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ALIGNING ENERGY POLICY WITH CLIMATE GOALS: GREEN TRANSITIONS TOWARD NET ZERO

Dr. Aditi Nidhi

Assistant Professor, School of Law, Mahindra University, Hyderabad, Telangana, India

Neha Tripathi

Assistant Professor, School of Law, Mahindra University, Hyderabad, Telangana, India

ABSTRACT

The increasing awareness of climate change is a good chance to make green energy shifts the priority and reach carbon neutrality as a policy agenda in the plans. This change is not only an issue that reacts to environmental problems but also encourage innovation and sustainable growth. With countries working hard to reduce global warming to 1.5-2°C in the Paris Agreement, transformation of fossil fuels to renewable energy systems; green hydrogen, hydropower, and wind and solar is essential. Nevertheless, it is prevented by a high level of policy gaps, which prevents reaching the goal of carbon neutrality, which equals the released carbon and the one captured. Therefore, the abstract explores the gaps and challenges to green energy and its transitions as well as recommend the approach to a sustainable and fair future. Although more focus is currently towards renewable energy, there are still policy frameworks that lack enforcement, inclusivity, and coherence. Differences in cross-border coordination, the fact that there are different standards of regulations, and insufficiency of financing mechanisms are upper handicaps that should be overcome to achieve improvement. The complexity of the transition is also made imminent by socio-political resistance, monetary expenditure involved, and technology constraints. There is a promising growth opportunity in investment in energy storage advancement, grid modernization, and carbon capture. These areas will be prioritized to promote energy efficiency and the quality of power systems as well as a contribution to the process of climate change reduction. In the meantime, the industries that depend on fossil fuels are being worried about

the possibility of job loss, that is why just transition policies are required to secure the vulnerable employees. Short-term benefits are always considered in political cycles at the expense of long-term sustainability, thus, exposing the policy to risk. A complex solution is required to address the problems mentioned above. The UNFCCC instrument which is legally binding at the international level, can be useful at the international level in harmonizing technology transfer standards between the developed and developing countries. On the national level, the divesting of fossil fuels, subsidies of renewable energy, and carbon levies require increasing in scale. Indeed, de-risking investments in emerging technologies can be done with the aid of public-private partnerships and green financing. In finality, it determines the possibility of a sustainable future when the gaps in policies are bridged using the means of social priorities, economical and interdisciplinary approaches that facilitate harmonies in costs of the environment. The paper explores the legal and policy issues in India in ensuring a carbon neutral setting with a special attention to the regulatory loopholes and implementation challenges and suggests legal provisions and governance approaches to a successful green power shift.

Keywords: Renewable Energy - Green Energy - Sustainable Development - Net Neutrality, Environmental Law

1. INTRODUCTION

The need to reduce climate change has never been pressing as is happening today, and international frameworks like the Paris Accord demand the net-zero of greenhouse gas emissions in the middle of the century. The energy sector examines a radical change within the energy system, which could assist in ensuring the concentration of greenhouse gases is below the concentration of 1.5-2°C. Following the increasing number of countries and organizations declaring their net-zero goals, climate change keeps having devastating consequences including heatwaves, floods, wildfires, etc. These facts demand the urgent necessity to synchronize national energy policies- defining the ways of energy consumption, distribution or production with the global climate considerations. This in practice implies that, the energy sector planning needs to incorporate vigorous emissions cuts with climate mitigation and climate adaptation goals.

But such alignment gives serious problems of governance. Energy policy is commonly created by institutions and structures that are independent of those that control climate promises, and the results on conflict or lack of coordination. An instance will be the backing of fossil fuels or lack of sufficient renewable targets may sabotage the goals of the Paris Agreement in a country. Furthermore, consolidation of policies is complicated by the relationship between the central and state governments as federated countries such as India have divergent powers. Besides, the paper is also inclined to outline the key concerns, which consist of the integration of policies, climate governance and institutional framework, which could match global climate objectives. Differently put, sector coordination, governance and fiscal framework reforms are necessary to guarantee energy planning that is able to directly proceed with climate objectives and targets.

An in-depth qualitative analysis of the available literature, institutional reports and case studies has also been pointed out. Another aspect that the author highlighted is the analytical style that India and its climate institutions took in joining forces with the other world institutions, especially in the United Nations and other OECD nations. The partnership is meant to bring about an effective coordination and rationalization in the efforts related to climate. Although the author focuses on global, India is a major case study since it is a federation with booming economic growth and high annual climate commitments of a net-zero by 2070. Comparative lessons can be gained due to experience of other countries (e.g. OECD countries, emerging economies, federal systems). The author can analyse successful models of governance, and find common gaps by using the institutional information that is synthesized through these sources. It is hoped that it will be possible to suggest the ways to make institutions more coherent and factor climate targets into the energy policy.

