Mapping Climate Readiness: Mainstreaming Low Carbon Pathways at Sub-National Level

Abinash Mohanty, Priyamvada Singh, Aalif Mohammed,
Vishal Srivastava, and Garima Kotnala

October 2025

Centre for Knowledge & Development

IPE GLOBAL
Expanding Horizons. Enriching Lives.

Suggested citation: Mohanty, Abinash, Priyamvada Singh, Aalif Mohammed, Vishal Srivastava, and Garima Kotnala. 2025.Mapping Climate Readiness; Mainstreaming Low Carbon Pathways at Sub-National Level: New Delhi, IPE Global

Cover Image: Pixabay

Peer reviewers: Prof. Sateesh S, Associate Professor, Faculty of Marine Sciences, King Abdulaziz University. Ms Nidhi Madan, Associate Director, Shakti Sustainable Energy Foundation, Dr Debojit Palit, Centre Head, Centre for Climate Change & Energy Transition Chintan Research Foundation; and Andrew Charles Head of Urban Green Growth, Triple Line Consulting.

Acknowledgement

We extend our deepest gratitude to the Ministry of New and Renewable Energy, Government of India, for their continued support and guidance throughout the preparation of this report. We are especially grateful to Ms. Suman Chandra, Director, MNRE, for her valuable encouragement and insightful feedback. We also acknowledge the constructive inputs received from various organizations that participated in the stakeholder consultations, whose perspectives greatly enriched the quality of this work. Our sincere appreciation goes to our colleagues from the Climate Change and Sustainability Practice—Dhriti Kharbanda, Rajnish Kumar, and Vaibhav Kumar—for their valuable contributions, and to the Corporate Communications Team for their consistent support. We would also like to recognize the contributions of our former colleagues Dr. Hareesh Chandra Panchangnula, Ananya Singh, and Shivansh Ghildiyal for their technical inputs and support during the assessments. Finally, we express our heartfelt thanks to all IPE Global colleagues who provided expert feedback during internal reviews, and to our state government and development agency partners for their collaboration. Your collective efforts have been instrumental in shaping the rigor, relevance, and impact of this work.

Corresponding author's profile

Abinash Mohanty

abinashm@ipeglobal.com **@Abinash0294**

Abinash currently leads the Climate Change and Sustainability Practice at IPE-Global. He is a climate change expert and a reviewer of the Intergovernmental Panel (IPCC) on Climate Change's sixth assessment report (AR6): Impacts, Adaptation, and Vulnerability. He is involved in designing decision-making toolkits for effective policy making around the intricacies of climate change risks, sustainability, and environmental resources management.

Garima Kotnala

gkotnala@ipeglobal.com

Garima Kotnala is a seasoned climate mitigation and sustainability professional at IPE Global, leading the Mitigation Practice with over a decade of expertise in designing low-carbon, resilient development solutions. Holding a Ph.D. in Environmental Sciences, she specializes in ESG scoring frameworks, decarbonization strategy, net-zero roadmaps, and climate risk assessments. She has pioneered the development of Low carbon pathways for sustainable value chains for diverse sectors across North America, Europe, and APAC regions, and spearheaded the Climate Readiness Index (CRI) for India's subnational climate strategies.

Acronyms

AHP	Analytical Hierarchy Process
AI-ML	Artificial Intelligence and Machine Learning
ALMM	Approved List of Models and Manufacturers (MNRE)
APAC	Asia–Pacific
CMSPGHS	Chief Minister's Solar Powered Green House Scheme
CRI	Climate Readiness Index
CRI-DSS	Climate Readiness Index–Decision Support System
DSS	Decision Support System
GHG	Greenhouse Gas
IREDA	Indian Renewable Energy Development Agency
LULC	Land-Use/Land-Cover
MAC	Marginal Abatement Cost
MNRE	Ministry of New and Renewable Energy
MoEFCC	Ministry of Environment, Forest and Climate Change
MSEDCL	Maharashtra State Electricity Distribution Company Limited
NIUA	National Institute of Urban Affairs
NISE	National Institute of Solar Energy
NREDCAP	New & Renewable Energy Development Corporation of Andhra Pradesh
PV	Photovoltaic
RE	Renewable Energy
RPO	Renewable Purchase Obligation
RRECL	Rajasthan Renewable Energy Corporation Limited
RUMSL	Rewa Ultra Mega Solar Limited
TANGEDCO	Tamil Nadu Generation and Distribution Corporation
TIDCO	Tamil Nadu Industrial Development Corporation
TIIC	Tamil Nadu Industrial Investment Corporation
TNERC	Tamil Nadu Electricity Regulatory Commission
UPEFA	Uttar Pradesh Education for All Project Board
UPERC	Uttar Pradesh Electricity Regulatory Commission
UPNEDA	Uttar Pradesh New & Renewable Energy Development Agency

