and weak protection against climate change and hazards. Thus, the whole character of the forest will be negatively modified from having the capacity to produce larger public goods to producing goods that can be availed of only by those who can pay. Thus, the larger benefits of forests that make them a 'Public Good' will soon be diminished and will be available only to those who can pay.

The demand for forest land will increase congestion and will further push public and free goods towards being private goods. This will change the economic character of forests and forest land. The proposed amendments in the FCA will give exclusive property rights to the private owners of the forest land and the mining companies. They will have open access to forest resources, leading to overconsumption and loss of efficiency over time. By giving exclusive property rights, the government is incentivizing the individuals to apply for the same, which will lead to overexploitation of the resource from a social and ecological perspective. Natural forest resources yield scanty rents (if only economic activities are considered) but have huge potential – ecologically and environmentally, without which lives can be at stake. Humans cannot survive without oxygen, water, and biodiversity.

Stakeholders such as forest-dwellers and tribes residing in the Fifth and Sixth Schedule regions of the country are completely neglected in the consultation paper of proposed amendments in the FCA. As of 2019, out of 4.22 million individual claims under The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, (FRA), 2 million claims are rejected, observed the 2019 Down To Earth report by Sahu and Kukreti (Sahu and Kukreti, 2019). Even after a decade of implementation of FRA and after district-level committees have been formed for easing the process, the lack of progress on this front shows a dearth of political

commitment to it. Although the Act exists, the tribals continue to face difficulties regarding their recognition and receiving land entitlements and rights. This highlights the differential treatment being given to different stakeholders; agencies like railways and private owners receive a preferential form of treatment while forest dwellers and tribals do not. According to Article 14 of the Constitution of India which ensures equality before the law (The Constitution of India, Part III, Fundamental Rights), it is the constitutional obligation of the state to ensure that people are not discriminated against and that its citizens have the benefit of all the laws that protect them. Regarding the granting of land rights, the state is blatantly favouring private owners and corporations.

Existing legislations like the FRA and Panchayats (Extension to Scheduled Areas) Act, 1996 (PESA) empower the Gram Sabha to take decisions on any developmental activities in their region. The proposed amendments in the Forest Conservation (Amendment) Act, 2021 will be directly in conflict with the provisions and processes under the FRA and the PESA as they empower private owners and agencies to easily bypass the gram sabha decisions in the tribal regions. The conflicting situations arising in the region will have unfair consequences for the tribal populace.

In conclusion, the proposed Amendments in the Forest Conservation Act need to be viewed in a larger framework considering the economic, social, ecological, and environmental impact.



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# *Changing How We Elect the President of India*

***OPINION***

***Vinod Vyasulu***

## Introduction

The President of India is the head of state of the Republic of India. The President is the formal head of India's executive, legislature and judiciary and is also the commander-in-chief of the Indian Armed Forces. The government acts in his name. Until the President signs a bill passed by both houses of parliament, it does not become law. The President appoints not only the Chief Justice of India but also the Prime Minister and the members of the council of ministers who advise her. In emergencies, as when there is no clear majority in the Lok Sabha, the President possesses discretionary powers. The President is a symbol of the nation-state; the manner of her election therefore matters. At present, the constitutional procedure is as follows.

### *The Present System*

The electoral college for electing the President consists of the people's elected representatives. Article 54 of the constitution states: 'The President shall be elected by the members of an electoral college consisting of [a] the elected members of both houses of parliament; and [b] the elected members of the legislative assemblies of the states" (Article 54 Constitution of India)

