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# STATE ENERGY EFFICIENCY INDEX (SEEI)

2025

## Project Team

**BEE Team:**
Mr. Milind Deore, Secretary
Dr. Abhishek Sharma, Director
Mr. Vikash Kumar Jha, Project Engineer
Mr. Chiddharth Fenix, Project Engineer

**AEEE Team:**
Dr. Satish Kumar, President and Executive Director
Mr. Pramod Kumar Singh, Senior Director – Research & Programmes
Mr. Sumedh Agarwal, Director - Smart and Resilient Power and Mobility (SRPM)
Mr. Winamra Negi, Senior Research Associate
Ms. Smiti Agarwal, Research Associate (ex-AEEE)

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Web portal development by AAPNA Infotheek Pvt Ltd.
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This report is based on data collected by the Alliance for an Energy Efficient Economy (AEEE) from the 36 State Designated Agencies (SDAs), and data available in the state and central government reports as of November 15, 2025 (Except the data taken from the CEA General Review 2025 (published by CEA - MoP, GoI in December 2025 for i) Sector-wise consumption of electricity in India for FY 2023-24 under Chapter 2; ii) Normalization of Certified Green Buildings under the Buildings Sector; and T& D Losses reported by State's for FY 2023-24 under DISCOM Sector discussion under Results Chapter of SEEI 2025).

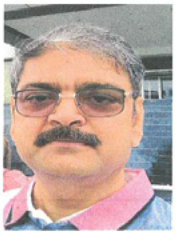
It has been reviewed by AEEE and the Bureau of Energy Efficiency (BEE). Every attempt has been made to ensure the correctness of the data. However, BEE and AEEE do not guarantee the accuracy of the data or accept responsibility for the consequences of using such data.

धीरज कुमार श्रीवास्तव
मुख्य अभियन्ता, विद्युत मंत्रालय एवं महानिदेशक, बीईई
**Dhiraj Kumar Srivastava**
Chief Engineer, MoP & Director General, BEE

सत्यमेव जयते

Azadi Ka Amrit Mahotsav

ऊर्जा दक्षता ब्यूरो
(विद्युत मंत्रालय, भारत सरकार)
**BUREAU OF ENERGY EFFICIENCY**
(Ministry of Power, Government of India)



## Message

Director General, Bureau of Energy Efficiency

India's energy transition is both a climate imperative and a strategic opportunity to advance innovation, resilience, and inclusive growth. As the nation moves toward its targets of Net Zero emissions by 2070 and a 45% reduction in the emissions intensity of GDP by 2030, energy efficiency remains a central, cost-effective lever for reducing energy demand across all sectors.

The State Energy Efficiency Index (SEEI) 2025 represents an important milestone in assessing state-level progress. Developed with the active participation of all 36 State Designated Agencies, this edition places greater emphasis on implementation, sectoral outcomes, and measurable improvements. By evaluating performance across buildings, industry, transport, DISCOMs, and agriculture, the Index has evolved into a valuable decision-support tool that facilitates peer learning and strengthens alignment between state actions and national objectives.

The 2025 assessment shows a marked improvement in overall performance, with the number of 'Front Runner' states increasing from five in 2024 to nine. This progress reflects the growing commitment of States and Union Territories to advancing energy efficiency and the successful uptake of key regulatory EE frameworks such as the Energy Conservation and Sustainable Building Code (ECSBC), Standard and Lebelling and the Perform, Achieve and Trade (PAT) scheme.

I extend my appreciation to the team of officers from Bureau of Energy Efficiency, State Designated Agencies, and all partners for their contributions. I also congratulate all States and Union Territories for their continued efforts toward building an energy-efficient and climate-resilient India.

New Delhi
December, 2025

स्वहित एवं राष्ट्रहित में ऊर्जा बचाएँ Save Energy for Benefit of Self and Nation
चौथा तल, सेवा भवन, आर.के. पुरम, नई दिल्ली-110066 / 4th Floor, Sewa Bhawan, R.K. Puram, New Delhi-110 066
दूरभाष / Tel. : 91 (11) 26766701 - 02, 20867389, फैक्स / Fax : 91 (11) 20867396
ई-मेल / E-mail : dg-bee@nic.in, वेबसाईट / Website : www.beeindia.gov.in

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# ABBREVIATIONS

| | |
|---|---|
| **ACS-ARR** | Average Cost of Supply to Average Revenue Realized (Gap) |
| **ADITEEE** | Assistance for Decarbonization and Innovative Technology Enhancement in Energy Efficiency (Scheme) |
| **AI** | Artificial Intelligence / Advanced Analytics (used in data/analytics context) |
| **AO** | Adjudicating Officer |
| **APSECM** | Andhra Pradesh State Energy Conservation Mission |
| **APSRTC** | Andhra Pradesh State Road Transport Corporation |
| **ARR** | Aggregate Revenue Requirement |
| **ASDA** | Assam State Designated Agency |
| **AT&C** | Aggregate Technical and Commercial (Losses) |
| **BEE** | Bureau of Energy Efficiency |
| **BESS** | Battery Energy Storage Systems |
| **CCTS** | Carbon Credit Trading Scheme |
| **CCMS** | Central Control and Monitoring System |
| **CEA** | Central Electricity Authority |
| **CII** | Confederation of Indian Industry |
| **CMWSSB** | Chennai Metropolitan Water Supply and Sewerage Board |
| **CNG** | Compressed Natural Gas |
| **$CO_2$** | Carbon Dioxide |
| **COP** | Conference of the Parties |
| **CSO** | Civil Society Organization |
| **DC** | Designated Consumer |
| **DISCOM** | Distribution Company |
| **DSM** | Demand Side Management |
| **DT** | Distribution Transformer |
| **EE** | Energy Efficiency |
| **EC** | Energy Conservation |
| **EC Act** | Energy Conservation Act (2001) |
| **ECBC** | Energy Conservation Building Code |
| **ECSBC** | Energy Conservation and Sustainable Building Code |
| **EESL** | Energy Efficiency Services Limited |
| **EHT** | Extra High Tension (Consumer) |
| **EMC** | Energy Management Centre |
| **EMPRI** | Environmental Management and Policy Research Institute |
| **ENS** | Eco Niwas Samhita |
| **ESCO** | Energy Service Company |
| **ESG** | Environmental, Social, and Governance |
| **EV** | Electric Vehicle |
| **FEEP** | Financing Energy Efficiency Programme |
| **FIs** | Financial Institutions |
| **FLCTD** | Facility for Low Carbon Technology Deployment |
| **FO** | Furnace Oil |
| **FY** | Financial Year |

| | |
|---|---|
| **GBCI** | Green Business Certification Inc |
| **GDC** | Gas Distribution Company |
| **GDP** | Gross Domestic Product |
| **GEF** | Global Environment Facility |
| **GHG** | Greenhouse Gas |
| **GIZ** | German Agency for International Cooperation |
| **GRIHA** | Green Rating for Integrated Habitat Assessment |
| **GSDP** | Gross State Domestic Product |
| **HT** | High Tension (Consumer) |
| **HVDS** | High Voltage Distribution System |
| **IEA** | International Energy Agency |
| **IESS** | India Energy Security Scenarios |
| **IGBC** | Indian Green Building Council |
| **INR** | Indian Rupee |
| **IoT** | Internet of Things |
| **IP Sets** | Irrigation Pump Sets |
| **ISO** | International Organization for Standardization |
| **JERC** | Joint Electricity Regulatory Commission |
| **KREDL** | Karnataka Renewable Energy Development Limited |
| **ktoe** | Thousand Tonnes of Oil Equivalent |
| **KVA** | Kilovolt-Amperes |
| **kWh** | Kilowatt-hour |
| **LED** | Light-Emitting Diode |
| **LT** | Low Tension (Consumer) |
| **LT-LEDS** | Long-Term Low Emission Development Strategy |
| **M&V** | Measurement & Verification |
| **MEA** | Mandatory Energy Audit |
| **MEDA** | Maharashtra Energy Development Agency |
| **MEDP** | Microenterprise Development Programme (or MSME Economic Development Policy) |
| **MIDH** | Mission for Integrated Development of Horticulture |
| **MMSSA** | Mukhya Mantri Shakti Sanrakshana Abhijaan |
| **MoP** | Ministry of Power |
| **MoPNG** | Ministry of Petroleum and Natural Gas |
| **MoSPI** | Ministry of Statistics and Programme Implementation |
| **MSME** | Micro, Small, and Medium Enterprises |
| **MTOE** | Million Tonnes of Oil Equivalent |
| **MU** | Million Units |
| **Mu-DSM** | Municipal Demand Side Management |
| **MWh** | Megawatt-hour |
| **NCAER** | National Council of Applied Economic Research |
| **NDC** | Nationally Determined Contributions |
| **NDF** | National Decarbonization Fund |