List of Tables

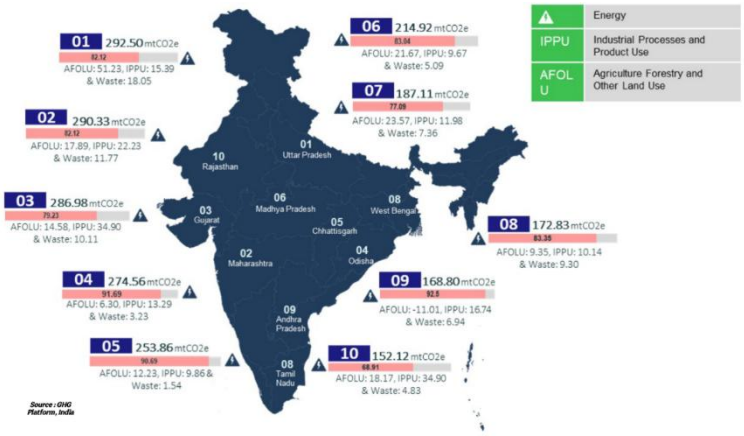
List of Figures

Executive Summary

Executive summary

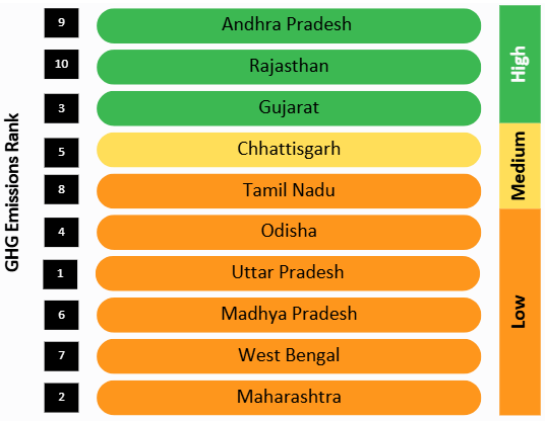
Global surface temperatures have risen markedly over recent decades, driven by increased greenhouse gas concentrations and atmospheric humidity. As a result, heatwaves, extreme meteorological events are becoming more frequent and severe, particularly in India's tropical climate during the March–May pre-monsoon season. Projections indicate that, by 2050, Indian heatwaves could exceed human survivability thresholds in shaded conditions, potentially impacting up to 500 million people. Failure to meet Paris Agreement targets may lead to a global temperature rise exceeding 3°C by century's end, exacerbating extreme rainfall, droughts, and cyclonic activity over the Indian subcontinent.

Figure E.S.1: Climate Readiness Index ranking of top 10 emitting states



The Climate Readiness Index (CRI) represents a comprehensive, multi-dimensional assessment framework designed to benchmark and diagnose the preparedness of India's top ten greenhouse gas, emitting states for a low-carbon transition. The methodology integrates a robust, indicator-based approach across three core pillars: systemic, financial, and technological readiness, each comprising multiple sub-indicators to capture the complexity of climate action. The study also incorporates qualitative assessments of policy frameworks, institutional mandates, and implementation capacity. The final Climate Readiness Index (CRI) ranking (Fig. E.S 1) reflects a comprehensive assessment of the ten highest GHG-emitting states in India. Andhra Pradesh, Rajasthan, and Gujarat lead the way: three of India's top ten emitting states are now ranked higher in the climate readiness Index. Tamil Nadu, Odisha, Uttar Pradesh, Madhya Pradesh, West Bengal, Maharashtra, need to fast-track its low carbon pathways transition.

Figure E.S.2: Climate Readiness Index



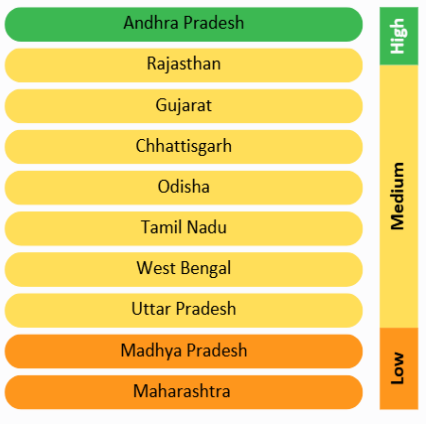
Source: Author' analysis

The "Mapping Climate Readiness at the Subnational Level" introduces the Climate Readiness Index (CRI), a first-of-its-kind, indicator-based framework that evaluates preparedness across India's ten highest GHG-emitting states in three critical dimensions:

- **Systemic Readiness:** Policy frameworks, institutional mandates, and governance mechanisms. Andhra Pradesh tops the rank in terms of systemic prudence to transition into low-carbon future followed by Rajasthan, Gujarat, Chhattisgarh, Odisha, among others. (Figure E.S.3).
- **Financial Readiness**: Investment pipelines, funding mechanisms, and bankability of projects. Chhattisgarh leads the states in terms of financial readiness. This reflects the state's substantial commitment to renewable energy investments and robust financial mechanisms supporting its green initiatives. Rajasthan and Andhra Pradesh follow closely, showcasing their strong financial readiness and significant investments in renewable energy projects (Figure E.S 4)
- **Technological Readiness:** Availability and adoption of mitigation technologies and infrastructure. Gujarat, and Rajasthan, emerge as leaders in technological readiness, setting strong examples for other states to follow) (Fig E.S 5)

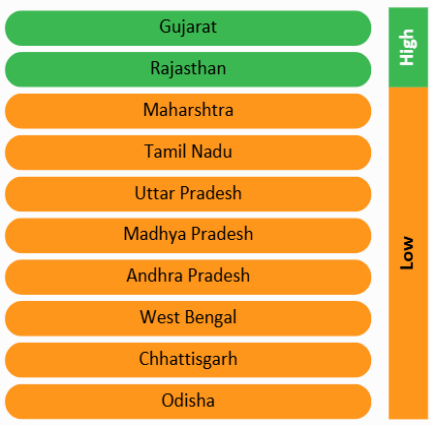
Key components of this study include **State-Level CRI Scorecards with** comprehensive readiness scores