What is the value of an elected member's vote? Article 55, dealing with the manner of election of the President, states: '[1] As far as practicable, there shall be uniformity in the scale of representation of different states in the election of the President. [2] To secure such uniformity among the states inter se as well as parity between the states as a whole and the union, the number of votes which each elected member of parliament and the legislative assembly of each state is entitled to cast at such election shall be determined in the following manner: [a] Every elected member of the legislative assembly of a state shall have as many votes as there are multiples of one thousand in the quotient obtained by dividing the population of the state by the total number of elected members of the assembly. [b] If, after taking the said multiples of one thousand, the remainder is not less than five hundred, then each member's vote in sub-clause [a] shall be further increased by one.[c] Each elected member of either house of parliament shall have such number of votes as may be obtained by dividing the total number of votes as may be obtained by dividing the total number of votes assigned to the members of the legislative assemblies of the states under sub-clauses [a] and [b] by the total number of elected members of both houses of parliament; fractions exceeding one half being counted as one and other fractions being disregarded. [3] The election of the President shall be held in accordance with the system of proportional representation by means of the single transferable vote and the voting at such election shall be by secret ballot.'

All our Presidents, from the first, Dr Rajendra Prasad, to the recently elected Shrimati Droupadi Murmu, have been elected in this manner. That the system can throw up surprises can be seen in the manner in which the official candidate of the Congress Party, Shri N. Sanjiva Reddy, lost the 1969 General Election to a 'rebel' candidate [also from the Congress], Shri V. V. Giri, who won in a runoff. Overall, the system has stood the test of time. Why then should it be changed?

### *The Need for An Amendment*

The 73rd and 74th amendments of the constitution brought in 'local self-governments' in rural and urban areas. India is a 'Union of States'. These two amendments deepened Indian democratic federalism. There is now a third, sub-State tier of representative, constitutional government. In urban areas, there are municipalities and city corporations. In the rural areas, there are district, block and gram panchayats. These 'self-governments' have been regularly elected after the two amendments came into effect in 1992. They are now well established. The federal structure is believed to be part of the basic structure of the constitution that the Supreme Court ruled cannot be amended by parliament. India is today effectively [if not legally] a 'Union of States, Municipalities and Panchayats'. But there has been no corresponding change in Article 54. Should these elected representatives of the people not have a role in electing future Presidents?

If one goes by the spirit of the constitution, elected representatives at all levels of government together constitute the electoral college to elect the President.

It may be argued that there is a difference between State and Union legislators and local government elected representatives. This is true, because the local governments do not have legislative power. But their domain is different. They have an executive role in supervising and ensuring people's input in local planning and implementation. The Constitutional amendment provides an indicative list which is not part of the Seventh Schedule, true, but nevertheless a constitutional responsibility. Just as there is a difference between Members of Parliament and Members of State Assemblies, so with local representatives. Federal structure respects such differences and needs consultation and compromise as part of the normal political process to meet the democratic aspirations of citizens who elect all Members of Parliament and State Assemblies. There is, therefore, no justification for excluding local elected representatives from the electoral college that elects the President. I proceed on this basis.

What follows is meant to stimulate, perhaps provoke, debate.

### *Suggested Amendment 1*

Accordingly, a clause could be added to Article 54. This could read as follows: '[c] the elected members of gram, block and zilla panchayats in rural areas and the elected members of nagar palikas and city corporations in urban areas.'

This would enlarge the electoral college to include all those who represent the people in any sphere of government under the constitution. This is in keeping with the spirit of the principle that the President is elected by the elected representatives of the people in a union like India, which consists of the Union, the States, Municipalities and Corporations in urban areas, and three levels of panchayats in rural areas.

This will ensure that the elected representatives of local self-governments receive their due in terms of constitutional—and perceived—importance. This is particularly important today as these elected representatives feel marginalized and excluded from decision-making in most parts of the country.

This suggested amendment would add to the prestige and authority of the President's Office because of the enlarged base that the electoral college would have. Also, the reforms of the electoral college for the election of the President of India could be a means to politically empower the third tier of governance in India and, along with fiscal devolution to the third tier, strengthen the cutting edge of governance that deals directly with citizens. This would be a democratic deepening of our federal structure. It is therefore of the utmost importance that this be seriously considered at an early date.

### *Suggested Amendment 2*

What should the vote of these elected representatives be worth? How should it be calculated?