| | |
|---|---|
| **NITI** | National Institution for Transforming India |
| **NSDP** | Net State Domestic Product |
| **O&M** | Operation and Maintenance |
| **PAT** | Perform, Achieve and Trade (Scheme) |
| **PEACE** | Policy for Enterprise Assistance and Cooperation in Energy |
| **PFC** | Power Finance Corporation |
| **PHED** | Public Health Engineering Department |
| **PM-KUSUM** | Pradhan Mantri Kisan Urja Suraksha Evam Utthaan Mahabhiyan |
| **PPP** | Public-Private Partnership |
| **PRGs** | Partial Risk Guarantees |
| **PRSF** | Partial Risk Sharing Facility |
| **PSU** | Public Sector Undertaking |
| **PWD** | Public Works Department |
| **R&D** | Research and Development |
| **RE** | Renewable Energy |
| **RDSS** | Revamped Distribution Sector Scheme |
| **RECP** | Resource Efficient and Cleaner Production |
| **RIF** | Revolving Investment Fund |
| **RIPS** | Rajasthan Investment Promotion Scheme |
| **RPO/RCO** | Renewable Purchase Obligation / Renewable Consumption Obligation |
| **S&L** | Standards and Labelling |
| **SAPCC** | State Action Plans on Climate Change |
| **SCADA** | Supervisory Control and Data Acquisition |
| **SDA** | State Designated Agency |
| **SEC** | Specific Energy Consumption |
| **SECF** | State Energy Conservation Fund |
| **SEEI** | State Energy Efficiency Index |

| | |
|---|---|
| **SERC** | State Electricity Regulatory Commission |
| **SGST** | State Goods and Services Tax |
| **SIDBI** | Small Industries Development Bank of India |
| **SJKVY** | Shaheed Jhabar Singh Kharra Yojana |
| **SLSC** | State-Level Steering Committee |
| **SME** | Small and Medium-sized Enterprise |
| **SRTPV** | Solar Rooftop Photovoltaic |
| **STU** | State Transport Undertakings |
| **SWHs** | Solar Water Heaters |
| **T&D** | Transmission and Distribution (Losses) |
| **TFEC** | Total Final Energy Consumption |
| **TGREDCO** | Telangana State Renewable Energy Development Corporation Limited |
| **ToD** | Time-of-Day (Tariff) |
| **TOE** | Tonnes of Oil Equivalent |
| **ToU** | Time-of-Use (Tariff) |
| **TWAD** | Tamil Nadu Water Supply and Drainage (Board) |
| **UDD** | Urban Development Department |
| **UG** | Underground (Cables) |
| **ULB** | Urban Local Body |
| **UNIDO** | United Nations Industrial Development Organization |
| **UT** | Union Territory |
| **VCFEE** | Venture Capital Fund for Energy Efficiency |
| **VFD** | Variable Frequency Drive |
| **VGF** | Viability Gap Funding |
| **WBP** | Whole Building Performance (Method) |
| **WIMS** | Water Information Management System |
| **WRI** | World Resources Institute |

# EXECUTIVE SUMMARY

As the world's third-largest energy consumer, India is witnessing a surging energy demand driven by robust economic expansion. In response, the nation has decisively committed to a sustainable, low-carbon development pathway, targeting net-zero emissions by 2070 and a **45% reduction in GDP emission intensity by 2030**. These ambitious, nationally determined goals are fundamentally supported by a comprehensive framework of regulatory and policy mechanisms aimed at maximizing energy efficiency (EE) and sustainability.

To ensure alignment with these national commitments and global energy efficiency objectives, including those reinforced at recent multilateral forums, India institutionalized the **State Energy Efficiency Action Plan (SEEAP)**. This plan is crucial for translating national policy into measurable, localized EE implementation, emphasizing the indispensable need for fluid coordination between central and state governments to drive policy execution and monitor sectoral progress.

The legislative foundation for this transition is the **Energy Conservation (EC) Act of 2001 (amended in 2022)**, which provides States with the statutory power to enforce energy conservation codes and establishes crucial market-driven funding mechanisms. Key initiatives under this framework include the **Carbon Credit Trading Scheme (CCTS)**, mandatory **Standards and Labelling (S&L) Programme**, and the **Energy Conservation and Sustainable Building Code (ECSBC).**

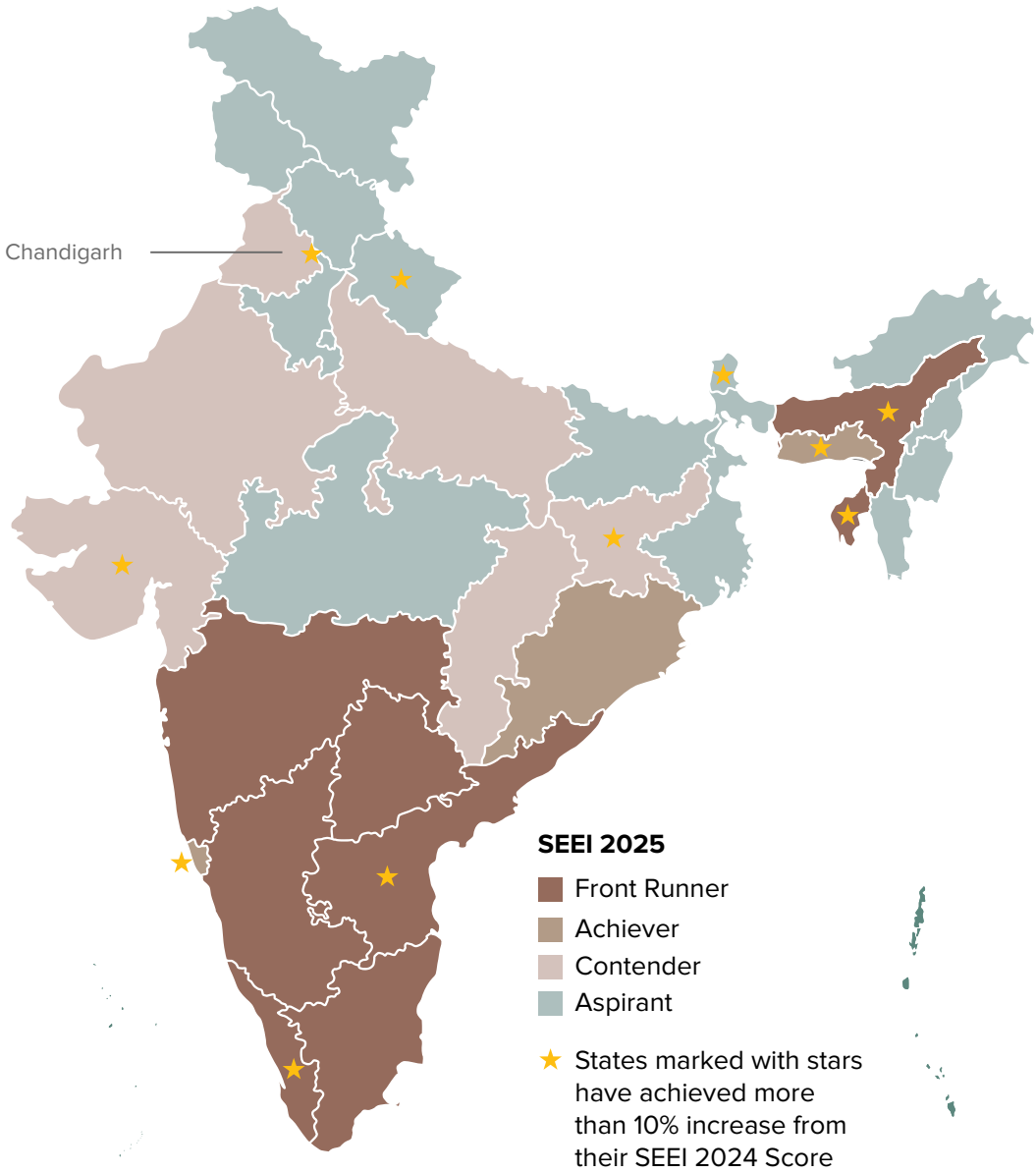
The consistent improvement documented in SEEI 2025—evidenced by the increase in 'Front Runner' States from five to nine—reflects the growing maturity of India's EE ecosystem. By continually expanding performance standards, enhancing enforcement, and mobilizing resources through innovative mechanisms, India is reinforcing its position as a global leader in sustainable energy policy, poised to accelerate its transition and align sub-national action with the long-term implementation agenda set forth at climate forums like **COP30**.

