



Impact of Regulatory Framework on the Investments in Indian Renewable Energy Industry

Korukonda Sreedhara Babu
IIBM Institute of Business Management

Abstract – Economic growth and Energy sustainability are key parameters for any country to grow and excel in their business operations. Renewable Energy is playing a key role in achieving this objective. Investments in renewable energy sources are considered as effective means towards energy independence. Hence several policies have been implemented by the Government of India to promote the renewable energy sources. This paper discusses the relation between renewable energy policies and renewable energy investments in India. The objective of this paper is to emphasize the renewable energy investment decisions influenced by renewable energy policies. This paper outlines a conceptual frame work and qualitative analysis to understand the factors affecting investors decision and its linkage with regulatory frame work in India. The results suggests that the policies increases the growth of the renewable energy in India.

Keywords – Renewable energy policy, Investment, Renewable energy.

I. INTRODUCTION

The Government of India is facing several challenges to maintain the energy security by there reducing fossil fuel based power generation. Renewable Energy is becoming key to address this challenge because it meets the future energy demand by minimizing the carbon foot print and dependency on the convention way of electricity supply. The government of India has set an ambitious target of 500GW of non fossil fuel capacity by 2030. To meet this target and to meet the demand supply gap in the country, the government has come up with several renewable energy policies. As the Renewable energy sector requires heavy upfront investments which the government alone cannot be borne. Successful deployment of Renewable energy projects can happen only with joint investment from public and private sector entities. Hence it requires effective and investor friendly policies to deploy renewable energy projects at a large scale in the country.

In recent years, the Indian government has introduced a series of emerging policy instruments intended to catalyze growth in the renewable energy (RE) sector. These include initiatives such as the National Green Hydrogen Mission, Energy Storage Policy, Open Access reforms, and the PM-KUSUM scheme for agricultural solarization. These policies go beyond conventional solar and wind programs, encompassing innovative solutions that aim to decarbonize hard-to-abate sectors, improve grid reliability, and expand energy access to underserved communities.

II. LITERATURE REVIEW

The renewable energy (RE) sector in India has been a focus of significant policy innovation and academic inquiry over the past two decades. The country's energy transformation has moved from subsidy-based support for traditional renewables to more sophisticated mechanisms involving competitive markets, emerging technologies like green hydrogen and energy storage, and decentralized models of power generation. This chapter reviews the key literature on India's renewable energy policy evolution, sector-specific

initiatives, and emerging themes, while also identifying gaps that this dissertation seeks to address.

a. Green Hydrogen and Storage Policies

The launch of the National Green Hydrogen Mission in 2023 marked a turning point in India's clean energy ambitions. As Kumar et al. (2023) suggest, hydrogen has the potential to decarbonize hard-to-abate sectors such as steel, cement, and long-haul transport. However, its widespread deployment is contingent upon policy-driven cost reductions, infrastructure readiness, and large-scale R&D investments. Similarly, Sharma and Joshi (2022) highlight that energy storage—particularly battery and pumped hydro systems—will be crucial for integrating variable renewables and ensuring grid stability. Yet, challenges such as high costs, limited domestic manufacturing, and lifecycle inefficiencies remain significant.

limited domestic manufacturing, and lifecycle inefficiencies remain significant.

b. Open Access and Decentralization

Open access regulations have played a vital role in democratizing renewable energy, especially for commercial and industrial users. Rao and Agarwal (2021) report that the revision of the open access threshold from 1 MW to 100 kW has significantly expanded market participation. However, they emphasize the need for regulatory clarity, grid modernization, and tariff reforms to enable effective decentralization and prevent friction between stakeholders such as DISCOMs and third-party power providers.

c. Agriculture and Rural Electrification

The PM-KUSUM scheme aims to solarize irrigation pumps and promote decentralized solar installations in rural areas. Patil and Singh (2022) find that this initiative not only reduces grid stress but also improves rural livelihoods through improved electricity access and income from surplus power sales. Nevertheless, limited awareness among farmers, delays in subsidy disbursements, and technical capacity gaps have hindered the scheme's effectiveness.



d. Grid Integration and Transmission Infrastructure

India's ambitious renewable energy targets require corresponding investments in transmission infrastructure. The Green Energy Corridor (GEC) initiative, launched by the Central Electricity Authority (CEA), seeks to address this need. According to a CEA report (2022), while Phase I has improved renewable energy evacuation in high-potential states, land acquisition challenges, coordination delays, and forecasting inefficiencies remain key obstacles. There is growing consensus on the importance of smart grids, real-time monitoring, and flexible power systems.