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This article [55] too will need to be amended to bring in the elected representatives at the third tier of constitutional government. There are several issues here. From clauses [1] and [2] comes the question of parity of states as a whole with the union. Until now, the states have been given the same parity as the union. This is clear enough even when the number of states has increased, as has happened recently. However, does it follow that this should continue? After the vigorous debate on union-state relations, this is a matter that may perhaps be re-examined. There are several options. The third tier, as being closest to the people and having the largest number of representatives, can be given a higher weight than the union or the states. Or the states can be given a higher weight and the union and third tier an equal weightage. One could think of other formulae. This matter needs widespread serious debate.

This, however, can occur elsewhere. For the moment, we can continue on the basis that this parity will continue.

### *Maintaining Uniformity*

What then should be the weight given to the elected members of panchayats and municipalities? Here too, there can be several options that merit debate.

Should they be considered together across the country, or should the practice of dealing with the rural and urban areas separately continue? The 74th amendment, with the provision of a District Planning Committee, suggests that urban and rural areas could be integrated. For the moment, we can proceed on this basis. Then, perhaps, we can say that the local self-governments together be given the same weightage as each of the other two tiers. In effect, the local governments taken together will have the same weight as the states when taken together, which will have parity with the Union of India.

This may be tantamount to saying that each sphere of federal governance has one-third weight in the electoral college. There are different ways of dealing with this situation. For example, we can determine the value of the vote of each representative at the level of each state, following the formula suggested in Article 55. We can continue the practice of treating urban and rural areas separately. This would preserve some of the unique characteristics of each state—say the size of the gram panchayat, which is small in Uttar Pradesh but large in Kerala.

Or can we think of them as a single 'local government' category by taking the panchayats and nagar palikas in the state together? Or we could add across the country, by adding the panchayats and nagar palikas of all the states together and using the combined population as the denominator. This would ensure a certain degree of uniformity in the value of the vote across the states.

There could be other methods as well. A debate is needed to settle this issue.

Example: Suppose we go by the first method. Then we can say: 'every elected member of a state's local government shall have as many votes as there are multiples of 1000in the quotient obtained by dividing the population of the state by the total number of elected members of the local governments taken together.' We can also add [b] if after taking the said multiples of 1000, the remainder is not less than 500, then the vote of each member referred to in sub-clause [a] shall be further increased by one.

Then, to calculate the value of the votes of MLAs and MLCs who have been elected, 'each elected member of the state assembly or council shall have the such number of votes as may be obtained by dividing the total number of votes assigned to the members of local governments of the states under sub-clause [a] and [b] by the total number of elected members of state assemblies/councils fractions exceeding one half being counted as one and the other fractions being disregarded'.

There need be no change where MPs are concerned. Clause [c] can continue as before: 'each elected member of either house of parliament shall have a such number of votes as may be obtained by dividing the total number of votes assigned to the members of the states under sub-clauses {a] and [b} by the total number of elected members of both houses of parliament, fractions exceeding one half being counted as one and other fractions being disregarded'. While there is no change in procedure, the actual number of votes will be higher as now the local government votes enter the calculation.

### *Recommendation for Amendment*

The following amendments may be considered:

To Article 54, add '[c] the elected members of gram, block and zilla panchayats in rural areas and the elected members of nagar palikas and city corporations in urban areas.'

To Article 55, add 'every elected member of a state's local government shall have as many votes as there are multiples of one thousand in the quotient obtained by dividing the state population by the total number of elected members of the local governments taken together'. We can also add '[b] if after taking the said multiples of one thousand, the remainder is not less than five hundred, then the vote of each member referred to in sub-clause [a] shall be further increased by one'. And 'each elected member of the state assembly or council shall have such number of votes as may be obtained by dividing the total number of votes assigned to the members of local governments of the states under sub-clause [a] and [b] by the total number of elected members of state assemblies/councils, fractions exceeding one half being counted as one and the other fractions being disregarded'.

This can form the base for public debate.