**India has introduced key initiatives such as CCTS, ECSBC, and SEEAP in alignment with its global commitments to sustainable energy policy.**

## STATE ENERGY EFFICIENCY INDEX 2025

The State Energy Efficiency Index (SEEI) 2025 assesses the energy efficiency (EE) progress of Indian States and Union Territories (UTs) for FY 2024-25. The index aims to institutionalise state-level data monitoring, track energy footprint management, promote best practices, and foster healthy competition to drive continuous improvement.

SEEI 2025 is the seventh edition of the index, building on the foundation laid by its predecessors—the State Energy Efficiency Preparedness Index 2018—and the subsequent editions released in 2019, 2020, 2021–22, 2023 and 2024.




# KEY FINDINGS

## BUILDINGS SECTOR

The Buildings Sector demonstrated strong regulatory momentum, with **27 States** notifying the Energy Conservation Building Code (ECBC) 2017, and **21** formally incorporating the code into their legal frameworks—a notable consolidation of policy across jurisdictions. Furthermore, **22 States** reported progress on the Eco Niwas Samhita (ENS) for the residential sector, confirming its draft status or submission for cabinet approval. Policy action in appliance efficiency continued, with **23 States** promoting the use of BEE star-labelled appliances in public buildings, and **14** extending this mandate to commercial establishments. In adoption efforts, **Maharashtra** emerged as the national leader with **2,405 certified green buildings** and **77 star-rated buildings**. Programme implementation was robust, with **Andhra Pradesh** achieving the highest overall sectoral score of **19.5**, reflecting substantial progress in both ECBC adoption and energy-efficient appliance promotion. **Telangana** reported achieving **56.4 million units** in cumulative energy savings and a reduction of **60,093 tonnes of $CO_2$ emissions** through commercial building cool roof projects and ECBC compliance. Overall, 28 States demonstrated improvement, with **Chandigarh** recording the most significant increase by **60.9 %**.

**Energy Conservation Building Code has been formally integrated into building byelaws of 21 states**

## INDUSTRY SECTOR

The Industrial Sector, critical for national energy savings, showed continued policy integration. Energy Efficiency (EE) and Energy Conservation (EC) provisions are now integrated into the Industrial/MSME policies of **24 States**. A regulatory push is visible—with **29 States** appointing an Adjudicating Officer (AO) and **19 States** pursuing PAT widening and deepening initiatives—but the adoption of mandatory audits remains modest, with only **11 States** mandating energy audits for non-PAT industries and MSMEs. Encouragingly, **14 States** have introduced financial incentives to implement these audit recommendations. In terms of verified impact, **Andhra Pradesh** emerged as the top performer, reporting substantial savings from the Perform, Achieve, and Trade (PAT) scheme, achieving **1,348 Million Units** in energy savings and reducing **9,54,465 tonnes of $CO_2$ emissions** across 40 large industries. **Karnataka's PAT program** also delivered robust results, achieving **1,34,866.9 TOE** in annual energy savings. Capacity-building initiatives remain strong, with **22 States** having instituted Energy Conservation Awards, and **Maharashtra** leading by honouring **59 industrial units**. **Tripura** demonstrated the highest improvement in sectoral scores at **36%.**

## MUNICIPAL SERVICES SECTOR

The Municipal Services Sector exhibited exceptional progress, with **Andhra Pradesh** achieving the maximum possible score of **11**, followed by **Kerala (10)** and **Chandigarh (9.75**). Policy alignment at the city level strengthened significantly, with **26 States** developing City-level Climate Action, Net Zero, or Heat Action Plans, and **16** actively collaborating with Urban Local Bodies (ULBs) on energy efficiency initiatives under these frameworks. Enforcement capacity grew, with **18 States** issuing advisories on EE practices for municipal street lighting. Implementation efforts delivered verifiable impact: **17 States** reported adopting energy efficiency practices (IE2/IE3 motors, VFDs, SCADA) in water, sewerage, and street lighting systems. Large-scale program success was evident in street lighting, with **Andhra Pradesh** achieving cumulative savings of **272.91 GWh** from near-universal LED adoption. Similarly, in water and sewerage, a **Maharashtra** demonstration project delivered **17.06 million kWh** in annual energy savings through EE pump replacements. **Kerala** demonstrated a remarkable **56%** score improvement, while Chandigarh showed the highest gain at **60%**.



**States have shown a marked strengthening of city-level climate and energy efficiency action.**

## TRANSPORT SECTOR

The Transport Sector saw accelerated progress driven by Electric Vehicle (EV) adoption policies. A total of **20 States** reported formal transport policies advocating fuel efficiency. Demand-side incentives are actively supported, with **27 States** providing consumer subsidies for private EV purchases. Policy focus on electrification infrastructure increased, with **23 States** mandating charging infrastructure in commercial buildings. In public transport, the push for fleet electrification is definitive: **Karnataka** targets **100%** electrification of its public fleet by 2030, while **Maharashtra's** e-bus deployment is projected to yield **1,109 GWh** in annual energy savings. **Andhra Pradesh** is also aiming for full APSRTC fleet electrification by 2029. Energy savings from the private sector were quantifiable, with **Telangana's** EV adoption resulting in deemed annual energy savings of **66,400 TOE** and avoiding **1.75 lakh tonnes of $CO_2$ emissions**. **Assam** emerged as the top scorer with **12.5 points**, while **Chandigarh** and **Tripura** demonstrated the most significant sectoral score increases of **39%** and **36%**, respectively.

## AGRICULTURE SECTOR

The Agriculture Sector, undergoing rapid modernization, demonstrated strong policy adoption, with **17 States** implementing policies to promote energy efficiency (EE) across integrated cold storage, water/energy savings, and farming machinery. Sectoral implementation achieved significant scale in energy-efficient pump adoption: **Maharashtra** reported a substantial **63.48%** adoption rate for EE/solar pumps under PM-KUSUM. Crucially, **Telangana** reported achieving **100% compliance** for new agricultural connections, mandating 5-star rated pumps. In terms of verified impact, **Andhra Pradesh's** Micro Irrigation Project delivered **1,817 lakh kWh** in energy savings, resulting in a **1.32 lakh tonne $CO_2$ reduction**. **Kerala's** solarization initiative for agricultural pumps is expected to deliver **33.5 GWh** in annual savings. **Karnataka** and **Andhra Pradesh** secured the maximum possible score of **7 points**, while **Goa** demonstrated the highest progress, recording a **79%** improvement in its sectoral score.



**17 States are implementing policies to promote energy efficiency across integrated cold storage, water and energy savings, and farming machinery.**

## DISCOM SECTOR

The DISCOM Sector showed remarkable maturity in its regulatory and operational frameworks, with **Andhra Pradesh** emerging as the overall top scorer **(13.75)**, followed by **Assam (12.5)** and **Kerala (12.25)**. Policy compliance is high, as Demand Side Management (DSM) action plans have been approved by the State Electricity Regulatory Commission (SERC) in **13 States**, and **31 States** have implemented demand response policies, including Time-of-Day (ToD)/Time-of-Use (ToU) tariffs for industrial consumers (all 29 reporting States) and domestic consumers **(20 States).** Under the Revamped Distribution Sector Scheme (RDSS), key States like **Tamil Nadu** and **Andhra Pradesh** achieved near-zero Average Cost of Supply to Average Revenue Realized (ACS-ARR) gaps. Smart metering gained momentum, with **Maharashtra** installing **63.90 lakh** smart meters. Programme implementation delivered substantial savings: **Kerala's** LED bulb distribution achieved **412 GWh** in annual energy savings, and **Karnataka's** DSM initiatives realized **72.61 million units** in energy savings. **Chandigarh** recorded the most significant improvement, with a **42%** score increase.

