UCF | The India Center

India Discussion Papers

Capturing Change in India: Technological Transitions, Economic Transformations and Evolving Global Footprint

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Introduction

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Abstract

India today occupies a peculiar position in world affairs. It is simultaneously the world's most populous country and one of its fastest-growing major economies, a nuclear-armed state navigating two contested borders, and a democracy managing the governance demands of a billion-plus citizenry in the digital age. Over the last three decades, India has undergone profound transformations across multiple dimensions: transformations that are reshaping not only the country from within, but its relationship with the international system. Yet the accompanying change in India and its approach - both internal and external - raises questions that resist easy answers. How does a state of this scale and complexity balance the imperatives of internal development against the mounting pressures of a shifting geopolitical order? How do domestic institutional choices and constraints shape the ambitions India projects outward?

The India Discussion Papers collected in this volume were conceived as an effort to address precisely these questions from multiple disciplinary vantage points. The papers originate from a conference organized under the auspices of the UCF India Center, which brought together scholars who continue to examine the ongoing transformations across modern India's economic, technological, and strategic domains. Individually, each paper provides a distinct perspective on the developing sectors of India's governance. Taken together, however, they offer a cohesive explanation of how India is navigating structural developments in regional and global affairs. While each paper focuses on specific concerns, they reflect a shared focus on how domestic policy choices and pressures from global powers will shape India's trajectory in the coming decades. Collectively, these papers portray India as an emerging security actor whose global role is shaped not only by external threats but also by institutional capacity and strategic choice.

Technological Transformation: Governance, Democracy, and the Digital State

India's technological revolution has altered not just what India produces but how its citizens communicate, organize, work, and relate to the state. From the rise of the IT sector to the Aadhaar biometric identity system to the Unified Payments Interface, technology has become the connective tissue of modern Indian governance and daily life. India is no longer simply a consumer or service provider in the global technological order. It is also increasingly a producer and has begun to shape the norms and architectures of the current technological order rather than simply adapting to them. Yet India's technological rise has generated as many governance challenges as it has opportunities, and the three papers in this cluster address the most consequential of these: the relationship between digital platforms and democratic politics, the challenge of governing personal data, and the role of international partnerships in India's clean energy transition.

Shahana Sheikh's *"Social Media's Impact on Political Campaigns in India and Its Policy Implications"* examines how digital platforms have transformed India's electoral landscape — not merely how campaigns advertise, but how voters are targeted, narratives constructed, and the boundary between persuasion and manipulation progressively eroded. In the world's largest democracy, Sheikh's analysis of the policy implications of this transformation is both timely and necessary. Trisha Ray's *"India's Digital Trilemma: The Case of the Digital Personal Data Protection Act"* situates India's recently

enacted data protection legislation within the structurally difficult challenge of simultaneously advancing data-driven economic growth, protecting individual privacy, and preserving state regulatory authority. Ray argues these objectives are in genuine tension, and that how India resolves that tension will carry consequences well beyond its borders. Akanksha Golchha's *"Role of Global South Partnerships in Accelerating EV Transition"* completes the cluster by showing how India is leveraging South-South cooperation – spanning supply chains, technology transfer, and development finance – to advance its electric vehicle ambitions without deepening dependency on Western or Chinese technology ecosystems. Together, these three contributions portray a technological India that is ambitious and increasingly globally integrated, but one grappling in real time with the governance demands that technological power imposes.

Economic Transitions: Inclusion, Energy, and the Structural Transformation Imperative

India's economic transformation, driven by liberalization in the early 1990s, has seen it transition from a largely agrarian, inward-looking economy to one increasingly diversified and integrated into global markets. Yet India's rise has not been without its contradictions. Stark regional disparities persist, the informal sector still dominates employment, and structural barriers to labor and land reform have tempered the pace and inclusivity of change. As India aspires to become a five trillion-dollar economy and beyond, the question is not simply whether India will grow, but whether it can translate macroeconomic expansion into genuine structural transformation, which reaches the margins of the economy and builds the institutional capacity to sustain growth through the disruptions ahead.

Shantanu Khanna's *"Self Help Groups Boost Women's Labor Force Participation in Rural India"* examines how community-level institutional interventions can bring marginalized women into fuller economic participation. Khanna makes the case that Self Help Groups are among the more effective instruments available for unlocking labor force participation among populations that top-down state directives have consistently failed to reach. In a country of India's demographic scale, the failure to extract the productive potential of half its population is not a peripheral concern; it is the difference between realizing and forfeiting the demographic dividend. Neelima Jain's *"Energizing Viksit Bharat: India's Technological Path to Economic Transformation Through Energy Independence"* argues that the push toward energy independence is not merely an environmental question. It is fundamentally linked to India's economic story. India's reliance on fossil fuel imports has long constrained its fiscal space and compounded structural vulnerabilities; Jain examines how India's energy transformation is being designed to generate new engines of domestic growth and reduce the import dependencies that have historically limited India's room for maneuver. Together, Khanna and Jain's contributions make the case that India's economic future will be determined as much by institutional design and strategic industrial policy as by aggregate growth rates.

Global Evolution: Strategy, Role, and the Limits of Indian Power

India's foreign policy has evolved substantially. From the post-colonial doctrine of non-alignment to today's complex web of strategic partnerships, India now leads the G20, pictures itself at the center of the Global South narrative and acts increasingly assertive in the Indo-Pacific. All this signals a country that sees itself as a rule-shaper, not merely a rule-taker. Yet the gap between India's stated ambitions and its demonstrated strategic behavior remains wide and understanding that gap is as important as understanding the ambitions themselves. The two papers in this cluster approach India's global evolution from complementary directions: one examines the external strategic environment compelling India's

recalibration, the other examines the domestic and institutional factors that shape and constrain its response.

Zack Constantino's *"Countering China in the Maritime Domain Remains Vital to Indian Interests"* makes a direct argument: the maritime competition with China is not a peripheral concern for India but a central one that will define the parameters of Indian security for the foreseeable future. As China's naval presence, port infrastructure, and power projection capacity across the Indian Ocean expand, Constantino argues that India cannot afford to treat this as one challenge among several — it demands sustained strategic attention, investment in naval capacity, and deeper partnerships with countries that share India's interest in a rules-based Indo-Pacific order. Aditi Malhotra's *"India's Evolving Security Role in the Indo-Pacific: A Role Theory Perspective"* brings a distinctive theoretical lens to the question of how India responds to that environment. Drawing on role theory, Malhotra explains India's cautious and selective security behavior not as a failure of vision but as a product of the interaction between the roles India is being asked to play and the roles it has chosen to perform, mediated by institutional capacity constraints, resource limitations, and a strategic culture that remains attached to autonomy even as the conditions of that autonomy become harder to maintain. Read together, Constantino establishes what is at stake; Malhotra explains why India's response has been measured rather than maximal. Together they offer a more honest analytical foundation for understanding India's global evolution than either triumphalism or skepticism alone can provide.

Structure of the Volume

The papers that follow are organized into three thematic clusters corresponding to the sections outlined above, though readers will find that the themes bleed into one another. Jain's energy argument is also a security story; Golchha's EV partnerships are also an economic story; Ray's digital trilemma is also a democratic accountability story; and Malhotra and Constantino's contributions are ultimately also domestic politics stories. That porousness is not a weakness of the volume: it reflects the subject matter. India's complexity resists clean disciplinary boundaries, and the most useful analyses are those that follow the problem rather than the subdiscipline. The India Center Discussion Papers are offered in that spirit, not as a comprehensive account of India's rise, but as carefully grounded inquiries into the specific domains where that rise will be decided.

Social Media's Impact on Political Campaigns in India and Its Policy Implications

Shahana Sheikh

Abstract

In recent years, India has seen a rapid surge in the access and use of the Internet. From 2010 to 2023, the share of the country's population using the Internet increased from 7.5 percent to 57.5 percent.[i] *Moreover, by 2023, national sample surveys indicated that approximately eight in ten households had Internet access.*[ii] *This has been driven by the widespread availability of low-cost smartphones—the primary means by which most Indians access social media—and by mobile Internet data, which ranks among the cheapest globally. The number of social media users in the country has also grown significantly. As of early 2025, reports indicated that India has over 350 million Facebook users and more than 500 million WhatsApp users.*[iii] *This policy paper examines how the rise of the Internet—particularly social media—is shaping political campaigns in India and explores the policy implications of this transformation.*

Content-Complementarity in Political Campaigns

Existing literature on how the proliferation of Internet-based platforms, including social media, is expected to shape political campaigns makes two predictions.[iv] The first builds on the innovation model[v] and predicts that as Internet use expands, political campaigns will "go online" and online campaigns will substitute[vi] in-person campaigns which are costly, time-consuming, and labor-intensive. Political organizations are expected to shift their focus to conducting campaigns online, with little reliance on in-person activities. The second derives from the normalization hypothesis[vii] and predicts that even as Internet use expands, in-person campaigns will remain at the center of politics[viii], and they will simply be replicated in the online sphere. Political organizations are expected to continue to focus on conducting in-person campaigns, using online campaigning only in an auxiliary way.

In contrast to these two predictions, in my work, I argue that in today's digital age there is a synergy between in-person campaigning and campaigning on Internet-based platforms that hinges on online content, a phenomenon that I term as content-complementarity.[ix] Rather than online political campaigns substituting in-person campaigns or online political campaigns merely remaining supplementary to in-person campaigns, I emphasize that there is a mutually reinforcing relationship between these two forms of campaigning.[x]

For organizations that participate in politics, social media has influenced both the demand and supply of online content. As the number of social media users rises, the demand for online content grows and political organizations must maintain a steady flow of digital material to shape political attitudes and behaviors. The supply of online content has also evolved: political organizations can now independently produce and disseminate their own digital content[xi], bypassing the traditional "mainstream media filter"[xii]; however, they cannot control material shared by their opponents.

To meet the growing demand for favorable online content, political organizations must continually create and circulate digital material. In-person campaigning serves as a valuable source, offering content before, during, and after its occurrence for online engagement. In the digital age, in-person campaigning has taken on a new purpose: generating material for online dissemination. The demand for online content and its anticipated effects shape how organizations conduct in-person campaigning. If certain types of content are expected to favorably influence online audiences, organizations will strategically conduct in-person political campaigns to produce such content. At the

same time, during in-person activities, they will seek to minimize chances for opponents to generate content that could cast them in a negative light.

The Case of Party Campaigns in India

My research shows that in today's social media era, campaigns of India's political parties exhibit content-complementarity between in-person mass campaigning and online campaigning.[xiii] In the digital age, a party faces growing demand for online campaign content from social media users, including both party workers and voters. A party's in-person mass campaign rallies serve a new party purpose by providing valuable digital content for online engagement, thereby enhancing the importance of rallies. While previous scholarship examined the effects of rallies on physical attendees[xiv], I shift the focus to content from a party's in-person rallies on social media and its effects on those exposed to it online.[xv] The demand for online content and anticipated effects of this content on both party workers and voters also shapes how a party conducts in-person mass campaign rallies. Rather than a party's online campaign replacing or merely replicating in-person rallies, there is a complementarity between the two wherein they feed off and reinforce each other.