e. Carbon Markets and Financial Instruments

Market-based mechanisms such as the Carbon Credit Trading Scheme (CCTS) are gaining momentum as tools for monetizing emission reductions and enhancing project bankability. Agarwal and Jain (2023) argue that integration with global carbon markets can unlock additional finance, but success will depend on the credibility of verification systems and institutional oversight. Additionally, there is growing interest in green bonds, viability gap funding, and blended finance models to attract private capital into the sector.

f. Gaps in Existing Literature

While considerable research exists on individual policies and technologies, there is a lack of integrated, cross-policy analysis that examines how these emerging instruments interact and influence the overall renewable energy ecosystem. Few studies address the practical challenges of implementation, especially in the context of state-level divergence and the financial health of DISCOMs. Moreover, most literature tends to adopt a sectoral or technology-specific lens, overlooking broader socio-economic and governance dimensions.

This dissertation seeks to bridge these gaps by providing a comprehensive evaluation of emerging renewable energy policies in India—linking policy design, implementation outcomes, institutional challenges, and recommendations for future improvement.

III. METHODOLOGY OF STUDY

This chapter outlines the research design, data sources, and analytical techniques used to evaluate the impact of emerging policies on the renewable energy sector in India. Given the complexity and multidimensional nature of energy policy, a qualitative, exploratory approach was adopted. The methodology integrates secondary data analysis, policy review, and case studies, supplemented by expert interviews to enrich understanding of ground-level realities.

A qualitative research framework was chosen due to the need for interpretative insights into how policy instruments influence outcomes across institutional, technological, and socio-economic dimensions. The study is descriptive and analytical in nature, focusing on:

- Understanding the policy formulation and implementation process
- Evaluating sectoral responses to specific policy interventions
- Identifying structural barriers and enabling factors

This methodology is well-suited for policy research, especially in the context of developing economies, where institutional complexity and regional variation play a major role in policy outcomes.

IV. SOURCES OF DATA

a. Primary data

- Expert interviews: Semi-structured interviews with policymakers, renewable energy developers, consultants, and researchers
- Stakeholder feedback: Opinions from grid operators, financial institutions, and NGOs collected through informal surveys and policy roundtable summaries

b. Secondary Data

- Government publications and notifications: Ministry of New and Renewable Energy (MNRE), Central Electricity Authority (CEA), NITI Aayog
- Policy documents: National Green Hydrogen Mission, PM-KUSUM guidelines, Green Energy Corridor updates, Draft Energy Storage Policy, Open Access rules
- Reports and white papers: IRENA, IEA, World Bank, TERI
- Academic literature: Peer-reviewed journals, conference proceedings, and doctoral theses
- Media and industry sources: Business Standard, Economic Times, Mercom India, Bridge to India

V. POLICY LANDSCAPE ANALYSIS

a. Introduction

India's renewable energy policy environment has evolved significantly over the last decade, moving from capacity-based targets to holistic strategies encompassing grid modernization, innovation, market development, and rural empowerment. In this chapter, key emerging policies are examined for their design, objectives, implementation status, and early outcomes. The analysis focuses on their individual contributions as well as overlaps, gaps, and synergies across policy instruments.

b. National Green Hydrogen Mission

Launched in 2023, the National Green Hydrogen Mission (NGHM) aims to position India as a global hub for green hydrogen production, targeting 5 million metric tonnes per year by 2030. The mission envisions decarbonizing sectors like steel, fertilizer, and transport while boosting energy self-reliance.



- Incentives for electrolyzer manufacturing and green hydrogen production
- Demand creation in refineries, mobility, and heavy industry
- R&D grants for hydrogen storage, safety, and logistics
- Rapid cost reductions in electrolysis
- Establishment of hydrogen infrastructure
- Integration with renewable energy sources to ensure “green” production

c. Energy Storage Policy

Energy storage is a critical enabler of RE integration, providing peak balancing, grid stability, and load shifting. India’s draft policy outlines viability gap funding, storage obligations for DISCOMs, and guidelines for pumped hydro and battery technologies.