2. LITERATURE REVIEW

The challenge of aligning energy and climate objectives sits at the intersection of climate governance, policy integration and institutional coordination. Climate governance frameworks encompass the institutional structures, legal provisions, and procedural mechanisms through which governmental bodies address climate change. Scholars assert that well-defined institutional frameworks are essential for effective climate action, as they establish incentive structures and influence political decision-making processes.¹ Effective climate governance typically entails national plans (e.g. Nationally Determined Contributions under the Paris

¹ Marquardt, J., Fünfgeld, A., & Elsässer, J. P. "Institutionalizing Climate Change Mitigation in the Global South: Current Trends and Future Research" (2023) 15 *Earth System Governance* 100163 <<https://doi.org/10.1016/j.esg.2022.100163>>

Agreement), dedicated climate legislation or targets, and bodies (such as climate commissions or interministerial councils) that coordinate across sectors. The literature documents a rapid expansion of such frameworks: for example, Dubash and Ghosh note that over the last decade India and other countries have broadened climate policy beyond diplomacy into national policy, with multiple new institutions emerging.²

Institutional coordination mechanisms are viewed as key enablers of integrated policy. The UNDP guidance on institutional and coordination mechanisms for the SDGs stresses that climate change is inherently cross-sectoral, with climate actions linking to almost all Sustainable Development Goals.³ It argues that countries must adopt “an integrated cross-sectoral approach” so that climate actions become integral to policymaking across government.⁴ In practice, this means setting up mechanisms that bring together environment, energy, finance, planning, and other ministries, as well as subnational governments. For instance, international survey findings note that Mexico established a high-level Climate Change Interministerial Commission, India formed the ‘Prime Minister’s Council on Climate Change (PMCCC)’ including government, private sector and civil society actors, and Brazil set up an Interministerial Commission on Global Climate Change to coordinate action.⁵ In many countries without a dedicated climate institution, environment ministries have the nominal coordination role, and some have created special climate secretariats or units (e.g. Sri Lanka’s Climate Change Secretariat) to drive cross-departmental activities.⁶ However, the effectiveness of these arrangements varies. A common critique is that climate is often treated as an “environmental” silo, limiting whole-of-government action.⁷ The UNDP study finds that where climate bodies operate under the prime minister’s or president’s office (as in India, China, and

² K. Dubash, “An Introduction to India’s Evolving Climate Change Debate”, *In India in a Warming World* (2019) <<https://doi.org/10.1093/oso/9780199498734.003.0001>>

³ Iyer, D., Pizarro, G., Rubian, R., & United Nations Development Programme, *Institutional and Coordination Mechanisms* (Directed by Nik Sekhran, 2017) <https://sdgs.un.org/sites/default/files/publications/2478Institutional_Coordination_Mechanisms_GuidanceNote.pdf>

⁴ Ibid.

⁵ Agarwal, S., Global Green Growth Institute, & The Energy and Resources Institute, “Green Growth and Climate Change Mitigation in India” (Neha Pahuja ed, The Energy and Resources Institute 2015) <<https://www.teriin.org/projects/green/pdf/National-Mitigation.pdf>>

⁶ Ministry of Environment, “Sri Lanka Updated Nationally Determined Contributions” (2021) <<https://unfccc.int/sites/default/files/NDC/2022-06/Amendmend%20to%20the%20Updated%20Nationally%20Determined%20Contributions%20of%20Sri%20Lanka.pdf>>.

⁷ Oliver Lah, “Breaking the Silos: Integrated Approaches to Foster Sustainable Development and Climate Action” (2025) 8 Sustainable Earth Reviews <<https://doi.org/10.1186/s42055-024-00102-w>>.

the Dominican Republic), they gain political weight and can mobilize other sectors more effectively.⁸

Policy integration refers to the mainstreaming of climate objectives into sectoral planning (such as energy, transport, agriculture, or urban development). It is an important theme in the literature. For energy policy, integration implies explicitly designing energy planning and infrastructure projects to meet climate targets. For example, the OECD and academic studies find that aligning innovation, fiscal policy and energy transition is essential to drive decarbonization.⁹ Empirical research across OECD countries shows that “green policies and innovations” (such as renewable subsidies, green taxes, or R&D incentives) significantly reduce emissions, highlighting tools like carbon taxes and technology innovation as crucial to a low-carbon transition.¹⁰ Another OECD report emphasizes that coordinating policies across ministries – especially aligning energy, finance and planning portfolios – is vital to mobilize the large investment needed for decarbonization.¹¹

Several authors have examined how energy and climate policies have been (or should be) linked. Dubash and Ghosh’s analysis of national climate policies argues that sector-specific missions (e.g. on solar energy, energy efficiency) can transform energy systems when well-implemented, but piecemeal governance leads to gaps.¹² They note that India’s National Action Plan on Climate Change (NAPCC, 2008) created eight missions (including the National Solar Mission and Energy Efficiency Mission) that bridged climate goals with energy policy, but coordination and prioritization have been mixed across missions.¹³ As compared to other countries where there lies inconsistency in terms of slowed progress, the evaluation shows

⁸ Jorge Chediek, United Nations Office for South-South Cooperation, and South Centre, “Climate Partnerships for a Sustainable Future: An Initial Overview of South-South Cooperation on Climate Change in the Context of Sustainable Development and Efforts to Eradicate Poverty” (2015) <<https://www.un.org/sustainabledevelopment/wp-content/uploads/2017/11/Report-on-Climate-Partnerships-for-a-Sustainable-Future.pdf>>.

⁹ Satar Bakhsh and others, “Energy Transition and Environmental Stability Prospects for OECD Economies: The Prominence Role of Environmental Governance, and Economic Complexity: Does the Geopolitical Risk Matter?” (2024) 354 *Journal of Environmental Management* 120358 <<https://doi.org/10.1016/j.jenvman.2024.120358>>.

¹⁰ Olatunji A Shobande, Aviral Kumar Tiwari and Lawrence Ogbeifun, “Repositioning Green Policy and Green Innovations for Energy Transition and Net Zero Target: New Evidence and Policy Actions” (2025) 9 *Sustainable Futures* 100594 <<https://doi.org/10.1016/j.sftr.2025.100594>>.