Content-complementarity in party campaigns is most clearly reflected in content about rally crowds. While recent scholarship has highlighted the importance of crowd size in strategic mobilizations such as protests[xvi] and demonstrations[xvii], I underscore that the size of rally crowds has acquired new significance in the social media era.[xviii] In the digital age, rally crowds serve as content for a party's online engagement, which makes the stakes around them higher. For a party, social media magnifies the rewards of large crowds and the penalties of small ones by extending rally viewership beyond in-person attendees.[xix] A large crowd benefits a party by providing content to showcase support online, while low turnout risks reputational damage when shared on social media. In my work, I theorize that a party's rally content suggesting large crowds improves party workers' campaign efforts, voter perceptions and voter mobilization, and content depicting small or absent crowds has the opposite effect, as well as explain the mechanisms for these effects.[xx]

To test the key observable implications of content-complementarity for party campaigns as well as for the behavior of party workers and voter behavior, I draw on evidence from social media and extensive fieldwork—including face-to-face surveys—conducted in the context of multiple party campaigns in North India. My analysis of content on Twitter (now X) for major parties in the lead-up to the 2022 Uttar Pradesh state election and 2023 Madhya Pradesh state election revealed that between 35 to 40 percent of the content was about in-person mass campaign rallies, with an overwhelming share of this content being post-rally content.[xxi] Most of this content was visual, with parties frequently highlighting the large scale of their rallies and rally crowds. Moreover, my surveys in Uttar Pradesh (UP), which is India's most populous state, found that rally content circulates widely among both party workers and voters, particularly on online platforms such as Facebook and WhatsApp.

Through surveys and survey experiments, I examined how rally content—especially visuals and narratives about crowd size—shaped the attitudes and behavior of party workers and voters beyond the rally itself. My face-to-face survey with approximately 400 party workers in UP demonstrated that a narrative of large rally crowds boosted party workers' morale, excitement, and enthusiasm for their party's campaign, while a narrative of small rally crowds had the opposite effect.[xxii] Using visual-based vignette survey experiments as part of a face-to-face survey with approximately 4,000 voters in UP, I found that rally content influences voters too. Specifically, exposure to visuals of large rally crowds improved

voter perceptions of the party's winnability and mobilized voters to participate in the party's campaign, while the lack of crowds worsened voter perceptions and demobilized voters.[xxiii]

Policy Implications of Content-Complementarity

Content-complementarity in political campaigns, particularly party campaigns, carries significant policy implications for the health of democratic competition, the inclusiveness of political participation, and urgent challenges such as online misinformation and polarization.
In multi-party systems like India's, a few major political parties hold more resources, while many smaller parties operate with far fewer resources. There is growing interest in whether social media can level the electoral playing field by helping less-resourced parties compete. Content-complementarity implies that online campaigning does not replace in-person efforts but amplifies their importance, reinforcing the advantages of well-funded parties that can do both. Moreover, it is not sufficient to merely conduct in-person campaigns since a party must engage in online campaigning as well. Since online campaigning also requires content drawn from in-person campaigning, parties unable to organize several large rallies may be disadvantaged. Still, less-resourced parties with a strong social media presence can strategically use content from limited rallies for online engagement.

In the Indian context where disparities in political participation—especially in non-electoral forms—persist across voter subgroups, expanded access to social media may offer opportunities to bridge these gaps. An implication of content-complementarity is that exposure to online campaign content can stimulate real-world political participation, particularly among groups with historically low engagement who have only recently gained digital access. However, strong partisans who have been online longer are more likely to encounter content that aligns with their partisan beliefs, which, in turn, reinforces their attachment to a political organization—such as a party—and increases their likelihood of participating in its in-person activities.

The phenomenon of content-complementarity underscores that online campaign content must be analyzed in conjunction with grassroots in-person efforts, as the two are deeply intertwined: campaigning on social media is both shaped by and shapes on-the-ground activities. This insight is useful to understand how online misinformation and politically polarizing content circulating on Internet-based platforms interacts with the real-world behavior of party operatives and citizens. It also has crucial implications for policy makers and administrators who aim to monitor and regulate online rumors and hate speech to prevent their viral spread and mitigate harmful real-world consequences.

Structure of the Volume

Shahana Sheikh explores how the rapid expansion of internet and social media access in India is reshaping the landscape of political campaigns. She introduces the concept of "content-complementarity" to argue that online and in-person campaigns are mutually reinforcing, demonstrating how physical mass rallies now serve the crucial purpose of generating digital content to satisfy online audiences.

Sheikh further illustrates how this dynamic ultimately amplifies the electoral advantages of well-funded major parties and highlights the deeply intertwined nature of on-the-ground activities and online political behavior.

India's Digital Trilemma: The Case of the Digital Personal Data Protection Act

Trisha Ray

Abstract

In 2023, the Indian government enacted the long-awaited Digital Personal Data Protection Act (DPDPA). In the decade plus journey of personal data protection legislation, the bill has taken many forms, with the introduction, removal and modification of provisions on data localization, user consent, exemptions for the state and the roles of responsibilities of platforms. This paper traces this evolution—from the IT Act 2000 to the 2023 DPDPA—and characterizes the shifting scope as a "digital trilemma" between individual rights, national sovereignty, and economic connectedness and growth.

Introduction

2025 marks ten years since the inception of Digital India, the Government of India's flagship initiative to bring the country's billion plus people online and revolutionize how the government provides essential services.

In 2014, India found itself at a critical juncture. Home to over a billion people and the fastest-growing working-age population in the world, New Delhi faced the challenge of efficiently providing government services across the nation and unlocking opportunities for economic mobility. At the same time, public trust in the government was fragile. A series of corruption scandals, culminating in mass protests and the passage of the Lokpal Act in 2013, demanded a new model of governance—one rooted in transparency, efficiency, and inclusion.[xxiv]

The government viewed digital technologies as a powerful tool to meet these aspirations. New Delhi launched a suite of digital public infrastructure initiatives, including Aadhaar, a 12-digit unique biometric ID that became the foundation of identity-linked services. Digital technologies promised not only improved delivery of public services but also the integration of India's citizens into the digital economy. However, this ambitious project soon encountered challenges. As India's digital footprint expanded, concerns surrounding data governance, cybersecurity, and the exploitation of personal data by global tech platforms also grew. The proliferation of social media raised concerns about unchecked data extraction, misinformation, disinformation, and foreign influence.

This paper characterizes India's digital policymaking, specifically the Digital Personal Data Protection Act (2023), as a "digital trilemma" between individual rights, national sovereignty/government control and economic connectedness.

Introducing the Digital Trilemma

In his 2011 book, *The Globalization Paradox*, economist Dani Rodrik expanded on his concept of a "political trilemma of the world economy".[xxv] Rodrik argued that countries can only maximize two of three goals:

1. Hyper-globalization: a form of all-encompassing globalization, eliminating all transaction costs related to cross-border flows of goods, services and capital.
2. National sovereignty: The ability of nations to pursue economic-policy agendas without undue external pressures.

3. Democratic politics: The ability of citizens to influence political decision-making and engender accountability of their governments.
4. Rodrik is critical of hyper-globalization, stating that true global governance will lead to a system of weak rules. In later essays, he examines the case of the 2009 Greek government debt crisis, with the constraints of the Euro Zone serving as a microcosm for this challenge.[xxvi]

> "*When we get the balance wrong between institutions of governance and the reach of markets at the global level, we are going to run either into problems of legitimacy or problems of efficiency."*
>
> **Dani Rodrik (2012)**

Rodrik's trilemma cannot be fully realized at once, however, it offers a useful lens to understand India's digital journey. As India steers its elephantine bureaucracy to meet the challenge of equitable economic growth, it has also frequently recalibrated how it balances economic integration, sovereign control, and individual agency.

Rodrik's criticism of free market liberalism has been re-legitimized in the digital economy era, especially in the context of data flows. "Digital wealth," according to a press release from UNCTAD, "is concentrated in the hands of a few US- and China-based platforms."[xxvii] Broadly, data governance is relevant for three competing imperatives: human rights, national security/public safety, and economic connectedness/trade. Data is also unlike other trade flows: it is non-rivalrous (i.e., its "consumption" does not make it unavailable to others). Data access *can* be excludable: limited through legal and technical means. "In technical terms," UNCTAD's 2021 Digital Economy Report states, "data can be either a public good, a private good or club good.[xxviii] Finally, data's value stems from its aggregation and combination.

Considering these qualities of data, data governance approaches may be a combination of the following: opening national datasets for homegrown applications, imposing restrictions on the data collected by platforms, and creating a common standard for individuals to interact with platforms that collect their data. For instance, Chapter 3 of the EU General Data Protection Regulation (GDPR) grants an individual the rights to object to, rectify, erase, restrict, and port their personal data.[xxix] Complementing this framework, the EU Digital Markets Act targets gatekeepers, or "large digital platforms providing 'core platform services'", obligating such platforms to share relevant data with their business users. Singapore's Personal Data Protection Act seeks to "increase consumer trust and strengthen Singapore's position as a trusted global data hub."[xxx] It is weak on privacy protections but does contain obligations around data collection and protection.[xxxi]

In other words, governments may adopt one of three approaches: a control-maximizing approach that gates data flows in favor of national sovereignty; an accelerationist approach aimed at boosting connectedness and business use cases; and a rights-maximizing approach that grants users autonomy in their interactions with digital services.