Figure E.S.3: System Readiness Index



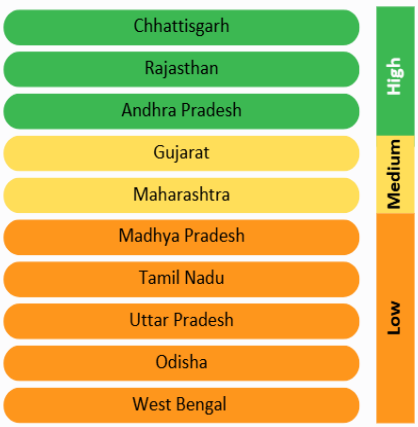
Source: Author' analysis

Figure E.S.5: Technological Readiness Index



Source: Author' analysis

Figure E.S.4: Financial Readiness Index

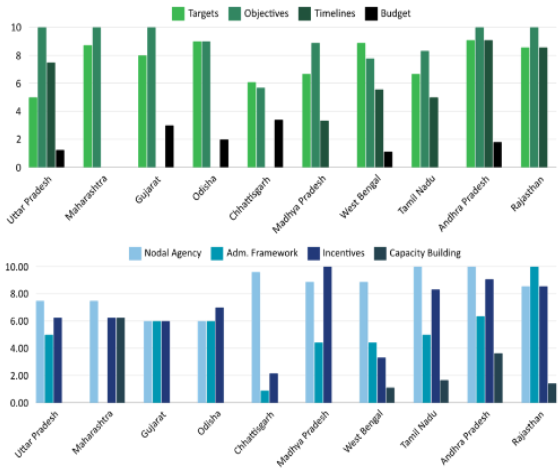


Source: Author' analysis

revealing marked divergence, top performers exhibit robust policy foundations and finance mechanisms, whereas lower-ranked states face gaps in institutional capacity and project bankability. By mainstreaming CRI metrics into state planning, strengthening institutional capacity, and mobilizing public-private finance, this study aims to accelerate India's low-carbon transition and support the nation's subnational climate commitments. The emphasis on system readiness recognises the fundamental importance of strong institutional frameworks, policy coherence, and governance mechanisms in facilitating climate financing and technological growth to ensure effective climate action. Financial readiness captures the states' ability to mobilize and allocate funds for climate initiatives, while technological readiness assesses the development and deployment of renewable energy technologies and infrastructure

The first-of-its-kind AI-ML–based Climate Readiness Index (CRI) reveals sharp disparities in preparedness among India's top-emitting states, where readiness hinges on credible governance, accessible finance, and deployable technology. Andhra Pradesh leads in systemic readiness with defined climate targets, a nodal agency, and enabling policies, though most states lack time-bound implementation and workforce skilling plans. Chhattisgarh ranks highest in financial readiness, driven by a 93% rise in central implementation funds, while Odisha recorded a >1,400% surge in IREDA sanctions and Rajasthan secured the largest total sanctions (~₹18,439 crore). Green-energy tariffs are highest in Chhattisgarh (~₹1.64/kWh) and Gujarat (~₹1.50/kWh), compared to lower rates in Odisha (~₹0.25/kWh) and Uttar Pradesh (~₹0.44/kWh). RPO compliance exceeds mandates in Andhra Pradesh, Tamil Nadu, and Odisha, but lags in others. On technological readiness, Gujarat dominates with 48% of solar manufacturing and 35% of park capacity, while Rajasthan leads in installed solar capacity (21,347.58 MW) and Uttar Pradesh excels in workforce development. The findings underscore a clear strategic imperative that leading states have achieved high climate readiness by effectively integrating robust policy frameworks, sustained financial commitment, and scalable technological infrastructure. The study has three key actionable recommendations that can fast-track low carbon transition at a sub-national level can address the trinity of jobs, growth and sustainability

Figure E.S.6: Indicator Scores-based comparison across states



Source: Author' analysis

Mandating establishment of Technical Support Unit at sub-national level: We recommend establishing Technical Support Units (TSUs) within the Climate Change Cells of the Departments of Environment and Forest across the top ten emitting states to fast-track India's low-carbon transition. These TSU should function as dedicated hubs for technical expertise, data integration, and inter-departmental coordination, enabling effective convergence between Viksit Bharat initiatives, state-level programs, and India's Net-Zero 2070 targets. The TSUs would strengthen institutional capacity to mainstream low-carbon pathways into state development planning by supporting greenhouse gas accounting, climate finance mobilisation, and technology deployment. By aligning policy, investment, and implementation at the sub-national level, the TSUs can ensure that climate action is both evidence-based and outcome-oriented, thereby transforming high-emitting states into leaders of sustainable, low-carbon growth.

Adoption of a Unified Technology Transfer Framework (UTTF): a Unified Technology Transfer Framework to streamline and accelerate the deployment of climate-smart and low-carbon technologies across sectors and states. Such a framework would serve as a national blueprint for identifying, adapting, and scaling up innovations that support mitigation and adaptation priorities under India's Net-Zero 2070 and Viksit Bharat visions. By integrating institutional mechanisms, regulatory standards, and financing models, the framework would enable effective collaboration between public agencies, private enterprises, and research institutions, ensuring that technology flows are demand-driven and context-specific. It should establish a common platform for technology assessment, intellectual property management, and capacity-building, while promoting local manufacturing and innovation ecosystems. Additionally, the framework would help address the asymmetry in access to climate technologies among states by providing tailored support for technology localisation and adoption at the sub-national level. By facilitating transparent governance, monitoring of technology performance, and alignment with global climate commitments, a unified technology transfer framework can enhance India's climate readiness, mainstream regional equity in low-carbon transitions, and position the country as a leader in South–South cooperation on green technology exchange.