¹¹ OECD and United Nations Development Programme, *Investing in Climate for Growth and Development* (2025) <<https://doi.org/10.1787/16b7cbc7-en>>.

¹² Navroz K Dubash and others, “India’s Energy and Emissions Future: An Interpretive Analysis of Model Scenarios” (2018) 13 *Environmental Research Letters* 074018 <<https://doi.org/10.1088/1748-9326/aacc74>>.

¹³ Ministry of Environment, Forest and Climate Change, “Frequently Asked Questions (FAQs) National Action Plan on Climate Change (NAPCC)” (2021) <<https://static.pib.gov.in/WriteReadData/specificdocs/documents/2021/dec/doc202112101.pdf>>.

similar patterns in many areas in terms of policy frameworks and drove massive renewable deployment such as California's cap-and-trade, Germany's Energiewende etc.)

In summary, the literature suggests that aligning energy policy with climate goals requires robust governance structures – for example, climate laws setting targets, inter-ministerial councils ensuring coherence, and budgeting processes that “tag” and incentivize low-carbon investments. As per the empirical studies and the global guidance, best practice needs to be adopted such as incorporating fiscal tools, statutory carbon budgeting and talks with high-level climate commissions. The study identifies several significant challenges, including institutional fragmentation, where climate issues are often relegated to environmental ministries. Additional challenges encompass the allocation of resources for climate-focused organizations, the presence of inadequate legal mandates, and the limited coordination between central and sub-national governments. These findings serve as the basis for our comparative analysis concerning the practical implications of such governance factors.

3. METHODOLOGY

This study conducts a qualitative comparative analysis of institutional and policy frameworks, drawing on academic analyses, case studies, and a comprehensive synthesis of existing documents. The key sources include reports and guidance notes from international organizations (e.g. UNDP's guidance on institutional coordination) as well as scholarly assessments of national frameworks (notably, detailed examinations of India's climate governance and comparative reviews of climate institutions). The methodology involves systematically reviewing these documents to extract information on governance structures, coordination mechanisms, and policy integration tools related to energy and climate.

The author treat each source as a case study or repository of examples. For instance, the UNDP guidance note provides cross-country examples of institutional arrangements for climate and SDG implementation; the CSEP discussion paper on India's climate governance supplies in-depth insights into India's federal institutions and proposed reforms¹⁴; and the OECD-based research articles offer quantitative analyses of how green policies affect emissions in developed economies.¹⁵ By comparing and contrasting these instances, the author identify patterns of

¹⁴ Aruna Bose, “Climate Change Governance in India: Building the Institutional Framework - CSEP” (CSEP - Centre for Social and Economic Progress, March 13, 2025) <<https://csep.org/discussion-note/climate-change-governance-in-india-building-the-institutional-framework/>>.

¹⁵ Olatunji A Shobande, Lawrence Ogbeifun and Aviral Kumar Tiwari, “Carbon Neutrality: Synergy for Energy Transition, Circular Economy and Inclusive Green Growth” (2025) 374 *Journal of Environmental Management* 124114 <<https://doi.org/10.1016/j.jenvman.2025.124114>>.

success and gaps. In particular, the author focus on how national energy policy (such as power sector planning, subsidy regimes, and energy targets) aligns or clashes with climate commitments (e.g. NDCs, net-zero pledges).

The analysis is structured thematically. The author evaluate institutional mechanisms at the global level (e.g. international targets and networks) and national level (with India as a primary focus, complemented by OECD country examples). The author adopted both informal and formal approach to identify the gaps where there lacks absence of statutory mechanisms and ineffective alignment with respect to net-zero. Hence, the corpus of this approach involves not only the collection of data but also on the critical interpretation of authoritative sources, thus ensuring that the recommendations drawn at last are based on new ideas, knowledge and scholarly analysis.

4. GLOBAL AND INSTITUTIONAL CONTEXT

The ‘Paris Agreement (2015)’ and Sustainable Development Goals set a clear global mandate: rapid decarbonization with a net-zero emissions trajectory. Achieving this mandate requires translating high-level commitments into national policies. Institutional coherence is key: policymakers must align climate targets with economic planning, energy supply, and infrastructure investment. However, many countries still lack dedicated climate legislation, relying instead on sectoral laws that do not explicitly enforce climate targets.¹⁶ For example, India has no single climate law; climate objectives are pursued through existing acts (like the ‘Electricity Act, 2003’, and ‘Energy Conservation Act, 2001’) that were not originally designed for GHG mitigation.¹⁷ Similarly, until recently, only a minority of countries had formal climate laws or carbon budgets (IPCC noted 53% of emissions globally were covered by any law by 2020). This institutional gap can lead to misalignment: without a climate law, energy regulators and planners may not be bound to decarbonize at the pace required. Experts thus recommend new national climate frameworks or laws, as seen in Germany and Canada.¹⁸

¹⁶ Jens Marquardt, Anna Fünfgeld and Joshua Philipp Elsässer, “Institutionalizing Climate Change Mitigation in the Global South: Current Trends and Future Research” (2023) 15 *Earth System Governance* 100163 <<https://doi.org/10.1016/j.esg.2022.100163>>.