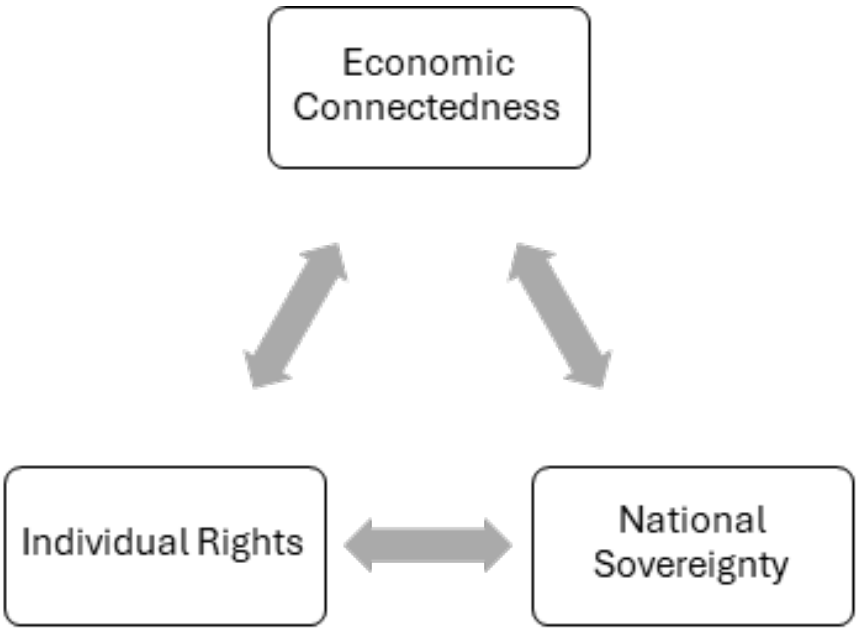


Figure 1 The Digital Trilemma

The Evolution of India's Data Protection Legislation

India's first attempt at digital regulation was the Information Technology Act of 2000, which provided a rudimentary framework but fell short in the context of increasing pervasiveness of digital services.[xxxii] In 2010, a multistakeholder committee released an Approach Paper for a Legislation on Privacy, which notes the need for privacy legislation following the introduction of the Unique ID project, later renamed Aadhaar. UID would break down data silos, opening considerable scope for exploitation of personal data.[xxxiii] After a period of stasis around the national elections, the momentum for reform picked up in 2017 with the formation of the Srikrishna Committee, following the Supreme Court's landmark 2017 *Puttaswamy* judgment that affirmed privacy as a fundamental right.[xxxiv]

The government framed data protection as an essential to creating a "free and fair digital economy."[xxxv] The Srikrishna Committee report underscored that both private firms and government agencies were major data processors and warned against the harms of unlawful data use. The draft bill introduced in 2018 brought the concept of data fiduciaries and user consent management into the legal lexicon. It categorized data into "sensitive" and "critical," imposing localization requirements—sensitive data had to be stored in India, and critical data could only be processed domestically. This draft also introduced sweeping exemptions for government agencies on undefined grounds such as "security of the state," raising concerns about state overreach.[xxxvi] The 2019 version of the bill significantly expanded exemptions for state agencies, while diluting protections laid out in the 2018 draft. It also added non-personal data to the scope of legislation. Contrary to popular belief, the bill also demonstrated that New Delhi is not inflexible: it walked back localization requirements, facilitating cross-border data flows under government-defined conditions, aiming to attract global tech investments. In 2022, the draft bill was withdrawn from Parliament.

Finally, the 2023 Digital Personal Data Protection Act enshrined user rights (although not to the extent outlined in the 2018 draft), including the ability to correct and erase personal data, along with

limitations on retention periods. It retains sweeping exemptions introduced in 2018 and 2019, enabling the government to exempt entire classes of data fiduciaries. Notably also, the government moved away from hard data localization mandates, opting instead for a blacklisting approach that facilitates cross-border data flows.[xxxvii] Ultimately, the DPDPA arrived at an approach that maximizes economic connectedness and national sovereignty.

Conclusion: Navigating the Trilemma

India's data governance journey is emblematic of a global trend toward sovereignty-affirming approaches, albeit with different countries landing on two different sides of the trilemma: a kind of guided economic connectedness and techno-nationalist approach. The trilemma will continue to animate digital policymaking both in India and elsewhere, including how countries approach the following challenges:

- Balancing national security concerns with the need to maintain an open and innovative digital environment. Managing the influence of Big Tech companies, whose value eclipses the GDPs of entire countries, and which exert major influence over economies and societies.
- Striking a balance between protecting users from harmful content and preserving freedom of expression.
- Ensuring that regulations do not inadvertently stifle dissent or marginalize voices.

India's regulatory choices today will shape not only the rights and freedoms of its citizens but also its role as a digital leader in the Global South. Its evolving approach to data protection and platform governance will be watched closely by other nations navigating the digital trilemma.

Structure of the Volume

Trisha Ray examines the decade-long evolution of India's data protection legislation, culminating in the passage of the 2023 Digital Personal Data Protection Act (DPDPA). Situating this legislative journey against the backdrop of the "Digital India" initiative and the massive expansion of the country's digital footprint, Ray highlights the mounting tension between leveraging digital public infrastructure for economic mobility and mitigating the risks of unchecked data extraction by global platforms.

To analyze this tension, she introduces the concept of a "digital trilemma" which is adapted from Dani Rodrik's globalization paradox. It argues that digital policymaking forces states to balance three competing imperatives: individual privacy rights, national sovereignty, and global economic connectedness. By tracing the bill's various iterations from the 2018 Srikrishna Committee draft to its final 2023 form, Ray illustrates how the Indian government continuously recalibrated its stance on data localization, user consent, and state exemptions. She argues that the finalized DPDPA ultimately resolves this trilemma by maximizing state control and cross-border economic integration at the expense of comprehensive user rights. Ultimately, Ray concludes that India has adopted a guided, techno-nationalist framework that will serve as a critical blueprint for other nations in the Global South seeking to regulate Big Tech and preserve sovereignty while pursuing digital economic growth.

Role of Global South Partnerships in Accelerating EV Transition

Akanksha Golchha

Abstract

The rapid growth of transport sector in developing economies like India is closely linked to economic development, job creation, and trade facilitation. However, transportation is also a major contributor to fastest growing sources of pollution, air toxins, and smog, accounting for about 25 percent[xxxviii] of energy related CO2 emissions, globally. While many countries in the Indo-Pacific have set policy mandates for adoption of electric vehicles (EV), significant bottlenecks persist in three key areas: economic feasibility, manufacturing ecosystem, and market development. To address these bottlenecks, supportive policy and regulatory frameworks are required addressing both supply-side and demand-side constraints.

The brief explores potential avenues for global-south collaboration on policy and technology knowledge exchange that can help address these bottlenecks. The brief draws comparatives and lessons from India and Indonesia that have contributed to the evolution of transport sector electrification in both the countries. This includes fiscal incentives for consumers and manufacturers, supply-side regulations, and consumer centric approaches. This policy brief assesses the outcomes by highlighting the potential for cross-country collaborations through structured knowledge exchanges that can accelerate electric mobility transitions, foster inclusive economic growth, and advance shared climate goals

Current State of Play – India and Indonesia's EV transition

India's transport sector is growing at a CAGR of 5.9%[xxxix] making it one of the fastest growing sectors of the economy. However, it is also the second[xl] largest CO2 emitter, with road transport accounting for more than 90% of those emissions. India is at a crossroads, pursuing its development goals while reducing emission intensity under its Nationally Determined Contributions (NDCs).

With transport sector emissions projected[xli] to double by 2050, India is making significant strides to electrify the sector and move towards low-emission technologies. Under the government of India's EV30@2030[xlii] target, it is expected that India will add 80 million EVs on road by 2030. This includes 30% of newly registered private cars, 40% of buses, 70% of commercial cars, and 80% of 2-wheelers and 3-wheelers.

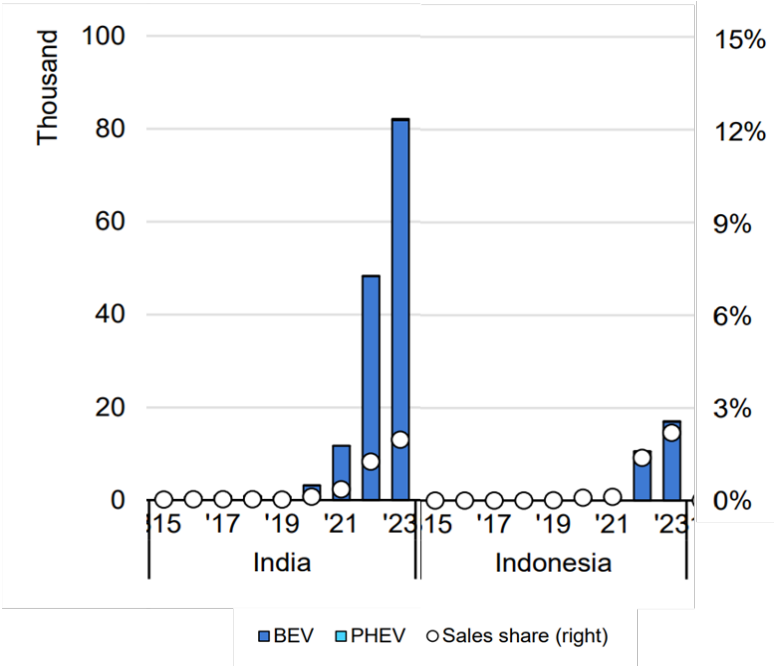
The national and state EV policy frameworks in India aims to establish a robust EV value chain and strong market signals are provided for demand creation, manufacturing and charging infrastructure. To support the transition, the government of India and over 30 states and union territories have announced[xliii] various demand-side and supply-side incentives for EVs through various policies and schemes. While at the central level manufacturing and investments are being promoted through[xliv] Production Linked Incentives (PLI) Schemes, these states have also announced a slew of incentives and reforms to attract investments. These states also have

defined goals under their EV policies in terms of EV adoption as well as job creation. In addition, fiscal incentives through schemes such as PM Electric Drive Revolution in Innovative Vehicle Enhancement (PM E-DRIVE)[xlv] with an outlay of $1.3 billion provide incentives for all form factors as well as for charging infrastructure and automobile testing facilities.

Like India, Indonesia also has ambitious EV targets to deploy[xlvi] 2 million electric cars and 12 million electric 2-wheelers and 10,000 electric buses by 2030. In Indonesia, EVs get major impetus to meet the net-zero emission[xlvii] goal by 2060. Along with this, the presence of large deposits of critical minerals such as nickel has become a key incentive for the Government of Indonesia to focus on expansion of domestic EV manufacturing. To support this, a slew of policies and incentives have been introduced to foster EV manufacturing in the country by both domestic and foreign manufacturers. Along with this, fiscal incentives such as reduction in the rate of value added tax[xlviii] to 1 per cent from 11 per cent for manufacturers that meet 40 per cent domestic content requirement have been provided to effectively reduce the purchase price of the EV as well as luxury tax on EVs is removed.[xlix] Initiatives such as import duty reduction[l] to zero percent on completely built up (CBU) and completely knocked down (CKD) have taken effect to attract foreign manufacturers if they commit to establish domestic factories by 2026 and providing bank guarantees equivalent of the rebates.

The graph below shows the trajectory of increase the total number of electric cars in India and Indonesia.

Figure 1: Stock of electric cars in India and Indonesia has been increasing over the years.