## CROSS SECTOR

The Cross-Sector category saw **Assam** achieve the highest overall score **(14.75)**, closely followed by **Andhra Pradesh (14.25)** and **Meghalaya (13.75)**. This segment highlighted strengthening governance and policy integration. Only **18 States** have reported on SEEAP implementation status, with **7 States** allocating budgets for FY 2024–25. Further policy adoption saw **14 States** integrating energy efficiency measures into their State Action Plans on Climate Change (SAPCC) and **10 States** officially notifying Energy Efficiency and/or Energy Conservation Policies. Institutional capacity significantly improved: **31 States** formed State-Level Steering Committees (SLSCs), with **30** actively conducting meetings. Financial discipline improved, with **9 States** securing approval for their State Designated Agency (SDA) budgets for FY 2025–26 as per the EC Act. Adoption efforts show **12 States** utilizing State Energy Conservation Awards and **9 States** actively promoting the ESCO model. **Meghalaya** and **Chandigarh** demonstrated the most significant progress, improving their scores by **69%** and **42%**, respectively.



**States should establish clear, time-bound targets for implementing State Energy Efficiency Action Plans (SEEAPs).**

## TAKEAWAY FOR STATES

The SEEI 2025 achieved comprehensive engagement from all 36 State Designated Agencies, confirming robust policy progress. A major finding is the notable increase in 'Front Runner' States—from five in SEEI 2024 to nine in the current cycle—reflecting a national shift toward measurable outcomes and rigorous enforcement of core programs like the Energy Conservation Building Code (ECBC) and the Perform, Achieve and Trade (PAT) scheme. Despite these institutional gains, critical vulnerabilities persist, notably in the municipal and agriculture sectors, constrained by data limitations and coordination gaps. To sustain this upward trajectory and align fully with India's Net Zero targets, States must strategically address enforcement, institutionalize data transparency, and structurally resolve the underlying energy efficiency (EE) financing bottleneck.

**The Three-Point Agenda for States**

- **Strengthening Outcome-Driven Governance and Enforcement:** States must strengthen outcome-driven governance by mandating uniform enforcement of core codes such as ECBC and ENS, and regulations like PAT, supported by Inspecting Officers and Annual Inspection Plans to ensure verifiable energy savings. Equally critical is fiscal commitment: State Finance Departments should allocate dedicated, multi-year budgets for SDAs and SEEAPs, addressing the current gap where only seven States report budget allocation. Cross-sectoral coordination must also be reinforced through the SLSC to ensure departments—particularly Urban Development—integrate ECBC compliance directly into building approval processes
- **Institutionalizing Data Standardization and Performance Validation:** To close persistent data gaps and build market confidence, States must institutionalize strong data standardization and performance validation systems. This includes mandating periodic collection and analytical use of granular end-use energy data across Buildings, Industry, and Transport—going beyond the 10 States currently doing so—to enable targeted, high-impact interventions. At the same time, States must adopt transparent, robust M&V protocols for ESCO and PAT projects to reduce information asymmetry, ensure credible savings reporting, and strengthen confidence in ESCerts.
- **Mobilizing Private Capital and Market Incentives:** Resolving the EE financing bottleneck requires structurally mobilizing private capital. States should redirect the State Energy Conservation Fund (SECF) toward de-risking instruments such as RIFs and PRGs to attract private investment for MSME and public-sector projects, expanding beyond the eight States currently using the fund strategically. States must also align EE programs with the national Carbon Credit Trading Scheme (CCTS) by providing technical assistance to help MSMEs and municipalities quantify, register, and monetize energy savings as carbon assets. Additionally, scaling the ESCO model through standardized performance-based contracts and project aggregation will generate larger, more bankable debt opportunities for financial institutions.

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# 1 INTRODUCTION

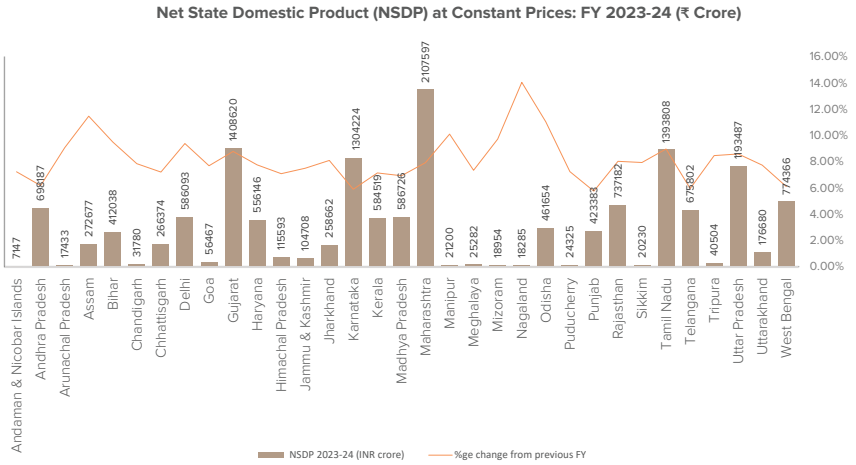
India ranks as the world's third-largest energy consumer, following China and the United States, with demand rising faster than in any other major economy. Despite this growth, its energy supply remains heavily reliant on fossil fuels, prompting intensified efforts to diversify energy sources and strengthen domestic energy security. Key initiatives such as the expansion of renewable energy capacity—now exceeding 217 GW—and the launch of the National Green Hydrogen Mission reflect a strategic push toward a cleaner, more resilient energy future. These developments form a critical backdrop for understanding how energy demand is distributed and managed across the country.

India's economic and demographic diversity results in significant variation in energy consumption patterns across States and union territories. These variations are shaped by differences in economic structure, levels of industrialisation, climatic conditions, population density, and the pace of urban development.

Understanding these differences is essential for contextualising state-level energy efficiency priorities and designing interventions that are responsive to local needs. Figure 1.1 provides an overview of the State Net State Domestic Product (NSDP) for FY 2023–24, highlighting the scale and distribution of economic activity across India. This economic profile forms a critical backdrop for energy efficiency planning, as higher economic output is closely associated with higher energy demand across sectors. Integrating such economic metrics into the analysis ensures that the State Energy Efficiency Index (SEEI) accounts for both structural differences and development trajectories when assessing the performance of States presents the State Net State Domestic Product (NSDP) for FY 2023–24, reflecting the distribution of economic activity that underpins sectoral energy consumption.

**India's economic and demographic diversity results in significant variation in energy consumption patterns across States and union territories.**

**Figure 1-1: State NSDP: FY 2023-2024**




Note: GDP FY 2022-2023 is not available for Dadra Nagar Haveli and Daman Diu, Ladakh, and Lakshadweep

As India's energy demand continues to rise across buildings, industry, transport, agriculture, and municipal services, energy efficiency remains the most cost-effective and scalable solution to strengthen energy security, reduce emissions, and support inclusive growth. India's national commitments—including reducing emissions intensity by 45% from 2005 levels by 2030 and achieving net-zero emissions by 2070—reinforce the centrality of energy efficiency within its low-carbon development pathway.

The outcomes of recent global forums—particularly COP28, the G20 Leaders' Declaration, and COP30—have reinforced the importance of accelerating energy efficiency deployment across all sectors. At COP28, countries endorsed a global call to **double the rate of energy efficiency improvement by 2030**, marking one of the most ambitious global mitigation targets to date. Similarly, during its G20 Presidency in 2023, India championed a voluntary action plan to advance energy efficiency as a practical pathway for achieving near-term climate goals.