¹⁷ Chandra Bhushan and others, “Environmental Laws and Climate Action: A Case for Enacting a Framework Climate Legislation in India” (Raj Kumar Singh ed, International Forum for Environment, Sustainability and Technology (iFOREST) 2021) book <<https://shaktifoundation.in/wp-content/uploads/2021/12/Environmental-Laws-and-Climate-Action.pdf>>.

¹⁸ Nick Evans and others, “The Landscape of National Climate Framework Laws in Europe: A Status Update” (Ecologic Institute, Berlin 2023) <https://www.ecologic.eu/sites/default/files/publication/2023/Ecologic_Landscape%20of%20climate%20framework%20laws%20in%20Europe%20-%20Status%20update%202023.pdf>.

At the governmental level, global best practice emphasizes a “whole-of-government” approach. The OECD and others have stressed that finance, energy, environment and planning ministries must coordinate to mobilize climate investment.¹⁹ For instance, the OECD highlights that strengthening inter-ministerial coordination is crucial to build cohesive strategies and policy consistency (e.g. aligning budget incentives with decarbonization goals)²⁰. Yet many countries still operate with climate responsibilities isolated in environment ministries. The UNDP guidance note finds that strong multi-ministerial bodies (like India’s PMCCC, Mexico’s interministerial commission, etc.) can facilitate cross-sectoral action.²¹ In contrast, where climate committees meet irregularly or lack high-level authority, coordination suffers. The literature warns that climate frameworks not elevated to a powerful political platform – or seen as merely environmental concerns – will struggle to mainstream climate in all sectors.²²

Beyond national borders, international governance instruments provide signals and facilitate cooperation. For example, the Adaptation Fund, Green Climate Fund, and climate finance pledges (such as the \$100 billion goal) create mechanisms for channelling finance, but their effectiveness depends on domestic institutions to absorb funds and implement projects. Multilateral organizations (UNDP, OECD, World Bank) also offer coordination forums (e.g. NDC Partnership, Coalition of Finance Ministers) that encourage country peer-learning on aligning financial policies with climate goals.²³ These forums highlight measures like green budgeting and climate tagging of expenditures, which many OECD countries are beginning to adopt. For instance, some EU member states already tag infrastructure investments for climate impact. However, globally only a handful of countries require such systematic climate-budget integration.

In the realm of energy-specific policy, integrating climate goals means transforming regulatory and market structures. The IPCC states that net-zero energy systems will typically share key features essentially, near-zero fossil fuel use and extensive electrification.²⁴ To achieve this, we

¹⁹ OECD, *Harnessing Mission Governance to Achieve National Climate Targets* (OECD Publishing 2025) <https://www.oecd.org/content/dam/oecd/en/publications/reports/2025/04/harnessing-mission-governance-to-achieve-national-climate-targets_2f7c93c8/781146eb-en.pdf>.

²⁰ Ibid.

²¹ Vaibhav Chaturvedi and others, “India’s Pathway to Net Zero by 2070: Status, Challenges, and Way Forward” (2024) 19 *Environmental Research Letters* 112501 <<https://doi.org/10.1088/1748-9326/ad7749>>.

²² Ana Terra Amorim-Maia and Marta Olazabal, “Beyond Adjustment: A New Paradigm for Climate Change Adaptation in a Complex World” (2025) 93 *Global Environmental Change* 103027 <<https://doi.org/10.1016/j.gloenvcha.2025.103027>>.

²³ OECD, *Aligning Development Co-Operation and Climate Action* (2019) <<https://doi.org/10.1787/5099ad91-en>>.

²⁴ Leon Clarke and others, “Energy Systems,” Cambridge University Press eBooks (2023) <<https://doi.org/10.1017/9781009157926.008>>.

should focus on implementing energy policy reforms such as gradually retiring coal plants, introducing carbon pricing, and increasing the use of renewable energy sources. Some OECD countries exemplify this: Germany's Energiewende paired a Renewable Energy Act (feed-in tariffs) with grid planning²⁵, and the UK's Climate Change Act established a statutory target and introduced carbon budgets. Without clear institutional alignment, conflicting policies can emerge between countries, particularly when some subsidize fossil fuel consumption even as they make pledges to reduce emissions. The literature clearly demonstrates that institutional mechanisms, such as independent regulatory bodies and carbon-pricing schemes, are effective when implemented. It is essential for nations to adopt these strategies to ensure coherent and impactful climate action. For example, Canada's Output-Based Pricing System (OBPS) for industry aligns industrial energy policy with carbon limits.²⁶ Such examples suggest that embedding climate targets within energy regulation yields tangible progress.

Finally, green finance is a critical component linking policy to outcomes. The OECD notes that an "unprecedented acceleration" of investment is needed to meet climate goals, requiring a shift of capital from high-emission projects to clean infrastructure.²⁷ This calls for institutional and policy reforms that ranges from incentivising investors, establishing climate funds or green banks and integrating climate risk into banking supervision. Hence, transparent framework, accountability and disclosure standards are needed to prevent "greenwashing" and ensure that an equilibrium is maintained throughout, that supports decarbonisation.²⁸ Governments play a pivotal role by creating enabling conditions such as fiscal incentives, predictable policies, and coordination among ministries of finance, environment, and energy. The OECD's recent work on climate investment highlights that effective coordination between ministries is essential to unlock financing for mitigation.²⁹ This means energy and finance ministries should co-design subsidy schemes and pricing policies that internalize carbon costs. In totality, global and international evidence to the necessity of merging fiscal, energy, and climate tools: for

²⁵ "Germany's Greenhouse Gas Emissions and Energy Transition Targets" (*Clean Energy Wire*, July 18, 2025) <<https://www.cleanenergywire.org/factsheets/germanys-greenhouse-gas-emissions-and-climate-targets>>.