Source: Global EV Outlook 2024 | IEA

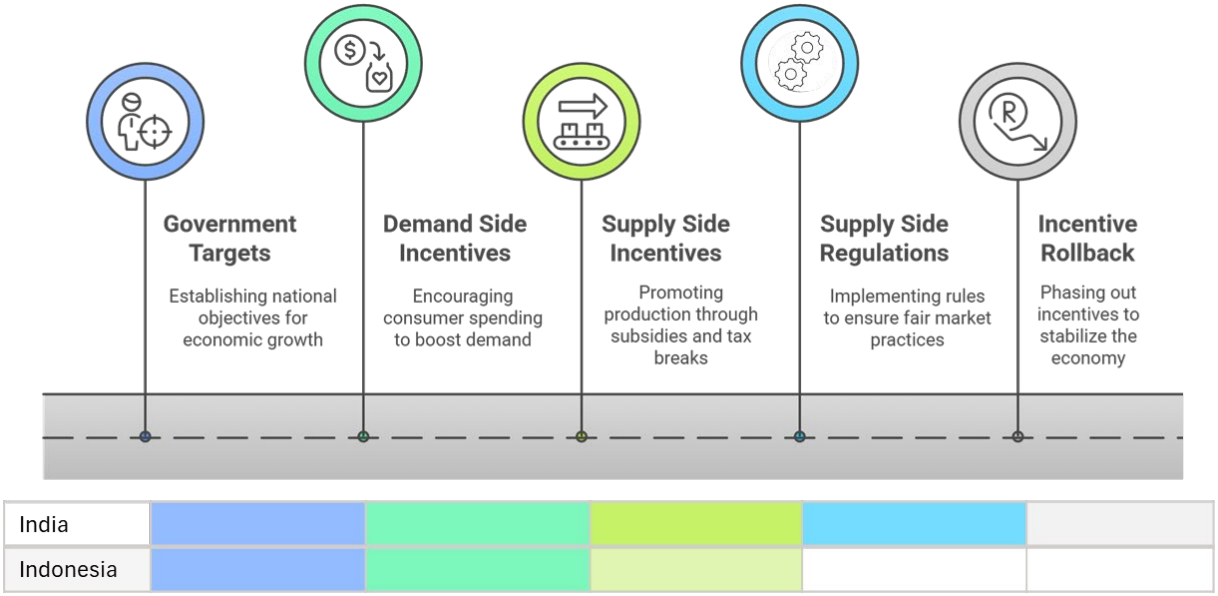
In India, new passenger electric car sales have seen a growth[li] of ~7% Y-o-Y between 2023 and 2024 taking the total number[lii] to ~100,000. Similarly, Indonesia is seeing a spurt[liii] in ownership of private electric cars growing from 0.1% in 2021 to 4.8% in in the first 4 months of 2024.

While both countries have ambitious EV targets and offer fiscal incentives, their approaches to policy design and implementation differ.

Comparison of the evolving EV Policy landscape

While both countries have introduced incentives to increase the EV adoption, Indonesia's policy landscape is yet to evolve to include supply-side regulations. On the other hand, both the markets are yet to mature to develop incentive rollback frameworks. States of Delhi in India, having initiated such rollbacks, had to reintroduce them due to complete failure[liv] of the market to thrive without them, discussed in the next section. The illustration below maps policy progress made by India and Indonesia to accelerate EVs.

Figure 2: EV policy landscape is evolving in India and Indonesia



Source: Author's interpretation

The Curious Case of Policy Shifts

Policy consistency is essential, particularly in emerging sectors, as it ensures stability and builds trust among the target stakeholders. Conversely, frequent or unpredictable policy changes can create uncertainty, reduce efficiency, and deter investment. Another important aspect to consider is market maturity while making changes to the fiscal incentives provided to manufacturers or consumers of new technology. Parallels can be drawn for the EV sector, showcasing how policy consistency or lack thereof shapes market outcomes.

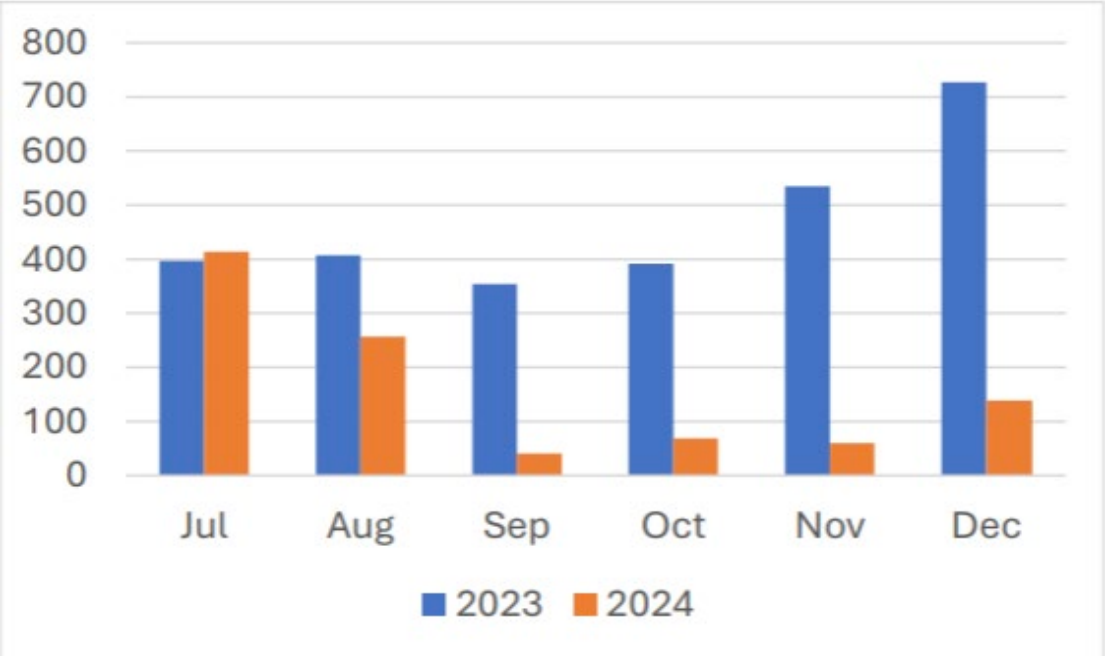
Norway, the global leader[lv] in EV adoption, provides a compelling case study. In just 12 years, Norway's EV sales surged[lvi] from negligible numbers to 80% of all new car sales, driven by two key policy approaches:

a) Sustained Government Support: Consistent fiscal incentives were provided[lvii] to consumers until EV technology matured and achieved cost parity with conventional vehicles.
b) Infrastructure Investments: The government invested[lviii] heavily in charging infrastructure and introduced initiatives[lix] like the "right to charge," making EV ownership practical and appealing.

As a result, Norway's EV market became self-sustaining, allowing the government to gradually phase out[lx] incentives, particularly for luxury vehicles, without disrupting the market. While Norway is far ahead of the curve in EV adoption, it set a trajectory for other countries where the ecosystem is still at a nascent stage.

In contrast, abrupt policy changes in less mature markets can have adverse effects. For instance, in September 2024, the Delhi government withdrew[lxi] the road tax waiver for electric cars and two-wheelers due to the expiration of Delhi's EV Policy 2020. This policy shift led to a nearly 10% increase in EV prices and caused sales to plunge, as illustrated in Figure 3.

Figure 3: The sale of electric vehicles in Delhi saw a steep reduction post subsidy withdrawal



Similarly, in Indonesia, early subsidies helped reduce risks for new market entrants and encouraged investment. However, sudden changes to these incentives have triggered negative reactions from manufacturers who have already committed significant resources to local production. The Government of Indonesia earlier provided[lxii] VAT reduction subsidy to those local manufacturers who met 40% local content requirement. The VAT on purchase of the vehicle was reduced by 1% from 11%, reducing the effective purchase price for the customers. However, to attract foreign manufacturers, import duty on completely built up (CBU) and completely knocked down (CKD) EVs stands reduced[lxiii] to 0%, subject to certain conditions. Comparative cost estimates are provided in Table 1.

As a result, the domestic manufacturing market clearly suffered a setback[lxiv] impacting domestic investments and indigenous manufacturing. These cases underscore the importance of stable, well-timed policy support in nurturing emerging sectors. Policy consistency not only encourages investment and innovation but also ensures that markets can transition smoothly as technologies mature and become self-sustaining.

While both India and Indonesia saw different policy shifts, their impact on the domestic market remained similar, that is hindering the sectoral progress. A structured platform for knowledge exchange between the countries where policies and their shifts can be assessed and shared can support envisaging the scenarios better and help inform the decisions better.

Major Policy Bottlenecks – A Case Comparative of India and Indonesia

As noted in the previous section, it is crucial to identify geographies that are similar in terms of socio-economic factors, preferred mode of transportation, consumer's approach to electric mobility, and national climate goals among others. This can create space for knowledge exchange on policy and regulatory framework in local context. Since the EV ecosystem operates differently in each country, exchanging knowledge on policy design and implementation can significantly enhance the effectiveness of these efforts. As discussed in this section, although India and Indonesia are at different stages in their EV transitions, the lessons learned in each context can be shared and adapted to accelerate progress in both countries.

1. **Utility of supply-side regulations:** Indonesia has provided supply-side incentives to the manufacturers to reduce the landed cost of the electric cars through reduction in VAT from 11 per cent to 1 per cent and complete waiver of luxury tax and import tax. However, the penetration of EVs in Indonesia is less than 1 per cent.[lxv] Supply-side regulations can nudge the markets by ensuring supply of electric vehicles. For instance, adoption of fuel consumption standards such as the Corporate average fuel efficiency (CAFE) norms in India pushes OEMs to manufacture more fuel-efficient fleets, gradually changing the mix of vehicles sold to comply with the norms.[lxvi] Another supply side regulation that can be adopted as the ecosystem matures is to mandate a specific percentage of EV sales by each manufacturer to be EV as has been implemented by the U.S. state of California. Though India and Indonesia have gradual ZEV mandate, but the manufacturers may still hesitate to foray into pure EVs if they comply with emissions norms.
2. **Ensuring Policy Certainty:** The policies in Indonesia are typically renewed annually – this creates major uncertainty, especially among the investors. For instance, foreign investors setting up manufacturing plants would have to account for the unavailability of tax rebates as soon as perhaps next year. A recent example is the non-renewal of subsidies on electric two-wheelers whereas the previous administration had allocated[lxvii] IDR 7 trillion[lxviii] (USD 453 million) to incentivize electric motorcycles translating to about IDR 7 million[lxix] (~ USD 435) for each vehicle. On the other hand, incentives and subsidies in India are announced either tied to specific time-periods or targets, providing certainty to the sector. However, this approach has sometimes limited the development of supporting infrastructure, such as charging stations. Consequently, it has limited the uptake of electric two and three wheelers.[lxx] In 2023, the sale of two and three wheelers totaled 11,500 vehicles as against the Government target of 200,000 vehicles.
3. **Creating space for sub-national policy frameworks:** There are no specific sub-national targets. In terms of fleet electrification, Trans Jakarta, the public bus operator of Jakarta city in Indonesia aims to electrify their entire fleet by 2030.[lxxi] But other than this, most mandates and targets are set by the Government of Indonesia. In contrast, India's subnational EV policies have significantly contributed to accelerate electric mobility transition through opportunities to customize[lxxii] policies, regulations, incentives, and infrastructure that align with local conditions.