At COP30 (Belém, 2025), energy efficiency featured prominently in the global mitigation agenda. The conference placed implementation, measurable outcomes, and just transitions at the forefront of international cooperation. The draft decisions reiterated three core system-wide priorities: **tripling renewable energy capacity**, **doubling global energy efficiency improvement rates**, and **accelerating a fair transition away from fossil fuels**. India reinforced its commitment to these priorities, highlighting the necessity of predictable climate finance, accessible technologies, and enhanced capacity-building mechanisms—especially for developing economies seeking to scale energy-efficient solutions. These global commitments provide renewed momentum for India to enhance its domestic efficiency frameworks and deepen sub-national implementation. They also elevate the relevance of the State Energy Efficiency Index (SEEI) as a critical mechanism for tracking progress, guiding investment decisions, and aligning state-level actions with global climate and development priorities.

India's policy architecture for energy efficiency has steadily evolved to support a more robust, decentralised, and implementation-driven transition. The legislative foundation for this framework is established through the **Energy Conservation Act, 2001**, which mandates energy use standards, promotes efficient technologies, and empowers institutions to drive nationwide improvements. The **Energy Conservation (Amendment) Act, 2022** further strengthened this mandate by expanding the scope of obligated entities, enabling the introduction of carbon markets, and empowering state governments to set sector-specific energy performance standards and enforce energy conservation codes.

At the national level, a suite of flagship programs implemented by the **Bureau of Energy Efficiency (BEE)** and the **Ministry of Power** continues to anchor India's energy efficiency efforts across sectors:

- **Carbon Credit Trading Scheme (CCTS):** A market-based mechanism designed to incentivise industries and large energy consumers to adopt low-carbon technologies and improve energy performance.
- **Standards and Labelling (S&L) Programme:** A long-standing initiative that enhances the energy performance of appliances and equipment, directly influencing residential and commercial energy consumption patterns.
- **Energy Conservation Building Code (ECBC) and Eco-Niwas Samhita (ENS):** National codes that set energy performance benchmarks for commercial and residential buildings to reduce energy intensity in the built environment.
- **National Motors Replacement Programme (NMRP):** A programme aimed at accelerating the adoption of high-efficiency motors in industrial applications, thereby improving energy productivity in one of the most energy-intensive sectors.
- **Energy Service Companies (ESCOs):** A vital component of India's energy-efficiency financing ecosystem, enabling performance-based contracting models that support large-scale implementation of efficiency projects across municipalities, industries, and buildings.

These initiatives are supported by complementary policy frameworks such as the **Perform, Achieve and Trade (PAT)** scheme, **Demand-Side Management (DSM)** programs in Distribution Utilities, and multiple sector-specific interventions in Municipal Services, Transport, Agriculture, and Industries & SMEs. Collectively, they create an enabling environment for States to design and implement context-specific energy efficiency measures, supported by clear regulatory guidance, financial instruments, and technical standards.

The strengthening of this institutional ecosystem ensures that India's national climate and energy aspirations are backed by a strong and coherent implementation framework—one that increasingly relies on sub-national leadership and granular monitoring mechanisms such as the State Energy Efficiency Index (SEEI).

India's diverse States and union territories exhibit distinct economic structures, climatic conditions, and energyuse patterns, making subnational leadership central to India's energy efficiency progress. States hold jurisdiction over critical sectors—including buildings, municipal services, transport, agriculture, and electricity distribution—where targeted interventions can yield substantial energy savings. However, differences in institutional capacity, policy enforcement, data systems, and financial resources lead to uneven implementation across regions. These variations highlight the need for a uniform, transparent mechanism to assess performance and guide improvement. The State Energy Efficiency Index (SEEI) fulfils this role by providing a structured, datadriven framework to evaluate, benchmark, and accelerate energy efficiency efforts across all States and union territories.

SEEI 2025 builds on the strong foundation of earlier editions and continues to pursue the core objectives established under SEEI 2024, which remain central to the Index's design and purpose. These objectives, retained as the **Objectives of SEEI 2025**, are:

- **To establish a framework that enhances understanding of energy efficiency imperatives at the state and UT levels;**
- **To institutionalise state-level data capture and monitoring of energy efficiency activities led by State Designated Agencies (SDAs);**
- **To track progress in managing the energy footprint of States and the nation as a whole;**
- **To highlight best practices and foster healthy competition among peer States.**



**The SEEI 2025 framework emphasizes effective energy efficiency implementation, supported by robust policy and institutional capacity at the sub-national level.**

Building on these objectives, the SEEI 2025 framework places a greater emphasis on implementation depth, measurable outcomes, and alignment with India's evolving climate and energy priorities. The Index for SEEI 2025 consists of **67 indicators**, collectively accounting for **100 marks**, and assesses performance across seven key sectors—**Buildings, Industry, Municipal Services, Transport, Agriculture, DISCOMs**, and **Cross-Sector**—through a balanced mix of quantitative, qualitative, and outcome-based indicators. These indicators capture the extent of policy adoption, programme execution, technology deployment, sectoral coordination, and institutional readiness across States and union territories.

A defining feature of SEEI 2025 is its expanded focus on implementation-specific metrics that reflect real on-ground progress. SEEI 2025 introduces a refined set of implementationsfocused indicators that sharpen the Index's ability to capture measurable progress. These include the state's enforcement actions under Sections 13A, 14 and 15 of the EC Act—assessing whether **Annual Inspection Plans are prepared and the extent to which compliance inspections are completed**—as well as **achievement of sampling targets under the Standards & Labelling Programme's checktesting requirements**. The framework also incorporates the **promotion of ESCO based project implementation over the past five years**, **steps undertaken toward notification of the Energy Conservation and Sustainable Building Code (ECSBC)**, and **initiatives supporting MSME decarbonisation under the ADITEEE scheme**. These concise yet targeted additions complement broader enhancements across sectors, ensuring that SEEI 2025 provides a more accurate reflection of States' onground implementation capacity and commitment to energy efficiency.

SEEI 2025 is built on a robust and transparent assessment framework that draws on verified data from **State Designated Agencies (SDAs), BEE, CEA, EESL, MoP, MoRTH, MoPNG, State Electricity Regulatory Commissions**, etc. State submissions undergo a structured validation process, including cross-checks with central databases and programme dashboards to ensure accuracy and consistency. This validation process ensures that only reliable, cross-verified information is used for the Index, enabling consistent comparison across States and strengthening the credibility of SEEI as a decision-support tool for both central and state governments.

# 2 APPROACH

The State Energy Efficiency Index (SEEI) 2025 builds on a strong foundation established by its predecessors, including the State Energy Efficiency Preparedness Index 2018 and SEEI iterations from 2019 to 2023. As the Seventh Edition, SEEI 2025 retains a consistent methodology while incorporating refinements to enhance objectivity, transparency, and consistency in evaluating the energy efficiency efforts of States. The framework focuses on actionable and results-driven indicators to measure States' progress effectively.

This chapter delves into the methodology that shapes the SEEI framework. The approach includes the following steps:

- **Indicator Selection and Scoring:** Performance indicators are thoughtfully selected and weighted to highlight critical demand sectors based on energy consumption and savings potential. This process prioritises areas where state-level interventions can significantly impact energy efficiency, ensuring a focused and effective evaluation of States' efforts.
- **State Categorisation:** States are grouped according to their Total Final Energy Consumption (TFEC). This classification ensures a fair and meaningful comparison among peers with similar energy profiles.
- **Data Collection and Validation:** The evaluation relies on the most reliable and credible data available. Each state's performance is cross-checked and validated against trusted sources to maintain accuracy and reliability in the assessment process.
- **Data Analysis and Scoring:** States' initiatives and outcomes are analysed and scored comprehensively, offering valuable insights into their energy efficiency achievements and progress.

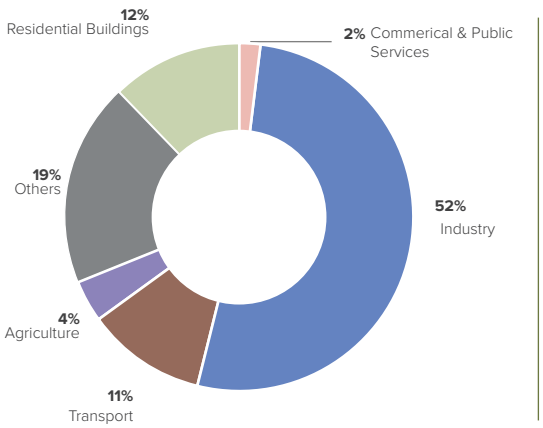
By emphasising a clear and structured approach, SEEI 2025 aims to support States in driving impactful energy efficiency interventions and fostering sustainable growth.