²⁶ Arbor, "Understanding Canada's Output-Based Pricing System: A Comprehensive Guide for Businesses" (Arbor) <<https://www.arbor.eco/blog/canada-output-based-pricing-system-obps>>.

²⁷ "GSR 2025 | Global Overview" <https://www.ren21.net/gsr-2025/global_overview/>.

²⁸ Catherine Marchewitz and others, "Sustainable Finance Taxonomies – Enabling the Transition towards Net Zero? A Transition Score for International Frameworks" [2024] SSRN Electronic Journal <<https://doi.org/10.2139/ssrn.4837372>>.

²⁹ Gabriela Ileana Iacobuță and others, "Aligning Climate and Sustainable Development Finance through an SDG Lens. The Role of Development Assistance in Implementing the Paris Agreement" (2022) 74 *Global Environmental Change* 102509 <<https://doi.org/10.1016/j.gloenvcha.2022.102509>>.

instance, by turning energy subsidies into carbon taxes or by using public funds to de-risk renewable projects.

5. NATIONAL (INDIAN) CLIMATE GOVERNANCE AND ENERGY POLICY

India's approach illuminates both progress and perennial challenges in aligning energy policy with climate goals. In 2008, India launched its 'National Action Plan on Climate Change (NAPCC)', which comprises of eight missions on topics like solar energy, energy efficiency and sustainable agriculture. These missions embodied the "co-benefits" approach: tackling climate issues in tandem with development (e.g. promoting solar power to increase energy access).³⁰ Over the past decade, the NAPCC did spur many reforms, such as rapid growth in solar installations and appliance efficiency standards³¹. However, coordination and coherence have been uneven. A parliamentary committee report noted that oversight of NAPCC lacked a unified authority, recommending a "Mission Mode Authority" to review implementation across the eight missions.³²

India's climate institutions are evolving. The 'Prime Minister's Council on Climate Change (PMCCC)', created in 2007, was tasked with supervising the NAPCC and its missions, such as the 'National Solar Mission' and 'Energy Efficiency Mission'.³³ It is a multi-ministerial forum (chaired by the PM) including portfolio ministers for power, environment, agriculture, etc., aimed at cross-sector coordination. In principle, the PMCCC serves to align national and state plans by guiding 'state action plans on climate change (SAPCCs)' and providing financial/technical support.³⁴ The 'Ministry of Environment, Forest and Climate Change (MoEFCC)' acts as the nodal agency for climate. It represents India in UNFCCC negotiations and oversees programs like the NAPCC missions, the Green India Mission (afforestation), and the National Adaptation Fund (NAFCC)³⁵. Through these roles, the MoEFCC integrates climate objectives into environmental regulations and helps plan mitigation and adaptation strategies.

³⁰ Tanvi Deshpande, Rahul Mukherji and Mekhala Sastry, "Policy Styles and India's National Action Plan on Climate Change (NAPCC)" (2023) 46 Policy Studies 46 <<https://doi.org/10.1080/01442872.2023.2261388>>.

³¹ Ibid

³² Ministry of Environment, Forest and Climate Change, "Frequently Asked Questions (FAQs) National Action Plan on Climate Change (NAPCC)" (2021) <<https://static.pib.gov.in/WriteReadData/specificdocs/documents/2021/dec/doc202112101.pdf>>.

³³ Vijeta Rattani and others, An analysis of India's National Action Plan on Climate Change (Directed by Chandra Bhushan, Tanya Mathur ed, Centre for Science and Environment 2018) <https://cdn.cseindia.org/attachments/0.55359500_1519109483_coping-climate-change-NAPCC.pdf>.

³⁴ VMKatoch. (2018). *National Action Plan for Climate Change & Human Health*. <https://ncdc.mohfw.gov.in/wp-content/uploads/2024/04/27505481411548674558.pdf>

³⁵ Ibid.

Despite these structures, several coordination gaps persist. The CSEP study finds that the MoEFCC has “experienced limited inter-ministerial coordination and engagement with states”.³⁶ The PMCCC has been criticized for irregular meetings and weak follow-up on its mandate.³⁷ For instance, the PMCCC is meant to oversee the NAPCC, but in reality its intermittent meeting have slowed down its continuous progress. Although, a new body named ‘Apex Committee for implementation of the Paris Agreement (AIPA)’ was established to focus nationally determined contributions.³⁸ However, AIPA still lacks a formal mechanism to involve state governments, leaving India’s federal climate coordination incomplete.³⁹ In parallel, the ‘National Steering Committee on Climate Change (NSCCC)’, chaired by the Environment Secretary, was formed in 2011 specifically to align state SAPCCs with national priorities.⁴⁰ Yet in practice, the NSCCC has often been seen as more of an administrative oversight for NAPCC projects rather than an empowerment platform for states.