While addressing various policy bottlenecks require national-level reforms, a greater regional cooperation and knowledge exchange can inform the policy design and enhance implementation.

The Case for Global-South Cooperation

As countries advance their EV transitions, cross-country collaboration can help identify shared challenges and opportunities to accelerate progress. These efforts can support acceleration while aligning with country-specific climate and development goals. There are various ways in which this can take shape through mutual collaboration, as discussed below:

- Establish guardrails to minimize sectoral risks focusing on supply chain diversification for critical minerals and battery manufacturing as well as recycling ecosystems.
- Create regional harmonized frameworks to facilitate interoperability and safety protocols to enable faster scale in international markets.
- Enable private sector participation so that technology and knowledge transfer can be facilitated while focusing on creating local jobs and infrastructure through public private partnerships.
- Facilitate technological innovation through shared research and development initiatives and creating avenues to reduce associated costs including testing facilities and regional knowledge hubs.
- Focus on cross learning and knowledge sharing by creating unique value propositions for peer-to-peer exchange and continuous dialogues to evaluate policy impacts and identify best practices.

Collaborative approaches enable countries to share practical knowledge, pool resources, and co-create solutions that reflect their unique socio-economic realities and mobility needs. These partnerships can foster mutual learning and capacity building ensuring transitions that are inclusive and sustainable.

Structure of the Volume

Akanksha Golchha examines the critical role of Global South partnerships in accelerating the transition to electric vehicles (EVs) across developing economies. She uses a comparative analysis of India and Indonesia and explores how both nations are attempting to balance rapid economic expansion with urgent net-zero climate mandates. She maps their differing approaches to market development and manufacturing. She explains that India's reliance on production-linked incentives and highly customized state-level frameworks contrasts Indonesia's strategy of leveraging its vast critical mineral reserves through tax reductions to attract foreign investment.

A central pillar of Golchha's analysis is the importance of policy consistency. By contrasting the successful, long-term regulatory stability seen in Norway with the severe market disruptions caused by sudden subsidy withdrawals in Delhi and abrupt import duty shifts in Indonesia, she demonstrates how unpredictable policy environments actively deter investment and derail market momentum. Identifying shared vulnerabilities, such as the lack of strict supply-side regulations, year-to-year policy uncertainty, and underdeveloped charging infrastructure, Golchha argues that emerging markets cannot overcome these systemic bottlenecks in isolation. Ultimately, she advocates for structured, collaborative frameworks across the Global South. By harmonizing safety protocols, securing critical mineral supply chains, and facilitating deep technological and policy knowledge exchange, Golchha concludes that developing nations can pool their resources to foster an inclusive, self-sustaining electric mobility transition.

Energizing Viksit Bharat: India's Technological Path to Economic Transformation Through Energy Independence

Neelima Jain

Abstract

India's energy transition is not a climate add-on; it is a core industrial and economic strategy. Three near-term choices —transport electrification, efficient cooling, and 24/7 clean power —can simultaneously strengthen energy security, lower system costs, and anchor domestic manufacturing. Our modelling indicates three layoffs:

1. *Transport electrification can sharply reduce oil imports over the next two decades, yielding about $2.5 trillion in consumer savings (2023–2050)[lxxiii] even after higher EV capex and putting India on a path to energy independence by 2047.*
2. *Without stronger standards, room air conditioners alone could add ~180 GW to peak load by 2035; raising the BEE 1-star floor (ISEER) on a clear roadmap could avoid >60 GW, avert ₹7.5 trillion in supply-side investments, and deliver up to ₹2.2 trillion in net consumer savings [lxxiv]*
3. *24/7 clean power is already bankable in India; recent auctions indicate delivered wholesale prices under ₹6/kWh, making firmed renewables a credible alternative to new thermal additions.[lxxv]*

Doing this at speed requires ~$10 billion in storage by 2027 to avoid shortages and ~$600 billion in clean-power investments by 2035 – both within India's execution capacity with clear policy signals and timely transmission upgrades.[lxxvi] That is a large number. It is also doable.

Why the transition is an economic necessity

India's growth story is a rapid rural-to-urban shift paired with rising living standards and heat stress. How India powers that shift will determine trade balances, inflation exposure, and industrial competitiveness for decades. The economic case is straightforward:

Energy security & macro stability. UC Berkeley's modeling indicates India can nearly eliminate oil imports by 2047 through transport electrification and achieve inflation-proof yet dependable electricity by meeting new demand with renewables. That pathway also reduces industrial coal imports via electrification and green hydrogen.

Consumer surplus & jobs. EV adoption yields ~$2.5 trillion in consumer savings through 2050[lxxvii], with induced job gains that outweigh fossil-tax revenue losses.

Investment scale is large but tractable. To keep reliability while cleaning up supply, India will need 15–20 GW/60 GWh of storage by 2027 (≈$10 billion), and on the order of $600 billion by 2035 to build out RE + storage.[lxxviii]

These are not distant hypotheticals. The purchasing choices that India will enable over the next five years—vehicles, appliances, and firm clean power, will lock in either efficient, low-cost trajectories or expensive, import-exposed ones. Notably, 95% of the appliances in 2040 have yet to be purchased, giving standards and demand-side policy outsize leverage.

Pillar I — Transport electrification

India's EV market is accelerating, but crucial segments such as private buses, medium and heavy-duty trucks, and a large share of passenger cars, remain far from scale. Today, support relies heavily on subsidies (FAME, GST rebates) that are fiscally visible yet insufficient to move manufacturers and consumers at speed. A complementary instrument used successfully in other markets, a Zero-Emission Vehicle Obligation (ZEVO) on automakers, can create durable investment certainly while reducing reliance on budgetary subsidies.[lxxix]

What does ZEVO do? It requires automakers to ensure a stipulated share of sales are ZEVs annually (with tradable credits and penalties for non-compliance). When consumers are unwilling to pay a premium, ZEVO shifts the onus to OEMs to innovate, scale, and market ZEVs or purchase credits, thereby turning the policy into an implicit tax on internal combustion engines (ICE) and an implicit subsidy to ZEVs without large direct budget outlays.

Why India needs ZEVO now. Despite existing rebates, adoption remains low in several segments and is practically non-existent in private buses and trucks; a binding obligation can unlock larger OEM investments, reduce per-unit costs via scale, and crowd in private capital for charging and supply chains.[lxxx]

Pillar II — Cooling India efficiently

Heat risk is now a first-order development issue: AC ownership is climbing, yet fewer than one in ten households currently have AC access. Without policy action, room air-conditioners alone could add on the order of 180 GW to peak demand by 2035.[lxxxi] India's current star-label thresholds are too lenient relative to what the domestic market can already supply at competitive prices. The most cost-effective intervention is to reform minimum energy performance standards (MEPS) so that the market's floor, not just its ceiling, moves upward.

A practical roadmap is to raise the 1-star threshold to what is effectively today's 5-star by 2027, then ratchet to globally leading levels by 2030 and 2033).[lxxxii] That ensures new sales are efficient by default, not by exception. Because hundreds of split-AC models in the Indian market already exceed these thresholds, the policy anchors a predictable, higher-volume demand for efficient components (inverter compressors, heat-exchangers, electronic expansion valves) without forcing a technology dead-end.

To maximize consumer and system benefits, standards should be paired with updated test procedures that reflect Indian operating realities (high humidity, significant latent loads, and extensive part-load operation). Procurement can do the rest: run annual bulk buys for super-efficient models, aggregate demand across states and large buyers, and then flow the price advantage into retail programs with on-bill financing and consumer-friendly warranties. Utilities and state nodal agencies can integrate these programs with demand-response offerings that modestly shift evening loads without sacrificing comfort.

Complementary policies matter building-code updates for thermal performance, incentives for efficient fans and cool roofs, and a refrigerant strategy that accelerates the transition to lower-GWP alternatives while ensuring safety and service-technician training. These measures keep bills down, tame

the peak that drives the most expensive generation and network capacity, and improve indoor comfort and productivity.

Pillar III — 24/7 clean power as the new baseload

Grid reliability concerns often default to "add more thermal." But India's own procurement is now demonstrating that firmed renewables (RE + storage) can be procured under ₹6/kWh on a 24/7 basis[lxxxiii], which is broadly competitive with new coal once fuel and balancing costs are included.

The near-term reliability gap is storage, not generation. Our modeling indicates India needs 15–20 GW/60 GWh of storage by 2027[lxxxiv] to avoid shortages and will plan toward ~140 GW storage by 2035 alongside a terawatt-scale RE buildout. Total clean-power investments on this path are ~$350 billion by 2030 and ~$600 billion by 2035.[lxxxv]

Transmission is a co-bottleneck: targeted up rates and advanced conductors can expand existing corridor capacity two- to five-fold while new lines are permitted and built[lxxxvi]

A sensible 2025–2035 trajectory is to expand 24/7 and peak-period clean-power auctions with standard contracts and payment security. Specify the delivery window and minimum availability and let bidders choose the mix of renewables and storage; this builds on India's recent auction evidence that renewables + storage can deliver 24/7 power for <₹6/kWh. Make storage financeable with a clear revenue framework so batteries are paid for being available at critical hours, stabilizing the grid , and shifting energy from daytime to evening (time-of-day pricing); this targets the true near-term gap, about 15–20 GW (~60 GWh) of storage by 2027, rising toward ~140 GW by 2035 alongside rapid RE build-out.[lxxxvii] In addition, fast-track transmission uprates where rights-of-way are tight by deploying advanced conductors and targeted upgrades that can raise corridor capacity two- to five-fold, buying time while new lines are permitted and built.

From projects to industrial policy

To lock in cost advantages and domestic value-addition, India needs a coherent package that aligns mandates and targets, incentives (viability-gap funding where justified, concessional finance), manufacturing support (PLI focused on strategic components), infrastructure planning (charging, storage, transmission), and social policy (reskilling and just transition). The goal is to convert cheap clean kilowatt-hours into competitive industry: batteries and power electronics on the mobility side; compressors, controls, and heat-exchanges on the cooling side; and systems engineering companies that design, build, and operate firm renewables at scale.

Trade policy and standards are part of this architecture. Harmonized charging standards, interoperable payment systems, and robust safety norms reduce system-level risk. Smart, time-bound tariff design can encourage domestic value-addition without isolating India from globally efficient supply chains. On the workforce side, a national skilling push for EV maintenance, battery handling and recycling, HVAC installation and servicing, and grid-scale storage operations will ease the transition for workers and raise service quality.