### *By Way of Conclusion*

In the manner explained above, the electoral college will be complete in the sense that all elected representatives of the people will have a say in the election of the President. Since elections to the third tier are now held regularly, there should be no issue of a 'missing electorate'. It would also not matter whether elections at the gram panchayat level are held with or without political parties. It is only necessary that elected representatives be there.

Given the reservations for women and scheduled castes and tribes in the local tiers, these hitherto under-represented groups will have a better say in the enlarged electoral college. This would be a true deepening of our federal democracy. All of this would add to the prestige and authority of the President as head of state.

Debate on alternative methods of vote value calculation would enrich us. Perhaps a better method than that sketched here will emerge from such debate. This will require a constitutional amendment, which always means open and spirited discussion. ___

My own view is that such a debate is urgently needed. This brief may serve to spark such debate.



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# *COVID-19 and the Russia-Ukraine Conflict: Emergence of India as a Global Leader*

***COMMENTARY***

***Jyotsna Bapat***

## Introduction

India's foreign policy has four clearly-stated principles that have been practised over the past seven years, namely, taking care of national trade and security interests (including using aggressive defence if needed), helping its citizens in foreign countries, taking care of partner countries, and continuing to participate in global governance organizations and institutions while maintaining its non-aligned stand. India over the last seven years has initiated various foreign policy strategies: Act East policy, Sagar (trans-ocean) outlook, Gulf engagement and Central Asia strategies that have focussed on resource use, humanitarian aid, and defence. Greater investment in defence strategies can be done through strengthening national defence, providing maritime security with India's neighbours in the Indian Ocean and Arabian Sea, and restructuring the defence organization. As a first responder, India takes on a leadership role for its partner countries that are in need of disaster management. Over the last few years, India has taken on the leadership of the global south and engaged with the United Nations as a temporary member.

India's foreign policy strategy has been to engage in diplomacy while finding solutions to issues. India continues to engage with major powers' economic hubs and influential regional players, while practising the foreign policy maxim of Sabka Sath, Sabka Vikas, Sabka Vishwas, (Everyone Together, Everyone's Development and Everyone's Trust) (Minister of External Affairs, 7 June 2022). A common engagement with major powers has resulted in multiple quadrilateral, trilateral and regional arrangements as well as in 2+2 meetings. As such, India's evolving and ambitious foreign policy, with corresponding actions on ground, has helped send clear messages to other countries over the last eight years. The priorities and strategies of these policies are consistent with India's economic growth and defence (Menon, S., May 2020). While India could take an aggressive stand against its hostile neighbours, it supports its partner countries in their development without reciprocal expectations. For instance, it has contributed to a large extent to the relatively-developed nations in the Middle East and South East Asia to create connectivity in transport and power (Bapat, J., November 2020) . The actions taken by the Ministry of External Affairs (MEA) in the context of the COVID- 19 pandemic are also examples of how India is practising its policies as per its priorities while interacting with its partner countries.

### *COVID-19: A Global Event*

On March 11, 2020, COVID-19, was declared a pandemic by the World Health Organization. India took both military and non-military action in order to control population and commodity movements across international and national borders, which were sealed for over a few months and re-opened gradually. More specifically, the Indian government adopted two measures to manage the disease: containment and mitigation. Containment was undertaken in the early stages of the outbreak, including contact tracing and isolating infected individuals to stop the disease from spreading to the rest of the population. This helped decrease the risk of health services being overwhelmed more than they already were and provided more time for vaccines and treatments to be developed. Mitigation measures were medical, paramedical, and



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non-paramedical or non-pharmaceutical interventions. Non-pharmaceutical interventions such as wearing masks, social distancing, and avoiding public transport were taken to manage the outbreak. An extreme measure taken to contain the spread of the disease was to completely shutdown global cross-border transactions, both international and intra-national ones. The impact of lockdowns of entire nations on a global scale have been multi-fold. Considering this context, this paper focuses on India's intervention to help its partner nations.