This institutional fragmentation is compounded by the absence of an overarching climate law. Many Indian scholars note that significant national objectives (such as renewable energy goals or emissions intensity targets) were achieved through sector-specific policies (e.g. renewable energy auctions under the Electricity Act), rather than through a comprehensive legislative framework.⁴¹ The result is sometimes piecemeal policy: for example, the power sector has been governed by electricity regulations and renewable purchase obligations, while transportation and industry have their own standards, with no single law enforcing an economy-wide emissions budget. Hence, after recognizing this gap, experts recommend adopting a formal climate framework law as Canada and Germany have done to integrate climate considerations across all ministries.⁴²

India’s federal structure further complicates energy-climate alignment. The Constitution gives the Union government authority over coal, interstate electricity, and oil, while states have

³⁶ “Climate Change Governance in India: Building the Institutional Framework” (Centre for Social and Economic Progress 2025) <<https://csep.org/wp-content/uploads/2025/03/Climate-Change-Governance-in-India.pdf>>.

³⁷ Navroz K Dubash and Shibani Ghosh, “National Climate Policies and Institutions,” *In India in a Warming World* (2019) <<https://doi.org/10.1093/oso/9780199498734.003.0019>>.

³⁸ Akshit Sangomla, “Centre Constitutes Committee for Implementation of 2015 Paris Agreement” *Down to Earth* (November 30, 2020) <<https://www.downtoearth.org.in/climate-change/centre-constitutes-committee-for-implementation-of-2015-paris-agreement-74451>>.

³⁹ *Ibid.*

⁴⁰ Oxford Policy Management, “India’s State Action Plans on Climate Change: Towards Meaningful Action” (2017) <https://www.opml.co.uk/sites/default/files/migrated_bolt_files/id-state-action-plan-climate-india.pdf>.

⁴¹ Anjana Das and others, “Pathways to Net Zero Emissions for the Indian Power Sector” (2022) 45 *Energy Strategy Reviews* 101042 <<https://doi.org/10.1016/j.esr.2022.101042>>.

⁴² Jennifer Huang, “Exploring Climate Framework Laws and the Future of Climate Action” (2021) 38 *Pace Environmental Law Review* 285 <<https://doi.org/10.58948/0738-6206.1849>>.

primary jurisdiction over local governance, agriculture, and water.⁴³ Energy (particularly electricity generation and distribution) is under concurrent jurisdiction: the central government sets broad targets (such as renewables percentages or pollution norms) but states implement them. This means that central policies (like the National Electricity Plan or commitments to retire coal plants) must be reconciled with state-level priorities. In practice, some states have been proactive: Tamil Nadu leads in renewables, while others lag. The literature suggests that for mitigation goals (which have global spillovers), a central role is needed to prevent “free-riding” by states.⁴⁴ On the contrary, the resilience and adaptation measures such as water conservation and flood control are needed for the local governments decentralization, as they are closer to ground realities.⁴⁵ Hence, striking the right balance of central standards and local flexibility is thus a recurring theme in aligning policy.

Notably, the CSEP analysis highlights India’s innovative use of fiscal mechanisms to promote climate action. A constitutional body named the ‘Finance Commission of India’ that allocates federal funds to states have proposed various ideologies to take climate responsibilities. These ideas include expanding ecological fiscal transfers (which currently reward states for forest cover) like carbon sequestration or renewable energy capacity.⁴⁶

The Finance Commission could also issue performance-based grants to states that achieve emissions reductions or renewable targets⁴⁷. Such measures would integrate climate incentives into fiscal federalism, aligning state and national energy-climate objectives. Examples from other countries support this: Brazil’s ICMS-Ecológico and South Africa’s resilience funds have shown that financial incentives can drive local climate action.⁴⁸

The another important factor is finance and green budgeting. The CSEP study recommends “climate-responsive budgeting” such as climate tagging of expenditures, and enhanced

⁴³ “India’s Domestic Climate Policy Is Fragmented and Lacks Clarity” (*Economic and Political Weekly*, February 14, 2019) <<https://www.epw.in/engage/article/indias-domestic-climate-policy-fragmented-lacks-clarity>>.

⁴⁴ Navroz K Dubash, “The Politics of Climate Change in India: Narratives of Equity and Cobenefits” (2013) 4 *Wiley Interdisciplinary Reviews Climate Change* 191 <<https://doi.org/10.1002/wcc.210>>.

⁴⁵ Gangani Dharmarathne and others, “Adapting Cities to the Surge: A Comprehensive Review of Climate-Induced Urban Flooding” (2024) 22 *Results in Engineering* 102123 <<https://doi.org/10.1016/j.rineng.2024.102123>>.

⁴⁶ Siddharth S Edake and others, “Forest Conservation through Fiscal Federalism: Lessons from Past Experience” (2019) <<https://fincomindia.nic.in/asset/doc/commission-reports/15th-FC/reports/studies/Forest%20Conservation%20through%20fiscal%20federalism.pdf>>.

⁴⁷ Ibid

⁴⁸ Climate Policy Initiative, “Brazil Surpasses Global Growth in Climate Finance, but International Resources for Forests Still Fall Short of Potential - CPI” (CPI, August 5, 2025) <<https://www.climatepolicyinitiative.org/press-release/brazil-surpasses-global-growth-in-climate-finance-but-international-resources-for-forests-still-fall-short-of-potential/>>.

monitoring of green spend.⁴⁹ Several Indian states, including Assam and Odisha, are already leading the way with their initiatives. Experts firmly advocate for the establishment of a national climate expenditure dashboard to effectively monitor the flow of funds directed towards mitigation and adaptation projects.⁵⁰ On the revenue side, instituting a structured carbon pricing system is advocated. For example, the EU's approach of absolute carbon pricing in emissions trading and Canada's Output-Based Pricing System (OBPS) for industries – which sets performance standards rather than a flat tax – is cited as a model in such case.⁵¹ Developing such pricing frameworks would ensure that energy producers (factories, power plants) internalize carbon costs, thus aligning energy markets with climate goals.