## 2.1 INDICATOR FRAMEWORK

In SEEI 2025, the methodology for selecting and assigning weights to performance indicators has been carefully designed to capture multiple dimensions of energy efficiency. It recognises the relative importance of different demand sectors by accounting for their share in total energy consumption as well as their potential for energy savings. The approach further emphasises the critical role of state-level interventions, focusing on sectors where States have greater jurisdiction and capacity to implement transformative energy efficiency measures. This ensures a fair, balanced, and contextually relevant evaluation of each state's efforts.

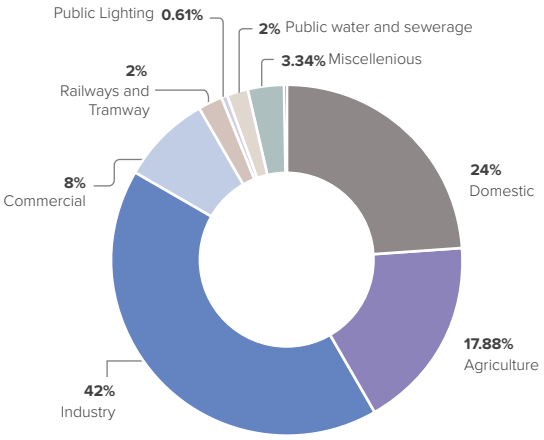
Figures 2-1 and 2-2 depict India's sector-wise annual final energy consumption for FY 2022–23 and the all-India electricity consumption for FY 2023–24, respectively. Figure 2-3 illustrates the estimated energy savings potential across sectors, while Table 2-1 highlights the roles and responsibilities of States in promoting energy efficiency as defined under the Energy Conservation (EC) Act 2001, its 2022 Amendment, and the Electricity Act 2003.

**Figure 2-1: Sector-wise TFEC in India (FY 2021-22)**




Source: Energy Statistics India 2025, MoSPI

**Figure 2-2: Sector-wise electricity consumption in India (FY 2023-24)**




Source: CEA General Review 2025

**Figure 2-3: India's sector-wise energy savings potential**

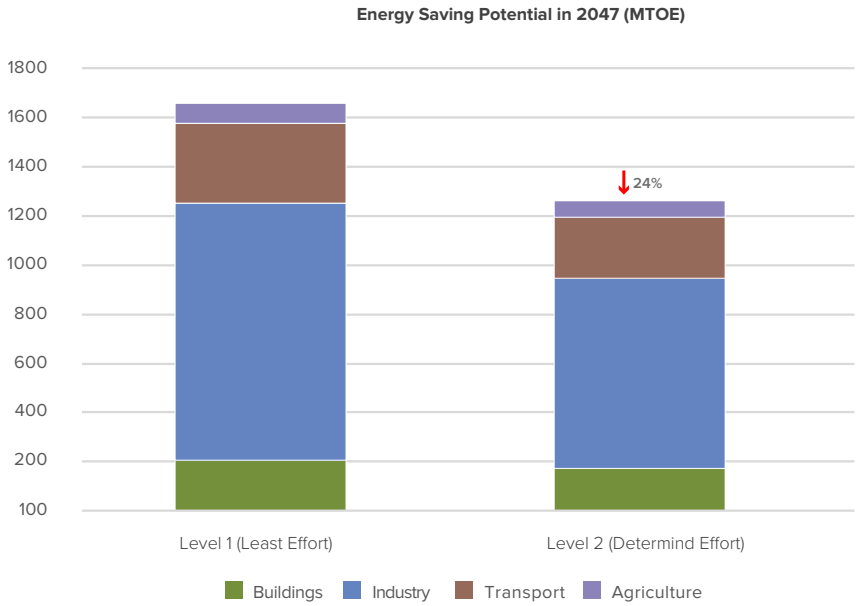


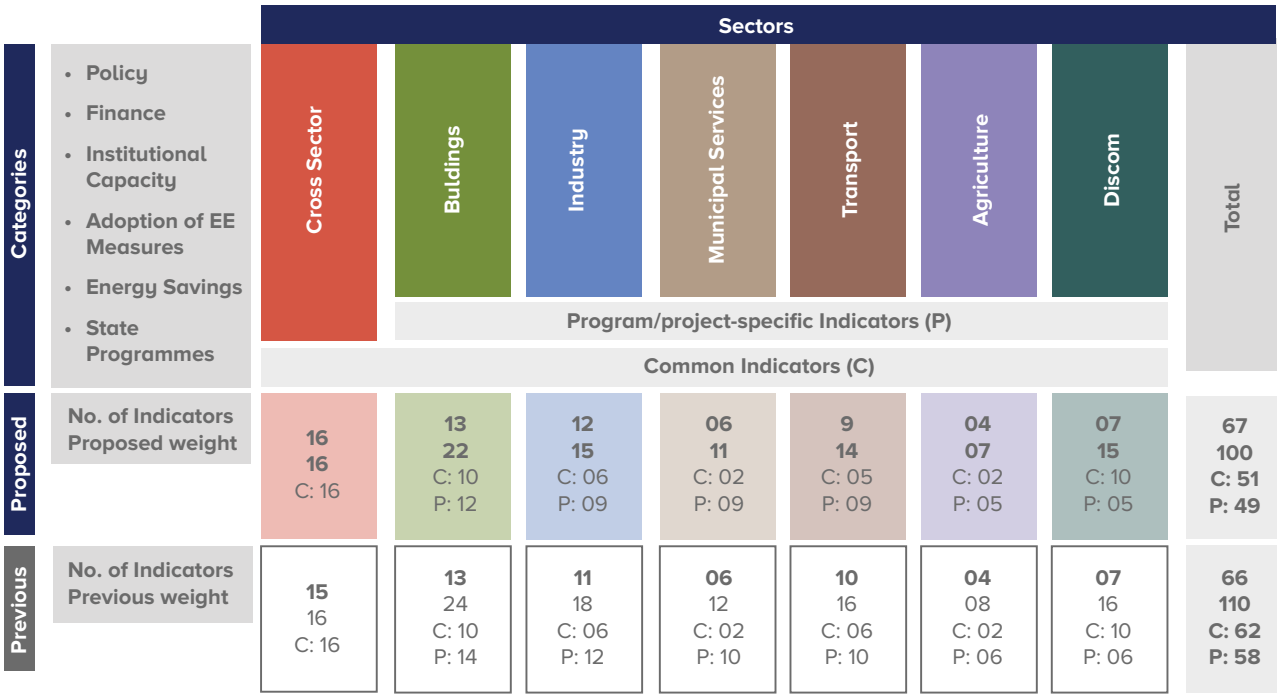
**Table 2-1: States and UT's role in energy conservation**

| Sector | States' role and authority in driving energy efficiency |
|---|---|
|  **Buildings** | EC (Amendment) Act, Section 2: Definition of "building" revised to include any structure or erection or part of structure or erection constructed after the rules relating to energy conservation and sustainable building codes have been notified by the Central Government, which has a minimum connected load of 100 kilowatts (kW) or contract demand of 120 kilovolt-amperes (kVA) and is used or intended to be used for commercial purposes or as an office building or for residential purposes. The State Government may specify a lower connected load or contract demand.<br>The phrase "Energy conservation building codes" in the Act has been substituted with the words "Energy conservation and sustainable building codes," which would provide norms and standards for energy efficiency and conservation, the use of renewable energy, and other green building requirements.<br>EC (Amendment) Act, Section 15: Amend the "Energy Conservation and Sustainable Building Code" to suit the regional and local climatic conditions. Notify energy conservation and sustainable building codes with respect to the use of energy in the buildings and implement these codes through state-level building bylaws. Direct designated consumers to comply with code and/or energy audit requirements and furnish requisite data at the requisite time.<br>EC Act, Section 17: Power of inspection of buildings to check compliance with requirements of the EC Act.<br>EC Act, Section 18: Regulation of norms for energy consumption standards in any building. Regulation of the energy consumption standards for equipment and appliances.<br>EC Act, Section 26: Impose penalties for non-compliance of either central or state government energy conservation regulations.<br>EC Act, Section 27, 28, 29: Power to adjudicate the penalties imposed for non-compliance.<br>EC Act, Section 57: Power of state government to make ECSBC rules through notification for carrying out the provisions of this act. |
|  **Industry** | EC Act, Section 15: Direct the designated consumers to comply with energy audit requirements and furnish requisite data at the requisite time.<br>EC Act, Section 17: Power of inspection of industries to check compliance with requirements of the EC Act.<br>EC Act, Section 18: Regulation of norms for process and energy consumption standards in any industry. Regulation of the energy consumption standards for industrial equipment and appliances, including motors.<br>EC Act, Section 26: Impose penalties for non-compliance of either central or state government energy conservation regulations.<br>EC Act, Section 27, 28, 29: Power to adjudicate the penalties imposed for non-compliance |
|  **Municipal Services** | EC Act, Section 15: Power to state government to create awareness, disseminate information, and organise training for efficient use of energy and its conservation.<br>EC Act, Section 18: Regulation of the energy consumption standards for street lighting and drinking and/or wastewater pumping.<br>EC Act, Section 27, 28, 29: Power to adjudicate the penalties imposed for non-compliance |