India's international interventions take place through the Ministry of External Affairs (MEA) and as such, India had engaged with its partner countries in South Asia by sending trained doctors and nurses experienced in managing epidemics. India also exported domestically-developed vaccines to its friendly nations and continues to do so till date. Along with this, India provided safe transport of those Indians and partner country citizens abroad who wished to return. At the national level, India organized a massive vaccination campaign through effective coordination across ministries. India counts 'Vaccine Maitri' (Vaccine Friendship) as one of its key diplomatic achievements of this period, not just for reasons of health but as a statement of solidarity (Minister of External Affairs, 7 June 2022).

### *Paradigm to Understand COVID-19*

How does one understand an event which has the potential to change the global system as we know it? Where do we look for its impact in a global system? A Systems Approach based paradigm by the Centre for Strategic and International Studies CSIS (www.CSIS.org), a policy research organisation is proposed here. It considers seven major global issues called Resolutions. Each Resolution consists of major indicators and for each indicator, the short and long-term trends are documented. Each indicator is represented by experts in making predictions over the next 15 years. The experts are supported by the latest data, research, and technologies. They are encouraged to think outside the box and make possible predictions in each of the seven global trends to understand global events such as COVID-19 (Brannen, S., et al. 2020). This is an ongoing research initiative to identify the most important macrotrends defining our world from now until 2050. This is the paradigm we review now.

The seven global macro trends or the seven revolutions according to the paradigm are: population, resources, technology, information, economics, governance, and security. A catastrophic event such as the COVID-19 pandemic has the potential to change the current global system. CSIS's directors of the global health policy centre, J. Stephen Morrison and Anna Carroll, observed that 'pandemics change history by transforming populations, states, societies, economies, norms, and governing structures' (Brannen, S. et al, 2020). Four months into the declaration of the pandemic, an analysis was conducted to think systematically about the pandemic and list out potentially fundamental changes in the seven major global trend lines. This research was conducted through the analytic framework of the Seven Revolutions initiative, a macro-trends assessment that is continually updated with a 30-year horizon. The net assessment is that COVID-19 is highly disruptive in the near term and highly unpredictable in the medium to long term across every macro trend line. The study viewed COVID-19 as an accelerant, an irritant, and a stress test (Brannen, S. et al, 2020). Its effects will ebb and flow and hit various nations and populations in different ways and on different timescales. This prediction has proven true two years into the pandemic given the virus mutations and the consequent struggle to control it globally. Here we will review in detail only the dominant trends in each Resolution relevant to India . Brannan's report provides a detailed global analysis of COVID-19 (Brannen, S. et al, 2020). A very brief overview of the other trends are provided here to demonstrate the application of the paradigm to India. The main focus is the Resolution of Security and its trends.

The impact of COVID-19 on the Resolution 'population' and the trend from the MEA perspective is the return migration of Indian citizens and their families living abroad. Introducing direct flights across continents was a major short-term impact co-ordinated by the MEA.

The COVID-19 impact on the Resolution 'resources' as well as the supply chain trend is also documented and relevant to India in terms of the shutdown of both sea and land transport. Both imports and exports had ceased and have not yet been fully restored, resulting in global inflation of up to 10 percent even in developed countries. The 'Technology' Resolution and especially the internet technology trend is also noteworthy. The speed with which the use of internet technology was adopted and implemented is a favourable sign of the impact of COVID-19. Most relevant was the large data generation and the monitoring that was required for the returning migrants. The other Resolutions and their global impacts listed in the report (Brannen, S et al. 2020) are not directly related to India's foreign policy.