In sum, India's experience illustrates both progress and unfinished business. Its institutional architecture (the PMCCC, MoEFCC, state action plans, etc.) provides an institutional basis for climate-energy integration, and it has implemented noteworthy policies (such as the world's largest renewable energy auction program). Yet coordination lapses, legal gaps, and uneven implementation remain. In order to address these, energy policies (such as electricity planning, transportation standards and fuel subsidies) must be directly guided by the net-zero vision and institutions must be strengthened (for instance, by establishing an independent climate commission or improving the consistency of the PMCCC).

6. INTERNATIONAL BEST PRACTICES AND COMPARATIVE EXAMPLES

Lessons from other countries and international bodies further illuminate pathways to alignment. In federal contexts (like India or Canada), having climate institutions close to the center of government is seen as effective. According to UNDP guidance, inter-sectoral cooperation improves and climate issues gain political prominence when climate commissions are housed under the president or prime minister.⁵² For instance, to ensure cross-party continuity, the Climate Change Commission in New Zealand, for instance, is an independent

⁴⁹ Malini Chakravarty and Centre for Budget and Governance Accountability (CBGA), "International Climate Finance in India: Assessing Issues of Gender Inclusivity and Subnational Access" (Asian Development Research Institute (ADRI) and others, 2022) <<https://www.cbgaindia.org/wp-content/uploads/2023/01/international-climate-finance.pdf>>.

⁵⁰ Wada Na Todo Abhiyan, Rauf, A., Nikarhil, D., Mathur, R., & Gomes, J. A. (2017). Civil Society Report on Sustainable Development Goals: Agenda 2030. In *Civil Society Report on Sustainable Development Goals: Agenda 2030* [Report].

⁵¹ Wei Cui, "Policy Forum: Comparing Canadian & Nbsp; Output-Based Pricing Systems" [2025] SSRN Electronic Journal <<https://doi.org/10.2139/ssrn.5270955>>.

⁵² Misha Kaur and others, "Steering Responses to Climate Change from the Centre of Government: A Stocktaking" [2023] OECD Working Papers on Public Governance <https://www.oecd.org/content/dam/oecd/en/publications/reports/2023/10/steering-responses-to-climate-change-from-the-centre-of-government_6296f4df/b95c8396-en.pdf>.

statutory body that advises the government on emission budgets. Although enforcement is still difficult, Germany's Climate Action Plan, which is supported by sectoral emission budgets, is commended for its legal clarity. The 'UK's Climate Change Act, 2008' created carbon budgets and an independent Committee on Climate Change (CCC), which has been influential in integrating climate targets into energy and industrial policies. Such models of independent oversight and statutory targets illustrate the value of strong institutional mandates.

At the sectoral level, various tools have proven effective. Renewable energy promotion is often achieved through clear, long-term policies: Germany's 'Renewable Energy Act (Erneuerbare-Energien-Gesetz, EEG)' with feed-in tariffs and quotas led to rapid wind/solar growth.⁵³ Similarly, in U.S. states such as in California and countries like South Korea have implemented carbon pricing to steer energy markets. Carbon taxation and cap-and-trade schemes feature prominently in literature; however, authors caution that their success depends on political commitment to net-zero.⁵⁴ For example, shifting an existing energy tax to a carbon tax (as suggested in the OECD study) could provide climate incentives while preserving fiscal neutrality.⁵⁵

Public finance institutions also play a role. Many countries have established dedicated green banks or funds to de-risk clean energy investment. In Australia, the 'Clean Energy Finance Corporation (CEFC)' channels public capital into renewables⁵⁶; similarly, international 'Just Energy Transition Partnerships (JETPs)' mobilize concessional finance for coal transition in South Africa, Indonesia, and Vietnam. The literature emphasizes using such vehicles in conjunction with mainstream planning. The OECD stresses that while institutional investors have ample capital, strong domestic policies (stable returns, clear pipelines) are needed to mobilize it.⁵⁷

⁵³ Andreas Coester, Marjan W Hofkes and Elissaios Papyrakis, "Economics of Renewable Energy Expansion and Security of Supply: A Dynamic Simulation of the German Electricity Market" (2018) 231 *Applied Energy* 1268 <<https://doi.org/10.1016/j.apenergy.2018.09.143>>.

⁵⁴ Jamil Khan and Bengt Johansson, "Adoption, Implementation and Design of Carbon Pricing Policy Instruments" (2022) 40 *Energy Strategy Reviews* 100801 <<https://doi.org/10.1016/j.esr.2022.100801>>.

⁵⁵ SM Woahid Murad, Arifur Rahman and AKM Mohsin, "From Policy to Progress: Environmental Taxation to Mitigate Air Pollution in OECD Countries" (2025) 374 *Journal of Environmental Management* 124143 <<https://doi.org/10.1016/j.jenvman.2025.124143>>.

⁵⁶ "Renewable Energy - Clean Energy Finance Corporation" <<https://www.cefc.com.au/where-we-invest/investment-focus-areas/renewable-energy/>>.

⁵⁷ World Bank Group, International Monetary Fund, and Organization for Economic Cooperation and Development, "Capital Market Instruments to Mobilize Institutional Investors to Infrastructure and SME Financing in Emerging Market Economies" <https://www.oecd.org/content/dam/oecd/en/publications/reports/2015/05/capital-market-instruments-to-mobilize-institutional-investors-to-infrastructure-and-sme-financing-in-emerging-market-economies_81dc0152/49e4a8a1-en.pdf>.