Mainstreaming Innovative Financing Mechanisms: We recommend mainstreaming of innovative financing mechanisms to accelerate the low-carbon transition and enhance sub-national climate financing readiness. Traditional funding sources alone are insufficient to meet the scale of investment required for decarbonisation/low carbon transition; hence, leveraging blended finance, green bonds, climate risk insurance, and impact-linked financing can help mobilise diverse capital pools from public, private, and philanthropic sources. A structured framework should be established to integrate these instruments into state and sectoral planning processes, aligning them with Viksit Bharat and Net-Zero 2070 objectives. The approach should include building the capacity of state financial institutions and departments to design, manage, and track low-carbon investments while incentivizing private sector participation through credit enhancement and risk-sharing tools. Further, adopting climate budgeting and expenditure tagging systems can enhance transparency and accountability in financial flows. By institutionalizing innovative financing within state climate action frameworks, India can create predictable, scalable, and outcome-oriented funding pathways that translate policy ambition into implementable low-carbon solutions across its highest-emitting states.

References

1 References

Andhra Pradesh Southern Power Distribution Company Limited (APSPDCL). 2024. *Tariff Order for FY 2024–25*. Tirupati: APSPDCL. https://apspdcl.in/regulatory/Tariffper cent20Orderper cent20forper cent20FY%202024-25.pdf.

Central Board of Irrigation and Power (CBIP). "Policy for Promoting Generation of Electricity from Biomass, 2010." Accessed February 25, 2025. https://www.cbip.org/policies2019/PD_07_Dec_2018_Policies/Rajasthan/3-Biomass/2%20Policy_Promoting_Generation_Electricity_Biomass_2010(Web).pdf.

Chhattisgarh Renewable Energy Development Agency (CREDA). "Renewable Energy Programmes." Accessed February 25, 2025. https://www.creda.co.in/Programmes.

Chhattisgarh Renewable Energy Development Agency (CREDA). "State Renewable Energy Policy 2017-2027." Accessed February 25, 2025. https://creda.co.in/image/Amended%20Solar%20Policy%202017-27.pdf.

Department of Energy, Government of Odisha. "Policy Document." Last modified December 2022. Accessed February 25, 2025. https://energy.odisha.gov.in/sites/default/files/2022-12/3354-Energy%20dept._1.pdf.

Department of Energy, Government of Odisha. "Resolution: Green City Mission." Last modified February 2024. Accessed February 25, 2025. https://energy.odisha.gov.in/sites/default/files/2024-02/708_Resolution%20Green%20City%20Mission.pdf.

Economy Wide - GHG Platform India. 2022. GHG Platform India. October 21, 2022. https://www.ghgplatform-india.org/economy-wide/.

Economic Times. "UP Govt Launched 'Har Ghar Solar Abhiyan' from Oct 2, 2023 to Promote Solar Energy." Accessed February 25, 2025. https://hindi.economictimes.com/news/up-govt-launched-har-ghar-solar-abhiyan-from-oct-2-2023-to-promote-solar-energy/articleshow/104118217.cms.

Electrical Inspectorate, Government of Odisha. "BGJ Special Mission Programme." Accessed February 25, 2025. https://eicelectricityodisha.nic.in/SM/BGJ_SM_PB.aspx#:~:text=Objective%3A%20In%20order%20to%20ensure,are%20not%20covered%20under%20RGGVY.

Finance Department, Government of Chhattisgarh. 2023. *Budget Documents 2023–24*. Raipur: Government of Chhattisgarh. https://finance.cg.gov.in/budget_doc/budget.asp.

Finance Department, Government of Gujarat. 2023. *Budget Documents 2023–24*. Gandhinagar: Government of Gujarat. https://financedepartment.gujarat.gov.in/budget.html.

Finance Department, Government of Madhya Pradesh. 2023. *Budget Documents 2023–24*. Bhopal: Government of Madhya Pradesh. https://finance.mp.gov.in/budget.

Finance Department, Government of Maharashtra. 2023. *Budget Documents 2023–24*. Mumbai: Government of Maharashtra. https://beams.mahakosh.gov.in/Beams5/BudgetMVC/MISRPT/MistBudgetBooksNew.jsp?year=2023-2024.

Finance Department, Government of Odisha. 2023. *Finance Budget 2023–24*. Bhubaneswar: Government of Odisha. https://finance.odisha.gov.in/publication/finance-budget.

Finance Department, Government of Rajasthan. 2023. *State Budget 2023–24*. Jaipur: Government of Rajasthan. https://finance.rajasthan.gov.in/website/StateBudgetAll.aspx.

Finance Department, Government of Tamil Nadu. 2023. *Budget Documents 2023–24*. Chennai: Government of Tamil Nadu. https://financedept.tn.gov.in/en/budget-publications/.

Finance Department, Government of West Bengal. 2023. *Budget Documents 2023–24*. Kolkata: Government of West Bengal. https://finance.wb.gov.in/new_fin/Pages/Budget_Publication.aspx.

Government of Andhra Pradesh. "New & Renewable Energy Development Corporation of A.P Ltd (NREDCAP)." Accessed February 25, 2025. https://spsnellore.ap.gov.in/new-renewable-energy-development-corporation-of-a-p-ltd-nredcap/.

Government of Andhra Pradesh. "New & Renewable Energy Development Corporation of A.P Ltd (NREDCAP)." Accessed February 25, 2025. https://spsnellore.ap.gov.in/new-renewable-energy-development-corporation-of-a-p-ltd-nredcap/.