| Sector | States' role and authority in driving energy efficiency |
|---|---|
| **Transport** | Road transport under state purview.<br>State Road Transport Corporations<br>State Transport Department defines policies and regulations<br>EC Act, Section 15: Power to state government to create awareness, disseminate information, and organise training for efficient use of energy and its conservation.<br>EC Act, Section 17: Power of inspection of the appliance (Tyres/Tires) for the purpose of ensuring compliance with energy consumption standards.<br>EC Act, Section 18: Regulation of the energy consumption standards for tyres/tires.<br>EC Act, Section 26: Impose penalties for non-compliance of either central or state government energy conservation regulations.<br>EC Act, Section 27, 28, 29: Power to adjudicate the penalties imposed for non-compliance. |
| **Agriculture** | EC Act, Section 15: Power to state government to create awareness, disseminate information, and organise training for efficient use of energy and its conservation.<br>EC Act, Section 18: Regulation of the energy consumption standards for agricultural pumping.<br>EC Act, Section 27, 28, 29: Power to adjudicate the penalties imposed for non-compliance |
| **DISCOM** | Electricity Act, Section 23, 42, 61 and 181: Empowers SERCs to make demand side management (DSM) regulations that are applicable to all DISCOMs in the state.<br>EC Act, Section 17: Power of inspection of concerned entities to check compliance with requirements of the EC Act.<br>EC Act, Section 26: Impose penalties for non-compliance of either central or state government energy conservation regulations.<br>EC (Amendment) Act, Section 27: SERCs may make regulations for discharging their functions.<br>EC Act, Section 28, 29: Power to adjudicate the penalties imposed for non-compliance. |
| **Cross-Sector** | EC (Amendment) Act, Section 4: BEE's Governing Council membership expanded from thirty-one to thirty-seven members to be more inclusive in representation.<br>EC (Amendment) Act, Section 15: Create awareness and disseminate information for the efficient use of energy and its conservation. The SDA budget will be part of the larger state budget.<br>EC (Amendment) Act, Section 16: Constitute State Energy Conservation Fund for meeting the expenses incurred for the designated agency in the discharge of its functions and for the objects and purposes of implementing EE projects authorised by the Act.<br>EC Act, Section 57: Power of State Government to make rules, by notification, for carrying out the provisions of EC Act and not inconsistent with the rules, if any, made by the Central Government. |

The SEEI 2025 framework features 67 thoughtfully designed indicators that blend qualitative, quantitative, and outcome-based measures. These indicators are structured to track progress in implementing energy efficiency (EE) policies, programs, and projects while minimising bias due to state-specific conditions, ensuring fair evaluations across diverse regions. The Index assigns a total score of 100, with sector-specific weights outlined in Figure 2 – 4.

**Figure 2-4: Framework for SEEI 2025**




The indicators span seven key demand sectors: buildings, industry, municipal services, transport, agriculture, DISCOMs, and cross-sector initiatives. To provide a detailed and well-rounded assessment, they are divided into two categories:

- **Common Indicators (51% weight):** These include measures related to policy, institutional capacity, financing, adoption of EE practices, and energy savings. Many are simple "yes/no" indicators, while others require detailed data analysis, scored on a graded scale.
- **Programme-Specific Indicators (49% weight):** These focus on evaluating state, central, or PSU-led EE programs. They consider factors such as program objectives, timelines, progress, budget allocation and utilisation, stakeholders involved, energy savings, and emissions reductions.

The emphasis on outcome-based indicators ensures a more precise measurement of EE adoption, energy savings, and reductions in energy intensity, offering a clear picture of each state's progress.

**Table 2-2: Sector-wise split of common and programme-specific indicators**

| Sector | Common Indicator | | | | | Programme specific indicator | Total |
|---|---|---|---|---|---|---|---|
| | Policy | Finance | Institutional Capacity | Adoption of EE Measures | Energy Savings | State Programme | |
| **Cross-sector** | 3 | 3 | 5 | 3 | 2 | 0 | 16 |
| **Buildings** | 3 | 0 | 1 | 5 | 0 | 4 | 13 |
| **Industries** | 2 | 0 | 1 | 6 | 0 | 3 | 12 |
| **Municipal Services** | 1 | 0 | 1 | 1 | 0 | 3 | 6 |
| **Transport** | 1 | 0 | 0 | 4 | 1 | 3 | 9 |
| **Agriculture** | 1 | 0 | 0 | 1 | 0 | 2 | 4 |
| **DISCOMs** | 3 | 0 | 0 | 2 | 0 | 2 | 7 |
| **Total Number of Indicators for State Energy Efficiency Index 2025** | | | | | | | 67 |

The weights reflect each sector's impact on energy use:

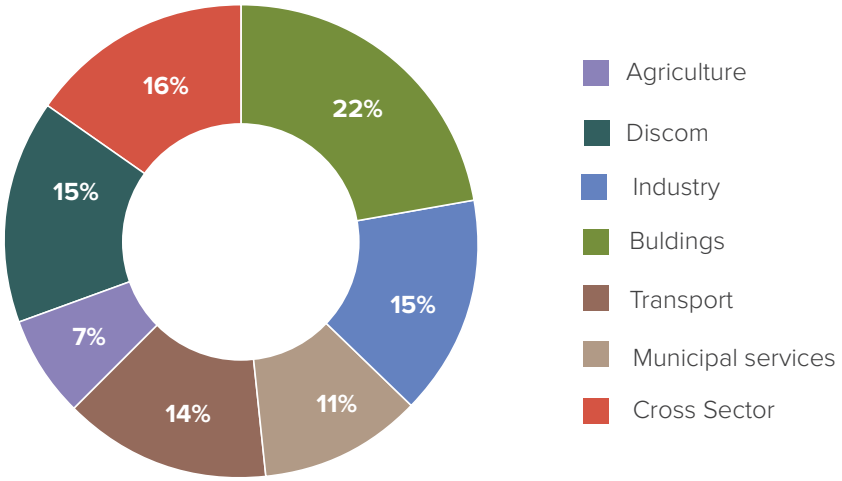
**Buildings (22%):** Prioritised for its significant energy consumption and the state's pivotal role in driving energy efficiency initiatives in this sector.

**Industry (15%):** Although the largest energy consumer, it receives slightly less weight due to limited state-level interventions. Large industries benefit from central efforts, but MSMEs pose challenges due to their diversity and decentralised nature, highlighting the need for targeted state action.

**Transport (14%):** Weighted to align with its substantial energy consumption and potential for energy efficiency improvements.