Finally, stakeholder engagement and transparency emerge as cross-cutting principles. Effective climate governance often involves multiple levels of government and civil society. The UNDP note suggests that communities and local governments involvement is critical to ensure that national plans translate into local action. India's case shows partial success here – states like Tamil Nadu achieved high renewables through proactive policy, while others require more capacity. A recommendation from both practice and literature is to institutionalize climate reporting (e.g. by auditor generals) and open budgeting tools, to hold all actors accountable.⁵⁸

7. CONCLUSION & WAY FORWARD

This analysis demonstrates that aligning energy policy with climate goals necessitates a comprehensive, multi-layered governance approach. At the heart of the issue is the need for institutional coherence, which includes clearly defined mandates, high-level coordination, and the incorporation of climate goals into all energy decisions. The key recommendations and findings include an implementation of a dedicated climate laws or to draft a legislative framework that set binding emission targets, delineate responsibilities across government levels and create legal underpinnings for climate action.

Moreover, as proposed by experts, there is a need of a national climate law that would codify the laws and help the central and state governments to drive mitigation (carbon pricing and energy targets) and adaptations measures (disaster resilience and agriculture, disaster resilience). This would replace the current ad hoc reliance on sectoral statutes. This will help the countries who do not have a comprehensive climate laws, to consider models of different countries such as Germany's Climate Change Act or the UK's Climate Change Act to integrate climate into policies. Not only this, it will help strengthen high-level coordination bodies, Inter-ministerial councils or commissions, especially under the prime minister or president. Strengthening India's PMCCC (making its meetings regular and results-binding) or forming an independent National Climate Commission (analogous to New Zealand's Climate Change Commission) would also raise climate action to the highest level and ensure cross-sector buy-in. Establishing permanent inter-governmental forums (between centre and states) can improve joint planning and knowledge-sharing, reducing policy fragmentation. Internationally, the success of senior climate bodies (e.g. EU climate governance, Brazil's council, Mexico's

⁵⁸ Sairam Bhat, *Energy Law and Policy in India* (2016) <<http://opac.nls.ac.in:8081/xmlui/handle/123456789/802>>.

commission) underscores this point. Embed climate in fiscal and planning processes. Governments should adopt green public financial management. This includes climate-responsive budgeting (tagging expenditures by mitigation/adaptation impact), developing dashboards to track climate spending, and independent audits of climate projects.

The Finance Ministry or Commission (as in India) can integrate environmental criteria into grant formulas, scaling up ecological fiscal transfers (EFTs) to reward actions like renewable installation or carbon sinks. Such fiscal reforms align financial flows with low-carbon outcomes. On taxation, implementing a structured carbon pricing mechanism (e.g. combining Canada's OBPS for industry with an economy-wide carbon tax) would ensure that energy producers and consumers face clear incentives to decarbonize. Promote energy-climate policy coherence. Energy ministries and planners must treat climate targets as core to their mandates. This implies, for example, designing power sector plans that account for the cost of carbon emissions and prioritize renewable expansion, or phasing out fossil fuel subsidies that run counter to net-zero goals. Institutional reforms like making climate impact assessments mandatory for new energy projects can help integrate objectives. In several countries (Germany, UK, California), such coherence was achieved by binding climate goals into energy regulation and planning. India and others should emulate these practices by aligning sectoral regulations (electricity codes, fuel standards) with national climate commitments. Mobilize and coordinate climate finance.

Given the vast investment gap, governments must create enabling conditions for climate finance. This includes establishing or reinforcing public-private partnerships for clean energy infrastructure, de-risking instruments and green banks. Hence, institutional coordination among environment ministries (as advocated by OECD), planning and finance should be strengthened to present unified policy signals to investors. Institutional capital will also come in through development of project pipelines (streamlined approvals, consistent energy tariffs). In order to provide the solid monitoring system that an international finance as a performance based organization must have, it must be made clear with regard to the energy transition milestones that could augment the transparency and stakeholder interactions. Mechanism of accountability are also very significant.

Visualization of energy policy and climate goals will be possible with mandated climate reporting (e.g. annual reports on the state of progress, which must be audited). Similarly, consistent interactions with the world of the private sector and scholarly space as well as civil society may produce novel solutions and create social consensus. The example of forming a

Climate Change Knowledge Network (MoEFCC) in India is one step towards this goal. On a global level, best practice sharing forums such as the NDC Partnership and Coalition of Finance Ministers can assist the governments in learning how to make climate act as a component of energy planning. In summary, balancing both national energy policy and global climate objectives is not an easy task and it cannot be implemented without a systemic change in governance. Therefore, the most important lesson to learn is that energy and climate policies are not disjointed components of sustainable development but integrated facets of climate and energy.

Countries such as India, despite their impressive progress (e.g. in terms of renewable energy implementation), should keep on reforming structures - both in the form of laws and councils, as well as fiscal instruments - to make sure that the decisions made on energy are oriented towards the net-zero agenda at all times. The effects are no longer confined to an individual nation: initiatives by the country to engage in increasing this alignment increase the pace of collective action on global warming reduction. Strengthening institutional coherence and policy integration will be a key to the successful green transition across global nations. Strengthening institutional coherence and policy integration will be essential to a successful green transition worldwide.