Government of Chhattisgarh, Finance Department. "Book 13: Budget 2024-2025." Accessed February 25, 2025. https://finance.cg.gov.in/budget_doc/2024-2025/Book/13/S-13.pdf.

Government of Chhattisgarh, Finance Department. "Key Highlights of Budget 2023-2024." Accessed February 25, 2025. https://finance.cg.gov.in/budget_doc/2023-2024/key_Highlight/Key_Highlight-E.pdf.

Government of Chhattisgarh, Finance Department. "Press Note on Budget 2023-2024." Accessed February 25, 2025. https://finance.cg.gov.in/budget_doc/2023-2024/Press%20Note/Press%20Note-E.pdf.

Government of India. "Chief Minister's Solar Rooftop Capital Incentive Scheme (CMSRCIS)." MyScheme. Accessed February 25, 2025. https://www.myscheme.gov.in/schemes/cmsrcis.

Government of India. "Policy Document, October 2023." Accessed February 25, 2025. https://cdnbbsr.s3waas.gov.in/s3716e1b8c6cd17b771da77391355749f3/uploads/2023/10/20231005812894382.pdf.

Government of Madhya Pradesh. "Notification on Hydro Power Policy." Accessed February 25, 2025. https://mprenewable.nic.in/hydronotification.pdf.

Government of Madhya Pradesh. "Policy for Decentralized Renewable Energy Systems, 2016." Accessed February 25, 2025. https://mprenewable.nic.in/uploads/MP%20Policy%20for%20Decentralized%20RE%20Sytems%20-%202016.pdf.

Government of Madhya Pradesh. "Pumped Hydro Storage Policy 2024." Accessed February 25, 2025. https://mprenewable.nic.in/uploads/2024/policy/pumped-hydro-pollicy.pdf.

Government of Madhya Pradesh. "Solar Power Policy." Accessed February 25, 2025. https://mprenewable.nic.in/solarp.pdf.

Government of Madhya Pradesh. "State Government Policy for Promotion of Renewable Energy." Accessed February 25, 2025. https://mprenewable.nic.in/StateGOVTpolicyforpromotion.pdf.

Government of Madhya Pradesh. "Wind Power Policy 2012." Accessed February 25, 2025. https://mprenewable.nic.in/wind2012.pdf.

Government of Maharashtra. 2015. "Policy for Grid-Connected Wind Power Projects 2015." Maharashtra Energy Development Agency. Accessed February 25, 2025. https://www.mahaurja.com/meda/data/grid_wind_power/state_policy/Policy%202015_2.pdf.

Government of Maharashtra. n.d. "Pradhan Mantri Surya Mitra Bima Yojana Guidelines." Accessed February 25, 2025.

Government of Rajasthan. "Jansoochna: Public Information Portal." Accessed February 25, 2025. https://jansoochna.rajasthan.gov.in/Scheme.

Government of Rajasthan. "Renewable Energy Policy Document, 2023." Accessed February 25, 2025. https://rajasthan.gov.in/O_160323_00d8e255-c50e-4353-b063-723a6c3356a7.pdf.

Government of Tamil Nadu. "Government Order No. 80: Energy Department." February 2024. Accessed February 25, 2025. https://cms.tn.gov.in/sites/default/files/go/Energy_e_80_2024.pdf.

Government of Tamil Nadu. "Government Order No. 81: Energy Department." February 2024. Accessed February 25, 2025. https://cms.tn.gov.in/sites/default/files/go/energy_e_81_2024.pdf.

Government of Tamil Nadu. "Kalignarin All Village Integrated Agriculture Development Programme (KAVIADP)." Accessed February 25, 2025.

Gujarat Energy and Petrochemicals Department. 2023. "Gujarat Renewable Energy Policy 2023." Accessed February 25, 2025. https://geda.gujarat.gov.in/Gallery/Media_Gallery/Gujarat_Renewable_Energy_Policy-2023.pdf.

Gujarat Energy and Petrochemicals Department. 2025. "Blog on Renewable Energy Initiatives." Accessed February 25, 2025. https://guj-epd.gujarat.gov.in/Home/BlogDetailsPage/55.

Gujarat Energy and Petrochemicals Department. 2025. "Energy and Petrochemicals Department Policy Document 1." Accessed February 25, 2025. https://gujepd.gujarat.gov.in/ViewFile?fileName=3ZXteMyLYbrFMnqqfGkioINmPAohZnCGhQG8hPvwbrwrW57YzvrEU5APWnob2Iu7qxHASH__HASHtbGwJ4ZIIzmtjdiRoAnrmEesHzLYo6dvQXKAzHASH__HASHrJn7kaZp2JkO5VndgLv6iRJbSAWUOWqPc9BwWLcmvjeBw==.

Gujarat Energy and Petrochemicals Department. 2025. "Energy and Petrochemicals Department Policy Document 2." Accessed February 25, 2025. https://gujepd.gujarat.gov.in/ViewFile?fileName=3ZXteMyLYbrFMnqqfGkioINmPAohZnCGhQG8hPvwbrwmkaVALHVCUThhJT1k4xJZQH1XfLkgG4HASH_HASHCUui0ExuHASH_HASHmL6te30R0WwuncDBqz3F4P1nCT8i6RRtAlZd29fzmT4o1uPhxm6tdEpfcKChTZESFw==.