- Storage capacity targets aligned with RE growth
- Priority access for storage-enabled RE
- Incentives for domestic manufacturing of batteries (linked to PLI schemes)
- High capital costs
- Limited domestic supply chains
- Regulatory uncertainty around cost recovery for DISCOMs

d. PM-KUSUM Scheme

The Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM) is aimed at solarizing agriculture through decentralized systems. It supports:

- Standalone solar pumps
- Grid-connected pumps
- Decentralized solar plants on barren land
- 30–60% capital subsidy
- DISCOM partnership for buying surplus power
- Empowerment of farmers through additional income
- Limited farmer awareness
- Delays in subsidy disbursement
- Varied DISCOM engagement across states

e. Green Energy Corridor (GEC)

The Green Energy Corridor initiative aims to strengthen transmission infrastructure for RE-rich states like Rajasthan, Tamil Nadu, and Gujarat. Phase I is near completion; Phase II includes central financial assistance for intra-state lines.

- Transmission lines and substations dedicated to RE evacuation
- Smart grid and forecasting tools
- Central and state funding model
- Improved RE evacuation capacity
- Reduced curtailment
- Land acquisition issues
- Delays in project execution
- Lack of real-time grid flexibility

f. Open Access and Decentralization

Open access regulations allow consumers to buy power from third-party generators, promoting competitive RE

procurement. Recent changes reduced the eligibility threshold and introduced reforms to facilitate faster approvals.

- Threshold reduced from 1 MW to 100 kW
- Time-bound DISCOM approvals
- Standardized wheeling and banking charges
- DISCOMs (revenue concerns)
- Inconsistent state regulations
- Lack of infrastructure for small consumers

g. Carbon Credit Trading Scheme (CCTS)

CCTS seeks to create a voluntary carbon market in India, monetizing emission reductions and attracting green investments. It's intended to complement RE projects with financial incentives tied to emissions avoided.

- Registry for emission credits
- Alignment with international standards
- Monitoring, reporting, and verification (MRV) protocols
- Transparent certification
- Regulatory clarity
- Market linkages with global carbon markets

VI. SUMMARY OF FINDINGS

In summary, it illustrates that the success of renewable energy policies in India is contingent not just on technological readiness or policy clarity, but on a complex interplay of institutional strength, financial mechanisms, and stakeholder alignment. PM-KUSUM reflects the challenges of decentralized policy execution in a federal system where farmers, state agencies, and utilities must all work in tandem. The Green Energy Corridor, while more successful, shows that even centralized policies require precise coordination and foresight to avoid delays and inefficiencies.

The implementation ecosystems—including governance structures, financing instruments, and community engagement—are as important as the policies themselves. These findings lay the groundwork for a broader discussion on system-level integration, which is explored in the next chapter.

VII. DISCUSSION

The transformation of India's energy sector is not merely a technological shift—it is a deeply structural, financial, and institutional challenge. The analysis presented in previous chapters shows that while India has crafted an ambitious suite of renewable energy policies, their real-world implementation is marred by bottlenecks that are as complex as the policies themselves. This chapter explores the key themes that emerge from the policy landscape and the case studies, particularly focusing on the dissonance between policy intent and outcomes, the central role of distribution companies (DISCOMs), state-level asymmetries, the evolving role of consumers in the energy market, and the challenges of integrating emerging



technologies into existing systems. The discussion also reflects on the broader governance and institutional frameworks within which these policies are embedded, arguing for a more integrated, adaptive, and system-oriented approach to energy policymaking in India.

a. Implementation challenges with policy intent

One of the most striking findings of this research is the growing gap between the visionary goals articulated in central policy documents and the ground realities of implementation. Programs such as the National Green Hydrogen Mission, PM-KUSUM, Green Energy Corridor, and the Green Open Access Rules (2022) all exhibit this disparity to varying degrees. While the policy frameworks are well-conceived and align with global best practices, the capacity to implement them effectively at the state and local levels remains limited.

For example, while Open Access aims to democratize electricity procurement by allowing Commercial and Industrial (C&I) consumers to source renewable energy directly from generators, many states have been slow or resistant to fully enforce it. Procedural delays, opaque approval systems, and discretionary levying of additional surcharges undermine the policy's core intent. Even where regulatory commissions have aligned with national directives, distribution utilities often delay or deny approvals, fearing revenue erosion.

Similarly, PM-KUSUM, envisioned as a transformative policy for rural energy access and sustainable agriculture, has been hindered by delays in subsidy disbursements, bureaucratic hurdles, and lack of coordination among multiple agencies. Farmers, the end beneficiaries, often remain unaware or find the process too complex.