The seventh global trend line is Security, whose immediate and long-term impacts are considered in more detail here. Further, as conflicts between nations escalate, the war between Russia and Ukraine is explored with a focus on India's actions and gains in this context. The seven Resolutions mentioned above are the first order outcomes of the pandemic and can be easily identified. The second order outcomes are events that are just unfolding, the specifics of which can only begin to be anticipated. For example, while the authors of this report predicted in April 2020 that COVID-19 would likely accelerate the governance impact trend line, and global protest movements as immediate impact was assessed, the specific countries, patterns, and situations were never anticipated. By late May 2020, the United States became the epicentre of a global protest movement against police brutality and systemic racism. In the trend line of economic impact, breakdown in the global supply chain as a secondary outcome could be anticipated, however, the delay in restoring the USA-China supply chain due to the extended COVID-19 impact on China could never have been anticipated.

| Revolution | Indicator | Immediate Impacts | Long-term Impacts |
|---|---|---|---|
| Security | Expanding National Security | Health security elevates as core to national security | Growing debt pressures reduce defense spending |
| | Fragmentation | U.S. and Chinese Leadership failures deepen global fragmentation | Future organizing principles for the international system unclear |
| | Gray Zone | Countries intensity gray zone actions as they avoid conventional conflict and seek advantages | Low defense budgets and increased fragmentation drive even more gray zone activities |
| | Return to Terror | Increased activity by violence extremist organization (VEOs) | VEOs prey on weakened states, economic vulnerability to push ideology and influence |

*Figure 1: Paradigm to understand the impact of COVID-19 on security*
*(Ref: Brannen, Samuel. Ahmed, Habiba. and Newton, Henry. 2020. 'COVID-19 Reshapes the Future', Centre for Strategic and International Studies (CSIS))*





Under the security trend line, the Russia-Ukraine Conflict could have played out as an immediate impact (Matsaberidze, D. 2015) in the 'grey zone' (refer Fig.1) where the land ownership or line of control between the two nations is contested. However, the conflict has now blown up to the level of a global event by way of a prolonged war. It may cause a re-emergence of a bipolar world and all countries currently have national security concerns about future security boundaries and increasing defence budgets.

The pandemic has entered the second phase of low mortality and morbidity heading towards a long tail. A spate of studies emerged anticipating the relationship between COVID-19, conflict and security issues. The policy brief 'Taking Stock' (Cimmino, J. et.al 2020) states that the COVID-19 pandemic shattered global health security, devastated the world economy, and accelerated great-power rivalry between the USA and China. It provides details about the origin of the novel coronavirus and how it spread around the world. It also examines how COVID-19 exacerbated or created pressure points in the global order, highlights uncertainties ahead, and provides recommendations to the USA and its partners for shaping the post-COVID world. The following pressure points are identified: global economic downturn due to shut down to contain the virus; conflict between China and the USA over soft power control; tensions between Russia and NATO; trans-Atlantic tension between the USA and its European allies during COVID-19 due to travel bans; and an Indo-Pacific alliance that excludes the EU and partnership with multilateral institutions and global health.

However, global events change unpredictably. By February 2022, China was facing a fourth wave of COVID-19 and with its zero- tolerance policy, had implemented a complete lockdown of major cities, reducing and even shutting down industrial production and disrupting the supply chain to the USA. The USA was recovering from the previous Trump government's anti-containment and anti-mitigation policies. This severely impacted the trade between USA and China. Mainly due to China's very stringent measures to eliminate COVID-19 from its country, the pressure on China was to focus internally, rather than on defence and security initiatives externally till recently. The supply-side constraints causing delivery delays in consumer goods and in semiconductor chips that were mainly produced in China, were quoted as high inflation and slow economic recovery. Both these economies, seen as global leaders, had to deploy their armed forces towards COVID- 19 containment and mitigation on account of their large populations and geographies. The main focus was to reduce death rates and reduce hospitalization through COVID-19 vaccination.

### *Opportunity for Russia*

In the face of the pandemic, along with the USA and China, Russia remains a key player in the global landscape. It has intervened militarily in Georgia, Ukraine, and Syria (Matsaberidze, D., 2014). While Russia is not a rising power and its economy is smaller than those of Brazil, Italy, and India, the disorder caused by a global pandemic served Russia's interest as the impact of the pandemic became manageable[51].