Gujarat Energy and Petrochemicals Department. 2025. "Energy and Petrochemicals Department Policy Document 3." Accessed February 25, 2025. https://gujepd.gujarat.gov.in/ViewFile?fileName=3ZXteMyLYbrFMnqqfGkioINmPAohZnCGhQG8hPvwbrw6N7OC1SeHASH_HASHBq6XAuaVksBjZw7RWjvwfAwL0L7XXKbDVNOKvz1rbqVWLLuDOcAlyk7aOM11E6VL8ohMn3yiiaMLZIysC21reeTmLgUCQFuKJA==.

Gujarat Energy and Petrochemicals Department. 2025. "Energy and Petrochemicals Department Policy Document 4." Accessed February 25, 2025. https://gujepd.gujarat.gov.in/ViewFile?fileName=3ZXteMyLYbrFMnqqfGkioINmPAohZnCGhQG8hPvwbrwKWcJhJbfXKyvdtWzr5fYz5xjHASH_HASHHASH__HASHSWH0aGfJytjupEOdI1RNzpzE3HJ3lBk0nY4zIVn3m4H532H1q7LTlPyD0aSAT4TtRbPMRRFWAWQqFFUuQ==.

Gujarat Energy and Petrochemicals Department. 2025. "Energy and Petrochemicals Department Policy Document 5." Accessed February 25, 2025. https://gujepd.gujarat.gov.in/ViewFile?fileName=3ZXteMyLYbrFMnqqfGkioINmPAohZnCGhQG8hPvwbrwWtJTLXPKULAfdlYIefMS3FaInPHASH_HASH5zS0zSqMCr2fNUEmEp4gPu3ADr5hIUfMlMyEsLaItbNt0iTzp6tFjH76f39dpFzcpa9WkwsxWaZOWs0A==.

Invest India. "Rajasthan Wind and Hybrid Energy Policy, 2019." Accessed February 25, 2025. https://static.investindia.gov.in/s3fs-public/2020-

02/Rajasthan%20Wind%20and%20Hybrid%20Energy%20Policy%202019.pdf.

Invest UP. "Ayodhya Renewable Energy Investment Policy." Accessed February 25, 2025. https://invest.up.gov.in/wp-content/uploads/2024/08/Ayodhya_010824.pdf.

Khanna, Parag. "India Is Overlooking the Climate Drag on Its Economic Growth." Opinion Indian Economy, December 29, 2024. https://www.ft.com/content/927a4c8b-db4c-4a46-af68-71c5a03452ab?utm_.

Madhya Pradesh Poorv Kshetra Vidyut Vitaran Company Limited (MPPKVVCL). 2023. *Tariff Order FY 2023–24*. Jabalpur: MPPKVVCL. https://mpezccc.in/mppkvvcl//assets/uploads/TariffOrder-FY-2023-24-pages-199-255.pdf.

Maharashtra State Electricity Distribution Co. Ltd. n.d. Accessed February 25, 2025.

Maharashtra State Electricity Distribution Co. Ltd. n.d. Accessed February 25, 2025.

Maharashtra State Electricity Distribution Company Limited (MSEDCL). 2022. *Renewable Energy Circular No. 4: GPT Guidelines*. Mumbai: MSEDCL. https://www.mahadiscom.in/consumer/wp-content/uploads/2022/04/RE-Circular-No.4_GPT-guidelines-SCAN.pdf.

Ministry of New and Renewable Energy (MNRE). "Guidelines for PM KUSUM Scheme, dated 17 January 2024." Accessed February 25, 2025. https://mprenewable.nic.in/uploads/2024/MNRE%20Guideline%20PM%20KUSUM%20dated%2017.01.2024.pdf.

Ministry of New and Renewable Energy (MNRE). 2019. *Annual Report 2029–20*. New Delhi: Government of India. https://mnre.gov.in/en/annual-report/.

Ministry of New and Renewable Energy (MNRE). 2020. *Annual Report 2020–21*. New Delhi: Government of India. https://mnre.gov.in/en/annual-report/.

Ministry of New and Renewable Energy (MNRE). 2021. *Annual Report 2021–22*. New Delhi: Government of India. https://mnre.gov.in/en/annual-report/.

Ministry of New and Renewable Energy (MNRE). 2022. *Annual Report 2022–23*. New Delhi: Government of India. https://mnre.gov.in/en/annual-report/.

Ministry of New and Renewable Energy (MNRE). 2023. *Annual Report 2023–24*. New Delhi: Government of India. https://mnre.gov.in/en/annual-report/.

Ministry of New and Renewable Energy (MNRE). 2025. Approved List of Models and Manufacturers (ALMM). New Delhi: MNRE. https://mnre.gov.in/en/approved-list-of-models-and-manufacturers-almm/.

National Institute of Solar Energy (NISE). 2024. Suryamitra Programme (2015–2024). Gurugram: NISE. https://nise.res.in/wp-content/uploads/2024/07/2015-2024-Suryamitra-Programme.pdf.

National Institute of Urban Affairs (NIUA). "Scheme for Grid Connected Rooftop and Small Solar Power Plants." Accessed February 25, 2025. https://smartnet.niua.org/sites/default/files/resources/Scheme-Grid-Connected-Rooftop-%26-small-solar-power-plants.pdf.

New and Renewable Energy Development Corporation of Andhra Pradesh (NREDCAP). "Solar PV Water Pumping Programme." Accessed February 25, 2025. https://nredcap.in/Solar_PV_Water_Pumping_Programme.aspx.

New and Renewable Energy Development Corporation of Andhra Pradesh (NREDCAP). "Andhra Pradesh Wind-Solar Hybrid Power Policy 2018." Accessed February 25, 2025. https://nredcap.in/PDFs/Pages/AP_Wind_Solar_Hybrid_Power_Policy_2018.pdf.