The Green Energy Corridor (GEC) offers a relatively more structured implementation framework with defined targets and centralized project management. Yet, issues like land acquisition, delays in tendering, and inter-governmental coordination challenges persist, revealing that even technically sound policies require robust execution mechanisms.

b. DISCOMs which suffers financial stress

DISCOMs play a contradictory role in Open Access decentralization. On one hand, they are required to facilitate open access transactions under the Electricity Act and subsequent rules. On the other, they perceive it as a direct threat to their high-paying C&I consumer base. As a result, they either impose unjustified surcharges or introduce procedural bottlenecks to discourage OA uptake. This institutional resistance highlights the misalignment between regulatory direction and utility-level incentives. Similar trends are observed under PM-KUSUM, where DISCOMs are reluctant to buy surplus solar power from farmers, citing grid stability or financial unviability. In both policies, DISCOMs' lack of financial resilience and weak incentive alignment obstruct progress.

c. Non symmetrical state level implementations

While the central government designs the overarching policy architecture and provides funding, actual implementation lies with state governments. This creates a patchwork of outcomes across India, heavily influenced by political will, institutional capacity, and regulatory alignment at the state level.

PM-KUSUM uptake varies widely—Rajasthan and Maharashtra have advanced deployment, while several northeastern and central Indian states lag due to limited awareness, lack of administrative preparedness, or weak political interest. GEC's state-level transmission projects also face uneven progress, depending on land availability, inter-agency coordination, and state project readiness.

These disparities make it difficult to implement centralized targets or encourage private investment at scale. Harmonizing state-level regulatory practices with central directives and enhancing capacity at the ground level is crucial to create a unified national market for clean energy.

d. Complexity in implementation due to governance

India's renewable energy governance is characterized by a multi-ministerial, multi-tiered structure that often lacks coherence and clarity in roles. Policies frequently require coordination between entities such as the Ministry of Power, Ministry of New and Renewable Energy, State Electricity Regulatory Commissions (SERCs), DISCOMs, and nodal agencies. In the case of Open Access, this fragmentation is acute: approvals may involve multiple bodies including SLDCs, DISCOMs, and regulatory commissions—each with differing interpretations and timelines.

For PM-KUSUM, the maze of paperwork between MNRE, state nodal agencies, DISCOMs, and agricultural departments delays adoption. The lack of single-window clearance systems exacerbates the issue. In the absence of centralized digital tracking, beneficiaries and developers alike face procedural fatigue.

Overall, policy execution suffers when fragmented governance leads to overlapping mandates, lack of accountability, and procedural confusion. A major takeaway is the need for dedicated project management units, streamlined approval mechanisms, and better inter-departmental coordination.

e. Emerging Technologies – An Integration challenge

As India looks beyond solar and wind to green hydrogen, battery storage, and smart grids, it must overcome both market and regulatory immaturity. Technologies such as energy storage and carbon markets require not just innovation but a supporting ecosystem—pricing mechanisms, off-take guarantees, and risk mitigation tools. Open Access will play a key role in integrating such technologies by enabling peer-to-peer trading, storage-



based time-of-day pricing, and flexible bilateral contracts. However, current OA rules do not fully accommodate dynamic pricing or distributed energy resource (DER) integration. States lack clear norms on energy banking, settlement systems, and dispute redressal—particularly when storage or smart metering is involved.

The National Green Hydrogen Mission and emerging carbon credit platforms face similar hurdles—namely, undefined roles for DISCOMs, unclear commercial models, and regulatory inertia. Until India develops detailed MRV protocols, interoperable data systems, and open trading platforms, these technologies will remain confined to pilot projects.

To mainstream innovation, policies must allow for experimentation and phased scale-up, backed by financial risk-sharing and credible regulation.

VIII. CONCLUSION

Moving of energy from the convention energy sources to the RE sources in India is not only a response to global climate imperatives but also a strategic necessity for ensuring energy security, economic resilience, and sustainable development. The country has introduced a series of forward-looking policies that aim to redefine its energy future. Programs like the Green Energy Corridor to decentralized schemes like PM-KUSUM, and from market instruments such as carbon trading to innovation-driven missions like Green Hydrogen, are policies which are making the country to move to the next level in sustainable growth and energy security.