The present Russia-Ukraine conflict is one possible outcome of the waning of the pandemic. It began in the grey area as the paradigm describes (refer Fig.1). It was a result of a necessity for Russia to resolve hostilities with Ukraine and the chance taken by the Russian President Vladimir Putin to send troops into Ukraine territory, along the shared Eastern borders with Ukraine. The pro-West government in Ukraine post their 2019 elections was threatening Russia's power of influence over Ukraine (Allison R., 2014). The chance that Russia took was to send troops into the Eastern border with Ukraine in February 2022 as a special military operation, another grey zone activity, dividing Ukraine along the centre. The stated intention was to control terrorist groups attacking Russians in Ukraine. At the very least, Russia wanted

[51] *Russia developed its own vaccine and greatly controlled the spread of COVID-19 by late 2021.ccording to the MNRE-Solar subsidy-scheme, India wants to increase solar power capacity of the country in order to increase the generation capacity of eco-friendly energy resources and reduce the overall GHG emission percentage in the near future.*

to capture the city of Mariupol, currently in Ukraine, and complete its land bridge to Crimea. This would give Russia control over more than 80 percent of the Ukrainian Black Sea coastline, and cuts off Ukraine's maritime trade.

When Russian troops finally crossed Ukraine's Northern and Eastern borders, they met with massive resistance. Ukraine's President, Volodymyr Zelenskyy, quickly approached the EU and the USA for military help. The strategy that the USA employed was to escalate the Russia-Ukraine conflict into a global issue. It chose to draft a resolution at the United Nations Security Council (UNSC) on ending the Ukraine crisis. The draft was to hold the Russian Federation accountable for the refugee crisis caused by military operations initiated by Russia. The resolution ordered Russia to withdraw Russian forces immediately from inside Ukraine's boundaries and to allow for humanitarian aid to be made available to people in need. Passing such a resolution would mean that UN peacekeeping forces would have been deployed between the two countries to stop the conflict and UN trade sanctions against Russia would be applied for ensuring its compliance. The draft resolution, submitted by Albania and the United States, was filed in the UNSC, and the Security Council met on 25 February 2022 to pass this resolution. This garnered support from 11 members but was vetoed by the Russian Federation. China, India and the United Arab Emirates all abstained. Amid the unfolding crisis in Ukraine, the Security Council rejected the resolution (UN Press February 25, 2022).

As a result, the USA and the EU countries imposed progressive trade sanctions against Russia in a phased manner. The most important impact is the energy sanctions imposed by Russia in retaliation to European trade sanctions. Natural gas, considered clean from a climate change perspective, is the most important energy export from Russia to the European countries. Russia had established major gas pipelines with European countries including the United Kingdom (UK) and its own neighbourhood of Eastern European countries. In 2021, Russian gas met 40 percent of European energy requirements. European countries then decided to reduce their dependence on Russian gas. In reaction, Russia turned off its pipeline to various gas companies. Besides the UK and Germany, the other large Russian gas importers in the European Union are France, Hungary, the Czech Republic, Poland, Austria and Slovakia. The largest non-EU importers of Russian natural gas are Turkey and Belarus (Fisher, J., June 22, 2022).

### *India's position*

These sanctions are expected to have an impact on the global economy through the disruption of supply chains. The impact on energy and commodity prices is already visible. The disruption of the global supply chain is expected to significantly impact the movement of goods and the import-export trade, particularly food grains, fertilizers, and petroleum. India has substantial dealings with both Russia and Ukraine; an assessment in this regard by the Indian government is underway (Minister of External Affairs, March 15, 2022). India is in the process of analysing its impact on India-Russia bilateral trade and economic cooperation, in consultation with all stakeholders. India's stance is that its relations with Russia stand on their own merit (Minister of External Affairs, March 15, 2022).