New and Renewable Energy Development Corporation of Andhra Pradesh (NREDCAP). "Andhra Pradesh Wind Power Policy 2018." Accessed February 25, 2025. https://nredcap.in/PDFs/Pages/AP_Wind_Power_Policy_2018.pdf.

New and Renewable Energy Development Corporation of Andhra Pradesh (NREDCAP). "Andhra Pradesh Solar Power Policy 2018." Accessed February 25, 2025. https://nredcap.in/PDFs/Pages/AP_Solar_Power_Policy_2018.pdf.

New and Renewable Energy Development Corporation of Andhra Pradesh (NREDCAP). "Andhra Pradesh Renewable Energy Export Policy 2020." Accessed February 25, 2025. https://nredcap.in/PDFs/Pages/AP_RE_Export_policy_2020.pdf.

New and Renewable Energy Development Corporation of Andhra Pradesh (NREDCAP). "GO Ms No 25: Power Sale Price Policy." Accessed February 25, 2025. https://nredcap.in/PDFs/Pages/GO_Ms_No_25_PSP_Policy.pdf.

New and Renewable Energy Development Corporation of Andhra Pradesh (NREDCAP). "GO Ms No 14, Dated 20 June 2023." Accessed February 25, 2025. https://nredcap.in/PDFs/Pages/GO_Ms_No_14_Dt_20_06_2023.pdf.

New and Renewable Energy Development Corporation of Andhra Pradesh (NREDCAP). "GO Ms No 37, 2024." Accessed February 25, 2025. https://nredcap.in/PDFs/2024/2024ENY_33768_MS37.pdf.

Odisha Electricity Regulatory Commission (OERC). 2023. DISCOM Short Summary ARR FY 2023–24. Bhubaneswar: OERC. https://www.orierc.org/CuteSoft_Client/writereaddata/upload/DISCOM-Short-Summary-ARR-FY%202023-24.pdf.

Odisha Renewable Energy Development Agency (OREDA). "Solarization of Konark Off-grid Solar Power Plant." Accessed February 25, 2025. https://oredaodisha.com/specialschemes/#:~:text=Solarization%20of%20Konark,Off%2Dgrid%20Solar%20Power%20Plant.

Parliament of India. 2024. Annexure to Question AU2214. New Delhi: Lok Sabha Secretariat. https://sansad.in/getFile/annex/260/AU2214.pdf?source=pqars.

Philip, Deepanshu Kaul. "India's Carbon Market Revolution: Balancing Economic Growth with Climate Responsibility." *Invest India*, July 15, 2024. https://www.investindia.gov.in/blogs/indias-carbon-market-revolution-balancing-economic-growth-climate-responsibility.

PRS Legislative Research. 2023. *State Budget Analysis 2023–24: Andhra Pradesh*. New Delhi: PRS Legislative Research.https://prsindia.org/files/budget/budget_state/andhrapradesh/2023/State_Budget_Analysis_2023-24_AP.pdf.

PRS Legislative Research. State Budget Analysis 2023–24: Uttar Pradesh. New Delhi: PRS Legislative Research, 2023. https://prsindia.org/files/budget/budget_state/uttar-pradesh/2023/State_Budget_Analysis_2023-24_UP.pdf.

Rajasthan Renewable Energy Corporation Limited (RRECL). "Policy and Guidelines, 2020." Accessed February 25, 2025. https://jankalyanfile.rajasthan.gov.in//Content/UploadFolder/OrderEntry/RRECL/2020/Policy%20_%20Guidelines/O_050820_285f7db2-eeae-4876-a26c-a2dd48e9c95e.pdf.

Rajasthan Renewable Energy Corporation Limited (RRECL). "Renewable Energy Policy Document, 2024." Accessed February 25, 2025.

https://jankalyanfile.rajasthan.gov.in//Content/UploadFolder/OrderEntry/RRECL/2024/Policy/O_250424_0d202f66-ae0f-4b6d-a46e-0e9cf897d7e7.pdf.

Rajasthan Renewable Energy Corporation Limited (RRECL). "Solar Energy Policy, 2024." Accessed February 25, 2025. https://jankalyanfile.rajasthan.gov.in//Content/UploadFolder/OrderEntry/RRECL/2024/Policy/O_250424_01e12b46-b469-48b2-bda4-e37318790a0d.pdf.

Rajasthan Renewable Energy Corporation Limited (RRECL). "Wind and Hybrid Energy Policy, 2024." Accessed February 25, 2025. https://jankalyanfile.rajasthan.gov.in//Content/UploadFolder/OrderEntry/RRECL/2024/Policy/O_250424_8c90a8a4-78e0-46c9-8593-8be303962d2c.pdf.

Renewable Energy Certificate Registry of India. "Renewable Purchase Obligation (RPO) for Madhya Pradesh." Accessed February 25, 2025. https://www.recregistryindia.nic.in/pdf/RPO/MP.pdf.

Rewa Ultra Mega Solar Limited (RUMSL). "Madhya Pradesh Renewable Energy Policy 2022." Accessed February 25, 2025. https://rumsl.mp.gov.in/wp-content/uploads/government_policy/2022/08/English-Policy.pdf.

SKAY Rajasthan. "SKAY Scheme Guidelines for the State of Rajasthan." Accessed February 25, 2025. https://skayrajasthan.org.in/Benefits/SKAYSchemeGuidelinesforStateofRajasthan_English.pdf.