This paper set out to evaluate the impact of these emerging policies on India's renewable energy sector, with a focus on implementation challenges, policy issues, and institutional bottlenecks for implementing these policies. The findings suggest that while policy frameworks are ambitious and generally well-conceived, their success is highly uneven due to combination of administrative efficiency, financial viability, inter-agency coordination, and localized capacity.

PM-KUSUM has issues in disbursing the subsidy, low awareness among farmers, and weak DISCOM cooperation, the Green Energy Corridor has seen comparatively smoother progress due to its centralized implementation structure and multilateral support. These requires the effectiveness of a policy to determined not just by its design, but by the ecosystem in which it operates.

Another critical dimension explored in this study is the role of open access and decentralization, which are foundational to a liberalized and competitive power market. Open access reforms allow large consumers to procure electricity directly from renewable energy producers, bypassing traditional distribution networks. While such reforms have the potential to accelerate private investment and improve energy efficiency, they are often resisted by financially distressed DISCOMs due to fears of revenue erosion.

Moreover, the decentralized energy landscape—encompassing rooftop solar, mini-grids, and localized storage—is often undermined by procedural delays, restrictive net metering regulations, and lack of capacity at the local governance level.

Systemic barriers—such as the financial condition of DISCOMs, fragmented institutional responsibilities, regulatory inconsistencies across states, and the slow adoption of emerging technologies—pose serious constraints on scalability and impact. The study also found that data gaps, lack of real-time performance tracking, and poor stakeholder engagement further exacerbate implementation challenges.

Nevertheless, India's commitment to its 2030 targets (500 GW of non-fossil fuel capacity) remains robust, and the policy foundation is strong. What is now required is a shift from fragmented efforts to a coordinated, system-wide strategy that not only accelerates renewable energy adoption but ensures that it is inclusive, efficient, and future-ready.

RECOMMENDATIONS

a. Capacity building at state level for program implementation

- Deploy awareness programs and conduct road shows to give awareness on the schemes and the intention of developing these schemes targeting the end beneficiaries like farmers, small business owners.
- Deploy dedicated Project Management Units (PMUs) within state renewable energy departments to coordinate implementation, streamline procedures, and monitor progress and to get the feed back from the end consumers.
- Develop and deploy capacity-building programs at rural, district and state level and ensure that the officers responsible for RE schemes and their implementation, with training on technical, commercial, and procedural aspects.

b. To support DISCOMs

- To support DISCOMs by improving their financial health and reducing the transmission and distribution losses and support them in capacity building on RE technologies and their deployment challenges.
- To support in providing financial guarantees or risk-sharing mechanisms to encourage DISCOMs to enter PPAs with decentralized producers (e.g., under PM-KUSUM).
- To announce performance-based grants that reward DISCOMs for facilitating open access, timely connections, and grid upgrades.

c. Improve Inter department alignment in conjunction with policies

- Create a National Renewable Energy Coordination Council involving MNRE, MoP, MoEFCC, Ministry of Agriculture, and state energy departments to align policy objectives and remove overlaps.



- Promote cross-sectoral integration by designing policies that consider the water-energy-food nexus, particularly in rural electrification and agriculture-focused schemes.

d. To set up data monitoring units by investing on them

- Develop real-time monitoring systems for policy implementation using geotagging, mobile-based reporting, and open-access dashboards.
- Institutionalize third-party evaluations of major schemes every two years to assess ground realities, identify bottlenecks, and recommend adjustments.
- Mandate data transparency requirements for all state nodal agencies and DISCOMs to report progress consistently.

e. Deploy emerging technologies by supporting through incentive schemes of the government

- Launch demonstration projects for green hydrogen, storage, and smart grids in select industrial clusters or RE parks.
- Design cost-sharing models for early-stage technologies involving public-private partnerships, viability gap funding, and R&D grants.
- Expedite the finalization and operationalization of the Energy Storage Policy and Carbon Market Mechanisms, with clear guidelines, roles, and timelines.

f. Open Access and Decentralized Energy Markets to be on priority

- Harmonize state regulations with central open access provisions to create a uniform legal and procedural framework across India.
- Reduce cross-subsidy surcharges and wheeling charges that disincentivize industrial and commercial consumers from adopting open access routes.
- Facilitate digital platforms for real-time open access approvals and power scheduling to ease transaction burdens for consumers and developers.
- Promote decentralized generation models—such as peer-to-peer trading, virtual net metering, and community solar initiatives—through pilot projects and regulatory sandboxes.
- Encourage DISCOMs to participate in decentralized energy markets by offering incentives for grid balancing services, flexibility, and local procurement.