Ten policy actions for 2025–2035

1. Adopt a national ZEVO by 2026–27. Start with modest targets and ramp to 100% ZEV sales by 2035 for two-/three-wheelers and light-duty vehicles; set credible, rising shares for buses and heavy trucks. Allow banking/borrowing and limited inter-segment crediting.
2. Pair ZEVO with targeted fiscal tools. Retain GST differentials and time-bound support for buses and trucks; direct public finance toward depots, corridor charging, and distribution upgrades rather than per-unit subsidies.
3. Publish a 10-year AC-MEPS roadmap in 2025. Lock in 1-star thresholds roughly equivalent to today's 5-star by 2027, with further ratchets by 2030 and 2033. Update test procedures for humidity and part-load operation.
4. Run annual ultra-efficient AC procurements. Aggregate demand across states and large buyers generate volume discounts, then pass those through to retail with on-bill financing and robust after-sales support.
5. Scale 24/7 and peak-power auctions to 30–40 GW per year. Standardize contracts, clarify storage revenue stacks, and prioritize procurement in regions with demonstrated shortfalls.
6. Commit to a national storage target and revenue framework. Aim for 15–20 GW (~60 GWh) by 2027 and build toward ~140 GW by 2035. Enable storage participation in capacity and ancillary service markets and define time-of-day tariffs that reward flexibility.
7. Fast-track transmission increases. Deploy advanced conductors to raise corridor capacity two-to-five-fold where rights-of-way are binding; co-site storage at renewable hubs to reduce congestion.
8. Finance at scale. Use blended finance (sovereign green bonds plus DFIs) for storage and transmission; offer partial-risk guarantees for DISCOM-facing contracts to reduce the cost of capital.
9. Deepen manufacturing. Extend and retarget PLI to strategic EV and cooling components (cells, cathodes/anodes, power electronics, inverter compressors, heat-exchanges, electronic expansion valves) so domestic firms capture policy-driven demand.
10. Just transition and workforce. Use the 10–15-year lead time before fossil output declines to retrain workers and build supplier capabilities; prioritize clean-industry clusters co-located with renewable resources and load.

What India demonstrates to the world

A large, fast-growing economy delivering more energy services with less import exposure, via electrified mobility, efficient cooling, and firm renewables offers a replicable model for Global South. The narrative is concrete: lower household bills, better reliability, cleaner air, and competitive industry. Locking in these choices now positions India for leadership in emerging clean-tech markets while advancing development goals.

Conclusion

The relevant question is no longer whether India should pursue a clean energy transition, it is how quickly we can align markets, manufacturing, and infrastructure to harvest the dividends. A ZEVO to drive EV scale, MEPS-led AC efficiency to tame peak demand, and 24/7 clean power to guarantee reliability are the most immediate, scalable levers. Executed together, they bend India's energy system toward security, affordability, and leadership—the essence of Viksit Bharat.

Structure of the Volume

Neelima Jain argues that India's energy transition must be approached as a foundational industrial strategy essential to achieving a "Viksit Bharat" (a developed India). She asserts that securing macroeconomic stability, nearly eliminating oil imports by 2047, and generating $2.5 trillion in consumer savings requires immediate, aggressive action across three critical pillars: transport electrification, highly efficient cooling, and the deployment of 24/7 firmed clean power.

To operate this transition, Jain proposes a shift from subsidy-dependent models to market-shaping mandates, most notably advocating for a national Zero-Emission Vehicle Obligation (ZEVO) that shifts the onus of scaling EV production directly onto automakers. Concurrently, she highlights the severe grid risks posed by rising heat stress, calling for a radical ratcheting of Minimum Energy Performance Standards (MEPS) for air conditioners to avert a projected 180 GW surge in peak power demand by 2035. To reliably support this electrified demand, Jain outlines a bankable pathway for clean power generation, emphasizing the urgent need to deploy 15–20 GW of grid storage by 2027 and utilize advanced conductors to rapidly multiply existing transmission capacity. Ultimately, Jain concludes that by aligning these targeted mandates with domestic manufacturing incentives and infrastructure planning, India can establish a replicable, economically viable clean-tech blueprint for the entire Global South.

Self-Help Groups Boost Women's Labor Force Participation in Rural India

Dr. Shantanu Khanna

Abstract

India's National Rural Livelihoods Mission (DAY-NRLM) is the world's largest livelihoods program. We examine the labor market impacts of this program by combining administrative data on SHG membership across districts in India with survey micro-data on labor force and employment outcomes of rural women between 2011 and 2019. Using generalized difference-in-differences, we find that SHG membership is positively associated with labor force participation and employment of rural women. SHG membership is also associated with a shift towards self-employment and a crowd-out of casual work.

The Labor Market Effects of the World's Largest Livelihoods Program

India's Deendayal Antyodaya Yojana-National Rural Livelihoods Mission (DAY-NRLM) is the world's largest livelihoods program, currently mobilizing over 74 million women—a population exceeding the combined total of Australia and Canada. This program, officially launched in 2011, works by organizing rural women into self-help groups (SHGs) with the explicit aim of creating or enhancing livelihood opportunities through self-employment.

There are two seemingly contradictory trends that are notable: First, India's female labor force participation (FLFP) has declined significantly, driven primarily by a drop in rural FLFP from 49% in 2004–2005 to 25% in 2017–2018.[lxxxviii] Second, during this same period, enrollment in DAY-NRLM has continuously increased. These trends appear contradictory because livelihoods programs like DAY-NRLM are explicitly designed to increase employment and income by easing credit constraints, promoting asset creation, and providing skilling opportunities.

In this conference paper, we summarize findings from the first nationwide, longitudinal assessment examining the relationship between SHG enrollment and female labor market participation in India.[lxxxix] Our study combines administrative data on SHG membership across districts with survey microdata on labor outcomes of rural women between 2011 and 2019.

Key Findings: SHGs Have Positive Labor Market Effects

To estimate the causal impact of SHG enrolment on labor market outcomes of women, we exploit the variation in SHG growth over time and across districts in India. Using a generalized difference-in-differences approach, our research reveals several important findings:

1. Positive impact on labor force participation: A ten-percentage point increase in district-level SHG membership is associated with a 1.4 percentage point increase in female labor force participation. This represents a 3.7% increase over the 2011 baseline.

2. Higher employment rates: The increased labor force participation reflects higher employment probabilities and lower unemployment among women induced by increases in the presence of SHGs.

3. Shift in employment type: Among employed women, higher SHG enrollment is associated with an increase in self-employment and a corresponding decrease in casual labor. A 10-percentage point

increase in SHG membership leads to approximately a 1.2 percentage point increase in self-employment and a 1 percentage point decrease in the share of casual labor.

4. No negative spillovers: Importantly, we find no significant impact of the program on male labor force participation or employment, mitigating concerns about potential unintended consequences.

5. Analysis using individual membership status: Supplementary analysis using data from Deshpande and Khanna (2021)[xc] showed that SHG membership is associated with a 3.9 percentage point increase in participation in economic activities. Moreover, women with longer duration of SHG membership (above median duration) had 4.4 percentage point higher participation rates compared to newer members.

6. Inclusive benefits: The labor market benefits were found to be higher for historically disadvantaged groups, particularly Scheduled Castes and Scheduled Tribes, indicating the program's effectiveness in reaching marginalized populations.

These findings suggest that the decline in female labor force participation observed in national statistics could have been worse in the absence of the DAY-NRLM program. Our study resolves the apparent enigma: higher program concentration is indeed associated with greater female labor force participation at the district level, consistent with program objectives.

Policy Implications and Future Directions

The positive relationship between SHG membership and women's economic participation offers several important policy insights. The positive labor market impacts of DAY-NRLM suggest that scaling up these programs could help counteract the broader declining trend in female labor force participation. Previous studies have found that SHG programs have reduced household debt[xci], improved food security[xcii], increased asset holdings[xciii], and enhanced credit uptake[xciv].

The shift toward self-employment among SHG members aligns with program objectives. Our findings are consistent with Menon and Rodgers (2011)[xcv] who also find that access to credit encourages women's self-employment. However, policymakers should ensure that this self-employment represents sustainable, productive economic activity rather than low-productivity "survivalist" enterprises. We do not make claims about how this self-employment is split between smaller-scale livelihood opportunities or genuinely entrepreneurial activities.

We also find stronger impacts for Scheduled Castes and Scheduled Tribes, highlighting the importance of ensuring that SHG programs effectively reach historically marginalized communities and consistent with the fact that SHGs target poorer women. Multiple studies have documented the positive effects of SHG membership on women's autonomy and involvement in public and private life.[xcvi] SHG members are more politically engaged, more aware of public entitlements, and show greater propensity for collective action.[xcvii]

While SHGs show positive impacts, note that increasing Indian FLFP to international standards would require much more than SHG enrollment. Mainstream explanations of the decline in FLFP have focused on supply-side factors (conservative social norms). However, there is also strong evidence that demand-side explanations related to structural shifts in employment are critical factors.[xcviii] Evidence

suggests that technological changes have replaced women's work in agriculture[xcix], and climate change decreases women's workdays more than men's.[c]

The longevity of India's rural livelihoods programs offers valuable lessons. DAY-NRLM has survived changes in national governments and political shifts. This continuity has likely contributed to its effectiveness. Thus, even in resource-constrained settings, it is possible to build and sustain a program with membership-based organization of the poor as its core foundation.

The need to boost rural non-farm employment remains strong and urgent. The increase in India's working-age population far outpaces job creation, and women often lag behind men in the queue for scarce jobs due to the disproportionate burden of domestic and care responsibilities. Self-help groups represent an important tool, but addressing the broader challenges of female labor force participation requires comprehensive policy approaches.''

Structure of the Volume

Dr. Shantanu Khanna addresses a central paradox in India's rural economy: the simultaneous decline of female labor force participation (FLFP) and the massive, continuous expansion of the Deendayal Antyodaya Yojana-National Rural Livelihoods Mission (DAY-NRLM), which is the world's largest livelihoods program. He utilizes a generalized difference-in-differences approach to analyze district-level administrative and survey micro-data from 2011 to 2019, Khanna demonstrates that organizing women into self-help groups (SHGs) yields decidedly positive labor market outcomes. He finds that SHG membership significantly boosts FLFP, shifts employment away from casual labor and toward self-employment, and delivers the strongest economic benefits to historically marginalized communities, such as Scheduled Castes and Scheduled Tribes.

Khanna argues that without the intervention of DAY-NRLM, India's aggregate decline in FLFP would have been substantially worse. Ultimately, he highlights the resilience and success of the SHG model in fostering women's economic autonomy. The paper concludes that relying on supply-side interventions is not enough; fully reversing the downward trend in women's workforce participation will require comprehensive, demand-side policy approaches that address structural barriers like technological displacement in agriculture and climate change.