Tamil Nadu Electricity Regulatory Commission (TNERC). 2023. Order on MP No. 11 of 2023 (Dated 25.04.2023). Chennai: TNERC. https://www.tnerc.tn.gov.in/Orders/files/CO-MPNo11%20250420231056.pdf.

Tamil Nadu Generation and Distribution Corporation (TANGEDCO). "Annexure I: Guidelines for PM Surya Ghar Scheme." Accessed February 25, 2025. https://www.tangedco.org/static/tangedco/assets/files/pmsuryaghar/annuxure1.pdf.

Tamil Nadu Industrial Development Corporation (TIDCO). "Tamil Nadu Solar Policy 2019." April 2020. Accessed February 25, 2025. https://tidco.com/wp-content/uploads/2020/04/tamil-nadu-solar-policy-2019-min.pdf.

Tamil Nadu Industrial Investment Corporation (TIIC). "Scheme for Purchase of Windmill." Accessed February 25, 2025. https://www.tiic.org/scheme-for-purchase-of-windmill/.

Tamil Nadu Rural Development and Panchayat Raj Department. "Chief Minister's Solar Powered Green House Scheme (CMSPGHS)." Accessed February 25, 2025. https://www.tnrd.tn.gov.in/schemes/st_cmspghs.html.

Tata Power. "Tata Power Expands GharGharSolar Initiative to Chhattisgarh, Aims to Unlock State's Solar Potential." Accessed February 25, 2025. https://www.tatapower.com/news-and-media/media-releases/Tata-Power-Expands-GharGharSolar-Initiative-to-Chhattisgarh-Aims-to-Unlock-States-Solar-Potential.

Torrent Power Limited. 2024. Tariff Order for FY 2024–25 (Case No. 2324 of 2024). Surat: Torrent Power. https://www.torrentpower.com/pdf/regulatory/TPLDSuratTariffOrderforFY202425inCaseNo23242024_20240606204856.pdf.

Uttar Pradesh Education for All Project Board (UPEFA). “UP Surya Ghar Yojana.” Accessed February 25, 2025. https://upefa.com/up-surya-ghar-yojana/.

Uttar Pradesh Electricity Regulatory Commission (UPERC). 2024. UPPCL Order with Corrigendum. Lucknow: UPERC. https://uperc.org/App_File/UPPCLOrderwithCorrigendum-pdf1017202471822PM.pdf.

Uttar Pradesh New and Renewable Energy Development Agency (UPNEDA). “Uttar Pradesh Solar Energy Policy 2022.” Accessed February 25, 2025. https://upneda.org.in/MediaGallery/Solar_Policy-2022_in_Eng.pdf.

Uttar Pradesh New and Renewable Energy Development Agency (UPNEDA). "Green Hydrogen Initiative." Accessed February 25, 2025. https://upneda.org.in/gh.aspx.

Uttar Pradesh New and Renewable Energy Development Agency (UPNEDA). "Uttar Pradesh Mini-Grid Policy 2016." Accessed February 25, 2025. https://upneda.org.in/mediagallery/Mini-Grid-Policy-2016.pdf.

Uttar Pradesh New and Renewable Energy Development Agency (UPNEDA). "Bio-Energy Policy of Uttar Pradesh." Accessed February 25, 2025. https://upneda.org.in/MediaGallery/BEPB_English.pdf.

Uttar Pradesh New and Renewable Energy Development Agency (UPNEDA). "PM-KUSUM Component-C2 Scheme Document." Accessed February 25, 2025. https://upnedakusumc2.in/Docfile/KusumC2SchemeDoc.pdf.

West Bengal Electricity Regulatory Commission. "Policy on Renewable Energy in West Bengal." Accessed February 25, 2025. https://wberc.gov.in/sites/default/files/policy-renewable-wb.pdf.

West Bengal Industrial Development Corporation. "Notification on Renewable Energy Policy." Accessed February 25, 2025. https://wbidc.com/assets/pdf/Notification_Renewable%20Energy%20Policy.pdf.

West Bengal Irrigation and Waterways Department. "Circular on Renewable Energy Initiatives." Accessed February 25, 2025. https://www.wbiwd.gov.in/uploads/circular/circ_1472712738.pdf.

West Bengal Power Department. "Green Hydrogen Policy 2023." Accessed February 25, 2025. https://wbpower.gov.in/wp-content/uploads/GreenHydrogenPolicy2023.pdf.

West Bengal Renewable Energy Development Agency. "Bio-Energy Programme." Accessed February 25, 2025. https://www.wbreda.org/bio-energy-programme/.

West Bengal Renewable Energy Development Agency. "Solar Energy Programme." Accessed February 25, 2025. https://www.wbreda.org/solar-energy-programme/.

West Bengal Renewable Energy Development Agency. "Wind Energy Programme." Accessed February 25, 2025. https://www.wbreda.org/wind-energy/.

West Bengal State Electricity Distribution Company Limited (WBSEDCL). 2024. Tariff Chart for the Year 2024–25 (Dated 06.03.2024). Kolkata: WBSEDCL. https://www.wbsedcl.in/irj/go/km/docs/internet/new_website/pdf/Tariff_Volumn/Tariff_chart_dated_06.03.2024_for_the_year_2024-25_12_03.pdf

Image Source: Pixabay

IPE GLOBAL
Expanding Horizons. Enriching Lives.

CKD
Centre for Knowledge & Development

B - 84, Defence Colony, New Delhi - 110024, India

+91 11 4075 5900 | ipe@ipeglobal.com | info@ipeckd.org | www.ipeglobal.com | www.ipeckd.org