While India abstained from voting in the UNSC meeting, it has not violated any UN charter in maintaining friendships with all nations and with its commitment to peace. The Indian Prime Minister Narendra Modi's statement in different forums since 25 February 2022, is to express deep concern at the worsening situation in Ukraine, to extend humanitarian assistance and to call for the immediate cessation of violence. India has asserted that a path of diplomacy and dialogue be followed to resolve differences internationally. India has emphasised to all member states of the UN that the UN Charter be respected for territorial integrity and the sovereignty of states



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For India, the interests of its citizens in foreign countries in situations of crisis is a priority. Indian students studying abroad and Indian businesses expanding into the Balkans and Russia is a new reality that at the height of the crisis, required prompt action. Operation Ganga involved contacting Indian students studying in Ukraine, releasing advisories every day, and organising flights to India by the embassy in Ukraine. The support that India received from Ukraine's neighbours during Operation Ganga was also very valuable. On India's part, it is by now an established tradition that any rescue and relief effort also include citizens of other neighbouring countries. As a result of Indian advisories and Operation Ganga, around 22,500 Indian citizens have returned to India safely since February 24, 2022. India since then has sent and continues to send humanitarian aid (Minister of External Affairs April 01, 2022). It has also offered to help neighbouring and developing countries who may ask for assistance (Minister of External Affairs April 01, 2022).

The impact of EU and USA sanctions on Russia due to the conflict has had a positive impact on India-Russia bilateral trade and economic cooperation on account of India choosing to abstain in the UNSC vote. India's relations with Russia stand on their own merit. India's trade has risen with Russia from 75.8 million USD over the last five years to 6.4 billion USD in April 2022. This is almost twice as much as for the same period last year. If India maintains these volumes throughout the year, it will have a turnover of more than 19 billion USD by the end of 2022 (NDTV India-News, July 6 2022).

Since February 2022, India has taken quick action to protect its interests and the interests of its partner developing countries. India will ensure that the long-term unrest due to shortages is avoided in the partner countries. While being the second largest wheat exporting country, India has banned wheat exports in anticipation of food shortages in the future due to the Russia-Ukraine conflict and with the intention of helping neighbourhood partner countries when needed (Chakraborty, D., June 13, 2022). India also focuses on the availability of fertilizers, and has kept the value chains of fertilizers smooth at a global scale. India is trying to increase the production of fertilizers within its borders and seek cooperation from the G7-countries in this regard (Ministry of External Affairs, June 27, 2022).

### *Conclusion*

India's clearly-stated foreign policy asserts its stand in international situations of stress. In the case of COVID-19, as soon as the global shutdown was declared, India mobilized its human resource team from scratch to assist its partner countries who needed help. In the case of the Russia-Ukraine conflict, India's commitment to peace and non-alignment, while respecting the UN Charter and territorial integrity, was seen in its emphasis on the restoration of peace immediately. India has emphasised that the path of diplomacy and dialogue be followed to resolve differences internationally.

India's interests are put first. India used this opportunity to promote its interest by creating an indigenous vaccine and exporting it to 101 countries (Vaccine Supply, August 25, 2022) India promoted special trade with Russia, because it was in the national interest to do so. India's commitment to the safety of its citizens was also asserted through safe travel during both the COVID-19 and the Russia-Ukraine crisis.

India has also offered assistance to its partner countries in need of medical support, and transport for their citizens. Humanitarian assistance is also provided for countries in crisis when needed.

India has respected and participated in global governance institutions and organisations. In the case of the COVID-19 crisis, the WHO guidelines were followed. In the case of international

security, the set procedures of the UNSC were adhered to and in the case of trade with Russia, international trade rules were followed.

In conclusion, the four principles on which the policies and strategies are based are clear, and the corresponding actions are implemented on ground effectively. This has helped India now emerge as a global leader. This leadership believes in global peace and an independent and autonomous position of leadership that is truly non-aligned, protecting and taking care of India: its economic and defence interest and its citizens' interests first and subsequently taking every partner country along with India, while participating in global governance.



JINDAL JOURNAL OF PUBLIC POLICY | OCTOBER 2022 | VOLUME 6 | ISSUE II

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