India's Evolving Security Role in the Indo-Pacific: A Role Theory Perspective

Aditi Malhotra[ci]

Abstract

The global order shaped after the World War II is undergoing a profound transformation, marked by the erosion of unipolarity, the rise of Asian powers, and an era of complex multipolarity. Within this context, India has assumed growing strategic significance, particularly in the Indo-Pacific, where its role has attracted considerable scholarly and policy attention. While India is often viewed through the lens of counterbalancing China, this article argues that such a framing overlooks the complexity and idiosyncrasies of its foreign policy behavior. Despite ongoing tensions with China, India remains engaged in multilateral institutions, avoids direct competition in regional arms trade, and adopts a cautious approach to security groupings like the Quad. To explain these patterns, the article utilizes the framework of role theory, which explores how the confluence of a state's self-conception and external expectations shape its international behavior. Key concepts such as role conception, role performance, and the conception–performance gap have been used to analyze India's security actions. The paper argues that a nuanced understanding of both internal and external drivers is essential to explain India's strategic posture, moving beyond simplistic threat-based interpretations.

Introduction

It is widely acknowledged that the global order established after World War II has been undergoing substantial transformation. The gradual erosion of unipolarity, the rise of Asian powers such as India and China, and the emergence of a multipolar world order set in motion a transformation that continues to unfold. In this context, India has assumed an increasingly important role. The growing prominence of the "Indo-Pacific" as a geopolitical construct and the sustained diplomatic attention it has drawn from the US and its allies is a testament to the strategic weight of the region. Since the early 2000s, New Delhi has attracted considerable scholarly and policy interest, primarily due to its perceived potential to "balance" China's economic and military rise.

Although scholarship in International Relations, Foreign Policy Analysis, and Security Studies has engaged extensively with India's geopolitical, economic, and military trajectory, it has largely approached India's foreign and security policy actions through the lens of the "China threat."[cii] Undoubtedly, China is one of the explanatory variables but attributing the spectrum of Indian external actions to this one factor provides a partial and often misleading account. For instance, despite India's periodic confrontations with China along the disputed border including the violent clash as recently as December 2022, New Delhi has not disengaged from institutions like the Asian Infrastructure Investment Bank, where it remains the second-largest shareholder.[ciii] In terms of the military rise, India's naval modernization seems to prioritize soft power and maritime influence over developing a submarine force aimed at countering China's regional presence.[civ]

Additionally, if India were actively seeking to counterbalance China in the Indo-Pacific, one would expect a more competitive posture in the arms trade with Southeast Asian countries. Yet data from Stockholm International Peace Research Institute reveals that India lags significantly behind China in this area and shows little sign of competing directly.[cv] New Delhi has also been cautious about positioning the Quad as a traditional security grouping, preferring to focus on non-traditional areas of cooperation instead. This reflects a deviation from the hard balancing typically anticipated by theoretical

frameworks. To explain these inconsistencies, scholars have felt the need to introduce more nuanced concepts of balancing, such as "soft balancing" or "under balancing."[cvi]

India's emergence as a security actor cannot be fully understood through external factors alone. A deeper understanding requires examining how its security role has evolved in the Indo-Pacific, the key drivers behind this transformation, and the constraints that limit New Delhi's ability to seamlessly perform the role it assumes for itself. Relying solely on the China factor to explain Indian actions inevitably leads to confusion thus making India's behavior appear inconsistent with the expected balancing behavior. It is equally crucial to grasp how the confluence of both endogenous and exogenous factors shapes its behavior, across different issues and to varying degrees. To explain these dynamics, the paper applies the conceptual framework of role theory to analyze India's security policy.

Role theory in international relations focuses on a range of conceptual blocks such as role conception, self-conception, external expectations, and conception performance gap. Role Conception can be described as "an actor's perception of his or her position vis-à-vis others and the perception of the role expectations of others as signaled through language and action."[cvii] It involves two key elements: the state's own perception of its appropriate role, shaped by domestic views and policymaker beliefs) and external expectations, i.e., the roles that other states expect it to play, based on systemic factors and international signals. In essence, the self reflects internal drivers of a state's role, while external expectations capture the external influence of the broader international environment. Role theory also distinguishes role conception from role performance, which refers to the actual foreign policy actions and behaviors a state carries out. While these roles emerge from a mix of internal and external factors, this does not necessarily mean a state can effectively fulfill all of them in the manner they are anticipated. Engström and Smith refer to this gap between the stated role conception and actual policy actions as a conception–performance gap.[cviii] These concepts will be utilized to clarify the Indian case.

India's Role Evolution and Facilitating Factors

After the Cold War, India's foreign policy altered significantly due to the collapse of the Soviet Union, an important strategic partner during the yesteryears. New Delhi felt compelled to rethink its foreign policy role and move beyond its traditional non-alignment stance. While the Cold War era was marked by efforts to keep extra-regional powers at bay, the post-1991 environment led India to gradually adopt more ambitious roles at the regional level.

By the early 2000s, India began assuming the role conception of a major power, shape in large part by the simultaneous interplay of internal and external factors. India's aspiration to "reclaim its rightful place in the comity of nations"[cix] (ideational internal factor) was supported by its rapid economic growth (material internal factor), and increased encouragement of India's rise in Asia (external expectations) by regional and extra-regional actors. Countries across Southeast and East Asia such as Japan and Singapore, along with the U.S. and its allies increasingly saw India as a valuable economic and strategic partner, particularly in balancing China's regional influence. However, India's vision extended beyond merely acting as a counterweight or balancer. On the other hand, it sought broader, independent roles at the regional and global level. The favorable internal and external environment prompted Indian policymakers to pursue a more ambitious strategy thus giving rise to a multi-alignment strategy. Notably, the multi-alignment strategy enabled New Delhi to work with multiple powers simultaneously and afforded it the luxury of strategic autonomy (internal factor). To expand, strategic

autonomy remains an enduring aspiration in New Delhi's foreign policy shaped largely by its colonial past and its determination to avoid entanglement in the security dilemmas of other states.[cx]

India's economic rise spurred a maritime focus (internal factor), driven by the need to safeguard sea lanes vital to trade and energy imports. This resulted in increased investment in naval capabilities.[cxi] After 2007, India grew increasingly uneasy with China's assertiveness along their land borders and in the Indian Ocean. While India had previously balanced cooperation with China while simultaneously positioning itself as a counterweight to attract Western support, it gradually began to view China more clearly as a security threat in the later years.[cxii] India steadily took on broader security roles, including first responder for Humanitarian Aid and Disaster Relief Operations in the Indian Ocean, as a net security provider in the Indian Ocean, and a stakeholder in the security of the Indo-Pacific.[cxiii] It also increased security cooperation with countries like the U.S., Japan, Australia, Vietnam, Singapore, and Indonesia, and solidified its role as a rising security actor with closer alignment to regional and extra-regional actors.

By 2014–2015, India began positioning itself as a leading power, capturing its self-conception as one of the poles in a multipolar world.[cxiv] Overall, the shifts in India's security role reflected not only its aspirations and ambitions to become a proactive regional system shaper (bolstered by its economic growth and rising security profile) but also New Delhi's evolving response to the increasing involvement of external actors over time. This argument commands attention as its underscores that India's role evolution was shaped not solely by a putative intent to counterbalance China (although the China threat began featuring as one of the factors eventually), but by a complex interplay of multiple, simultaneous influences.

Constraining Factors

Despite India's aspirations for more prominent strategic and security roles, a gap persists between its declared role conceptions and their actual implementation. Theoretically, this is known as the conception–performance gap.[cxv] Often, theorists assume a direct link between role conception and performance—that a state will naturally act in line with its stated roles. However, this overlooks the real-world constraints that can hinder role implementation. Despite a country's intentions, various limiting factors may prevent it from performing as expected. Practically, a range of internal and external factors tends to somewhat limit India's ability to consistently translate its stated security roles into corresponding action. This is one of the reasons why India's limited performance is sometimes mistakenly interpreted as a lack of intent, rather than the result of real-world constraints.

Domestically, India's ability to implement its security role is at times constrained by limited resources, with the post-2008 economic slowdown and a relatively stagnant defense budget hampering military modernization. Bureaucratic delays, inter-service rivalries, and turf battles between civilian and military agencies further complicated strategic planning. While land border tensions with China and Pakistan dominate priorities, this continental focus often sidelines maritime ambitions. Meanwhile, a weak defense industrial base, slow progress in indigenization, and the absence of a whole-of-government approach continue to undermine efforts toward self-reliance and timely procurement.[cxvi]

On the international front, India's external engagements are marked by both convergence and divergence. While India's broader strategic outlook aligns with countries like the United States, Japan, and certain ASEAN members, notable differences persist, especially in how these partners approach managing China and conducting economic engagements. India's desire to maintain strategic autonomy

and unwillingness to forge security alliances continues to shape its external engagements. This cautious approach is reflected in New Delhi over its on-the-fence stance on the Russia-Ukraine conflict.[cxvii] While cooperation with the United States has deepened over years despite challenges, the Trump administration's America first stance and transactional foreign policy tend to create lingering uncertainty in New Delhi about relying too heavily on Washington. New Delhi's reluctance to openly criticize Moscow and its lack of alignment with the West on this issue have been a point contention in U.S.-India relations. These factors contribute to the gap between its declared roles and actual policy conduct because of the pushback from external actors on specific circumstances. Even when it comes to the India-China dyad, despite ongoing border tensions, New Delhi continues to engage with Beijing on issues like trade, multilateral reforms, and climate change, reflecting a complex and often contradictory relationship.

In conclusion, India's security behavior in the Indo-Pacific reflects a subtle balance between ambition, layered intentions, and constraints. While certain conditions have supported its emergence as a security actor, others within the same domains have simultaneously limited their capacity to act. This intricate interplay challenges simplistic labels like hard, soft, or under-balancer and shows that all India's actions cannot be solely explained by China's rise or constant balancing of external pressures.

Structure of the Volume

Aditi Malhotra challenges the narrative that India's evolving security role in the Indo-Pacific is driven solely by the imperative to counterbalance China. Utilizing role theory, Malhotra examines the complex interplay between India's internal strategic aspirations, shifting from traditional non-alignment to a self-conception as a "leading power", and the external expectations placed upon it by global partners. She highlights how New Delhi's seemingly contradictory behaviors, such as its cautious approach to the Quad's security dimensions and its continued engagement with the China-led multilateral institutions, are reflections of its deep-seated desire to maintain strategic autonomy. By analyzing the "conception-performance gap," Malhotra demonstrates that domestic resource limitations, bureaucratic hurdles, and complex international divergences actively constrain India's ability to seamlessly execute its assumed security roles. Ultimately, she concludes that India's geopolitical behavior must be understood as a navigation between high-level ambition and stark real-world constraints.