LIMITATIONS

The number of variables considered at this stage is not sufficient to develop a conceptual model and test it further. Hence, a more quantitative based approach is suggested to follow through proper questionnaire and get the response from various stake holders.

FUTURE SCOPE OF STUDY

The present study is focusing on the limited data available. The future scope focuses on giving information the consumers and stake holders to provide detailed information on sustainable products, and to design a

conceptual model of consumers' intention to purchase sustainable products. This will help to scale the study to different sectors with further practical implications for business owners, policymakers, and other stakeholders. A longitudinal time series study can be conducted further of these practical implications suggested for the study.

Its energy future is being shaped not just by global trends, but by the policy choices and governance models it adopts today. The transition to renewable energy presents an unprecedented opportunity to not only decarbonize the economy but to build a more inclusive, decentralized, and resilient energy system. Emerging policies must move beyond high-level announcements and evolve into programs that are people-centric, institutionally sound, and technologically adaptive. Strengthening open access regimes and promoting decentralized energy markets will be critical to empowering consumers, encouraging innovation, and reducing the load on traditional distribution systems.

Continuous learning, transparent governance, and a focus on local capacity are key to unlocking the full potential of India's energy transformation. As India aspires to become a global leader in renewable energy, the success of its emerging policies will be measured not only in megawatts but in the extent to which they empower communities, stimulate innovation, and build a sustainable future for generations to come.

REFERENCES

1. Aggarwal, P. (2018). Policy implementation challenges in India's renewable energy sector: A state-level analysis. *Energy Policy Journal*, 112, 45–53.
2. Agarwal, R., & Jain, V. (2023). Carbon markets in India: Frameworks, challenges, and global alignment. *International Journal of Climate Finance*, 9(1), 23–38.
3. Bhattacharya, A., & Dey, R. (2020). India's renewable energy journey: From subsidy to market. *Energy Policy*, 137, 111109. <https://doi.org/10.1016/j.enpol.2020.111109>
4. Bhattacharya, A., & Kojima, S. (2012). Power sector investment risk and renewable energy: A Japanese case study using portfolio risk optimization. *Energy Policy*, 40, 69–80.
5. Central Electricity Authority. (2022). *Green Energy Corridor: Status and Progress Report*. Government of India.
6. Central Electricity Authority. (2023). *CEA Regulations: Measures Relating to Safety and Electric Supply*. Government of India. Retrieved from <https://cea.nic.in>
7. International Renewable Energy Agency. (2021). *Renewable Energy Policies in a Time of Transition: India Report*. IRENA.
8. Kumar, S., & Majid, M. A. (2020). Solar energy in India: Policies, challenges and opportunities. *Renewable and Sustainable Energy Reviews*, 123, 109730.



9. Kumar, R., Singh, H., & Ranjan, A. (2023). National Green Hydrogen Mission: Scope, barriers, and roadmap. *Journal of Renewable Hydrogen*, 1(2), 55–67.
10. Ministry of New and Renewable Energy. (2023). National Green Hydrogen Mission Overview. Retrieved from <https://mnre.gov.in>
11. Ministry of New and Renewable Energy. (n.d.). Policies and Regulations. Retrieved from <https://mnre.gov.in/en/policies-and-regulations/>
12. Patil, M., & Singh, D. (2022). Decentralized solar power in Indian agriculture: An evaluation of PM-KUSUM. *Energy for Sustainable Development*, 68, 73–84.
13. Rao, R., & Agarwal, S. (2021). Open access reforms in India's renewable energy market: Impacts and challenges. *Energy Economics and Policy Review*, 11(3), 101–119.
14. Rathi, S., & Sahoo, S. (2022). Green hydrogen and energy storage: The next frontier in India's energy policy. *Clean Energy Policy Journal*, 7(1), 15–29.
15. Sharma, P., & Joshi, V. (2022). Energy storage as a key enabler for India's energy transition: Policy and technological perspectives. *Journal of Power and Energy Engineering*, 10(4), 121–133.
16. TERI (The Energy and Resources Institute). (2021). *Pathways to Renewable Energy Integration in India*. New Delhi: TERI Press.
17. World Bank. (2022). *Developing India's Carbon Market Framework: Policy Note*. Retrieved from <https://worldbank.org>