Countering China in the Maritime Domain Remains Vital to Indian Interests
Zachary Constantino

Abstract

India's brief yet intense conflict with Pakistan in May 2025, the warming of ties between Washington and Islamabad in the aftermath of those hostilities, and trade tensions with the United States have generated unexpected headwinds for New Delhi over the past year. Nonetheless, the steady pace of U.S.-India defense cooperation in 2025 served as a tangible indicator that even a bilateral downturn cannot upend the shared interests of both countries in balancing against China's bid to dominate Asia. Significantly, the U.S. and India renewed a 10-year framework in October to advance defense ties across multiple areas, including co-producing advanced capabilities.[cxviii] *The recent conclusion of an interim trade deal between Washington and New Delhi may create additional political space to advance shared defense priorities.*

In addition, the upswing in U.S.-Pakistan relations is likely temporary and cannot displace or inhibit India's status as an emerging great power. Indian policymakers are understandably strengthening their power-projection capabilities in the air and land domains, given Pakistan's military performance in 2025. But ensuring India's naval preeminence in the Indian Ocean remains vital to its long-term national security and prosperity, as well as U.S. interests, and Washington is uniquely positioned to support New Delhi's maritime requirements.

Pakistan is manageable . . .

India is a space-faring nation, home to an expanding middle class, a hub for technological innovation, and a net security provider securing sea lanes crucial to global commerce. India is courted at the global high table while Pakistan lurches from one IMF loan to the next to avert insolvency. Pakistan-based terrorism aimed at India will persist, but the dangers can be managed through targeted counterterrorism strikes, improved intelligence collection, and backchannel diplomacy to ensure crises do not spiral out of control.

India need not worry about the United States prudently maintaining channels to Pakistan's generals and even undertaking a modest reboot. Hard realities will constrain U.S.-Pakistan ties to transactional business. In the event of another India-Pakistan crisis, the ability of the White House to moderate Rawalpindi's risk-prone behavior might be advantageous to India. China has also conspicuously avoided militarily intervening on Pakistan's behalf since the launch of its so-called "iron brotherhood" with Pakistan in 1963. In short, Pakistan poses no existential danger.

. . . But China is formidable

China is the only power capable of manipulating the balance of power in a manner inimical to India's global rise and regional position. Pakistan can needle India, whereas China increasingly shapes outcomes across India's periphery and beyond. Former Indian national security advisor Shivshankar Menon aptly weighed the scales when he observed, "Since 1990, Pakistan's agency within the international system has declined . . . and China's has risen phenomenally."[cxix] Despite diplomatic

efforts to stabilize Sino-Indian relations in the wake of a deadly border confrontation in 2020, India continues to face a Chinese military buildup along its northern border.

Nowhere does the Sino-Indian contest command greater stakes than in the Indian Ocean. Scholar John Garver captured the crux of the dilemma a quarter of a century ago when he wrote, "The essence of the problem is that foreign trade plays a vital and expanding role in both Chinese and Indian economies . . . the Indian Ocean sea lanes carrying that trade are threatened by the naval activities of the other country."[cxx] Those sea lanes are essential to Indian growth and prosperity. India utilizes Indian Ocean routes to transport 95 percent of its trade by volume.[cxxi]

Recognizing the centrality of safeguarding strategic maritime routes and the prospect of a rival power threatening such access, the People's Liberation Army Navy (PLAN) under President Xi Jinping has expanded the scope of PLAN missions and capabilities. Xi views building a navy capable of projecting power beyond the first island chain as an essential national security mission and a pillar of the PRC's ascendance on the world stage. Accordingly, China's 2015 defense white paper declared for the first time the PLAN's embrace of "far-seas protection."[cxxii]

The PLAN, the world's largest navy sustained by the world's largest shipping-building industry, is expanding its expeditionary fleet, access to regional ports, and at-sea experience to increasingly contest India's position as the resident naval power in the Indian Ocean. According to the 2024 U.S. Department of Defense annual report on Chinese military power, "The PLAN continues to develop into a global force, gradually extending its operational reach beyond East Asia into a sustained ability to operate at increasingly longer ranges, including a continuous presence in the Gulf of Aden" in the western Indian Ocean. In 2025, India's chief of naval staff warned the PLAN maintains "6-8 very capable combatants at any point [in] time" in the Indian Ocean region. Moreover, a former head of Indian naval intelligence cautioned that "China's growing geostrategic influence remains the biggest concern," owing in part to "regular and improving deployments outside the East and South China Seas."

In 2014, the PLAN began dispatching submarines into the Indian Ocean, missions that helped it to accumulate considerable expertise in operating well beyond China's near abroad. Supplementing these deployments are Chinese research vessels that undertake extensive data collection on the dynamic undersea environment in the Indian Ocean, providing intelligence crucial to facilitating future submarine operations. The PLAN is also developing stealthier submarines with longer endurance and using Chinese research vessels to demonstrate unmanned undersea surveillance capabilities. As India develops the sea-based leg of its strategic triad, the PLAN's growing presence in the Indian Ocean complicates the Indian Navy's search for secure bastions while raising the risk of accidental collision. Taken together, analyst Arzan Tarapore posits, "a relatively modest contingent of [PRC] submarines and UUVs [Unmanned Underwater Vehicles] could disrupt or hold at risk Indian or partner navies' operations across a wide area."

China is establishing the infrastructure to sustain a permanent PLAN presence in the Indian Ocean. Beijing implausibly characterized its one foreign base in Djibouti as exclusively a support platform for combating piracy and pursuing other non-military activities, such as evacuating Chinese citizens from unstable hotspots. However, commercial imagery indicates the Djibouti base's pier can host the PLAN's largest blue-water vessels, including aircraft carriers, and new pier construction is likely underway, exceeding counterpiracy needs. China is further expanding its regional access and footprint for civilian and potentially military applications.

India's choices

New Delhi is focused on Pakistan as a near-term threat, and it cannot ignore China's pressure along its land border. However, the more consequential arena of strategic competition will unfold in the Indian Ocean between the Indian and Chinese navies. The good news for India is that it does not need to match the PLAN ship-for-ship owing to the limitations China confronts, primarily the tyranny of distance and other priorities, namely developing coercive military options directed against Taiwan. India's strength also extends to its control of valuable geography that underpins wide-area maritime domain awareness. These include infrastructure upgrades in the Andaman and Nicobar Islands (safeguarding access to the Strait of Malacca), the commissioning of a naval station in the Lakshadweep archipelago (securing the waterways connecting the Arabian Sea and the Bay of Bengal), and a new airstrip in Mauritius (providing maritime domain awareness across eastern Africa). Combined, these enhancements will likely yield beneficial effects in bolstering India's reach and capabilities.

However, maritime surveillance is of little value without the surface and subsurface vessels to respond to PLAN incursions in peacetime or wartime contingencies. For India to maintain a credible deterrent at sea, it needs to be able to respond quickly and forcefully. For instance, in 2019, the Indian Navy ejected a Chinese research vessel loitering within India's waters around the Andaman and Nicobar Islands. If the PLAN expands the tempo of its deployments in the Indian Ocean, the Indian Navy might not be able to respond to multiple incursions effectively. The Indian Navy's current disposition is heavily concentrated in the western Indian Ocean, where recurring threats, such as Houthi attacks on shipping and piracy, consume attention and resources. Meanwhile, China is making inroads in the Bay of Bengal. Bangladesh acquired two Chinese-built submarines, and China financed a base there capable of berthing six to eight submarines and several warships. In Myanmar, Beijing is developing a port that is expected to facilitate a modest submarine presence.

Indian naval modernization needs to accelerate. After a seven-year delay, the Indian government is finally moving forward with the purchase of six P-8I maritime patrol aircraft from the United States to augment India's current fleet of twelve P-8Is. Prospects for acquiring a third Indian aircraft carrier, following the deployment of their first indigenously produced carrier in 2022, remain uncertain because the anticipated retirement of India's oldest Soviet-era carrier may limit the navy's posture to a two-carrier fleet. India also aims to acquire submarines to support a sea-denial strategy. However, India's submarine force is beset with delays, technological limitations, and an aging fleet. India's former director general of naval operations, Vice Admiral (retired) Anil Chawla, foresees a "serious degradation in force levels of conventional submarines." He notes that only six of 24 submarines proposed for development have been commissioned, and the bulk of India's conventional submarines are nearly three decades old.

U.S. is Key to Indian Modernization

The United States remains the most consequential partner in strengthening the Indian Navy. U.S. strategy envisions continued improvement in "relations with India to encourage New Delhi to contribute to Indo-Pacific security." The U.S. presence in the Indian Ocean has long been an "economy of force," with Washington looking to Delhi to secure the maritime commons. Technologically, the United States is well-positioned to enhance naval interoperability, owing to the frequency and complexity of U.S.-India naval exercises and the U.S.-origin platforms deployed across the Indian fleet, including MH-60 helicopters, MQ-9B drones, and P-8I aircraft.

Washington's willingness to share sensitive undersea technology also lends weight to New Delhi's efforts to push back against the PLAN. Undersea domain awareness is one of six co-production priorities in the renewed 10-year defense framework. Accordingly, the United States and India announced partnerships to co-produce autonomous undersea vehicles and sonobuoys to detect submarines. Co-production will further cement productive linkages between U.S. and Indian defense industrial bases, spur innovation, and create more cost-efficient hubs for the maintenance, repair, and overhaul of systems used by the United States and India.

Sustained investments by India in its navy, backed by U.S. cooperation, will very likely determine whether the balance of power in the Indian Ocean remains favorable. The moment demands sustained resource allocations for the Indian Navy in the coming decades, and a level of integration with the United States that moves with alacrity.

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Structure of the Volume

In his paper, Zachary Constantino argues that while recent events have caught India's attention, its biggest long-term challenge is dealing with China's growing naval power in the Indian Ocean. He points out that while Pakistan is an ongoing but manageable problem, China is the only country that can actually stop India from becoming a global power.

Since 95 percent of India's trade goes through the Indian Ocean, Constantino explains how the Chinese navy is actively working to control waters far from its home. We can see this through China's constant military presence in the area, their use of hidden submarines and underwater drones to map the ocean floor, and their building of ports in places like Djibouti, Bangladesh, and Myanmar that can be used for both trade and the military.

Even though India has good geographic advantages, like important island bases that help them watch over large areas of the ocean, Constantino warns that India is falling dangerously behind in updating its navy. He specifically points to India's old, delayed submarines and the uncertainty about whether they will get a third aircraft carrier.

Ultimately, Constantino concludes that keeping India's ocean borders safe requires spending more money at home and quickly working much closer with the United States military. He sees the U.S. as a necessary partner, highlighting the need to use their new 10-year defense agreement to build advanced underwater technology together to keep the region balanced and safe for decades to come.

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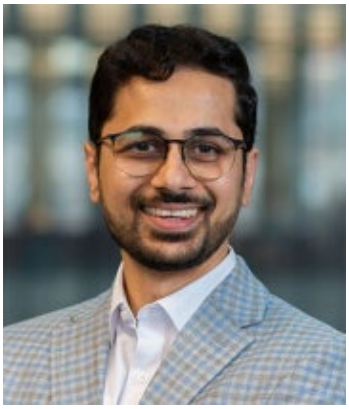

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