**Other Sectors:** Weights are distributed based on their relative energy use, ensuring fair representation.

**Figure 2-5: Sector-wise split of score weightage in SEEI 2025**




## 2.2 GROUPING OF STATES

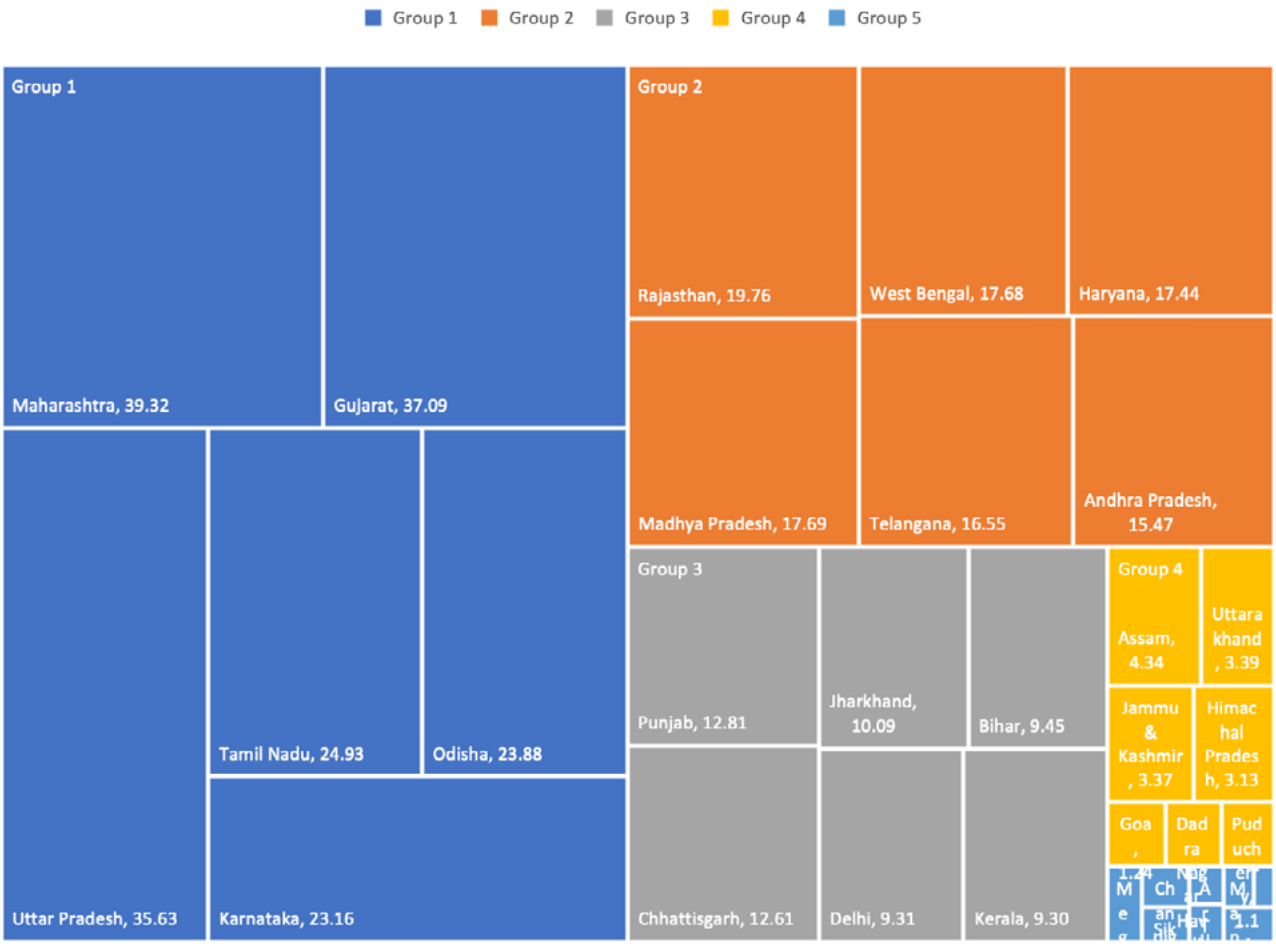
Building on the earlier methodology for grouping States, the State Energy Efficiency Index (SEEI) 2025 introduces a refined classification system, categorising States and union territories into five groups based on their Total Final Energy Consumption (TFEC) for the fiscal year 2022–2023. This grouping is derived from the latest data available from central government sources and aims to enable more nuanced peer comparisons and analysis of energy efficiency performance among States with similar consumption profiles. This classification facilitates meaningful peer comparisons and enables clearer visualisation of energy efficiency performance among States with comparable levels of energy consumption.

The **6 highest energy-consuming States belonging to Group 1—each having more than 20 MTOE of Total Final Energy Consumption**—collectively account for nearly **~50%** of the total energy consumption across all Indian States. Notably, the **top 12 States (Group 1 and Group 2)** contribute **~77%** of the nation's total energy use.

While this grouping is purely based on the scale of energy consumption, it does not capture the wide variations in geographical, socio-economic, and cultural contexts among States.

During the framework's design, other parameters such as Energy Intensity, Gross State Domestic Product (GSDP), Potential Energy Savings, and Per Capita Energy Consumption were considered. However, TFEC was ultimately chosen as the sole criterion for its simplicity, comparability, and the constraints associated with data availability.

**Figure 2-6: Grouping of States by TFEC**




**Source:** MoSPI's India Energy Statistics, CEA General Review, MoPNG's Petroleum and Natural Gas Statistics (oil, compressed natural gas (CNG)), and the Coal Directory (coal), Reserve Bank of India (RBI) Handbook of Statistics on Indian States (GSDP).

**Note:** GSDP is unavailable for Dadra & Nagar Haveli and Daman & Diu, Ladakh, and Lakshadweep. The TFEC is derived from state-wise data in CEA General Review 2024 (electricity), MoPNG's Petroleum and Natural Gas Statistics 2023-24 (oil, CNG), and the Coal Directory 2022-23 (coal). TFEC per state includes final electricity consumption, electricity T&D losses, and the use of coal, oil, and gas (CNG only) for energy other than that, used for power generation.

Methodology for Calculating Total Final Energy Consumption (TFEC) of Indian States (FY 2022-23) has been provided in Annexure

There are inherent data limitations in the state-wise final consumption figures for several fuels, particularly natural gas and biofuels. For natural gas, only Compressed Natural Gas (CNG) consumption has been considered in the index, as disaggregated state-level data for Piped Natural Gas (PNG) and Liquefied Natural Gas (LNG) is not available. Similarly, biofuels and biomass have been excluded due to the lack of reliable state-wise data.

To maintain accuracy and prevent double counting, coal consumption figures have been refined to exclude quantities used for electricity generation. This ensures a more accurate representation of coal use across different States. The conversion factors for translating energy use into tonnes of oil equivalent (TOE) are drawn from reliable sources, including

the Ministry of Statistics and Programme Implementation's (MoSPI) India Energy Statistics, the International Energy Agency (IEA), and the Ministry of Petroleum and Natural Gas (MoPNG), ensuring methodological consistency and robustness in the data conversion process

## 2.3 DATA COLLECTION AND REVIEW

To ensure a systematic and transparent data collection process for the State Energy Efficiency Index (SEEI), the Bureau of Energy Efficiency (BEE) has designated State Designated Agencies (SDAs) as the primary coordinators in their respective States. The SDAs were entrusted with the responsibility of collecting data from various state departments and agencies. Since the launch of the data collection portal in SEEI 2018, BEE has continually upgraded its features—integrating user feedback and introducing improvements in SEEI 2021–22, SEEI 2023, SEEI 2024 and SEEI 2025—to make the platform more user-friendly and efficient.

Beyond state-level submissions, data inputs were also drawn from key central government institutions such as the Central Electricity Authority (CEA), Energy Efficiency Services Limited (EESL), and the Ministry of Road Transport and Highways (MoRTH). Supplementary data from State Electricity Regulatory Commissions, industry bodies like the Confederation of Indian Industry (CII), and certification agencies including IGBC, GBCI India, and GRIHA further enriched the database.

All information submitted by the SDAs was rigorously reviewed by the Alliance for an Energy Efficient Economy (AEEE) and subsequently verified by the respective SDAs. Only data that met the validation standards of both the SDAs and BEE was included in SEEI 2025, thereby ensuring a robust and credible assessment framework.

## 2.4 DATA ANALYSIS AND SCORING

In the final phase of the SEEI 2025 process, BEE and AEEE conducted a detailed analysis of the data collected from all States. Each state was evaluated and scored against a predefined set of criteria for every indicator. The outcomes of this rigorous assessment—offering a comprehensive overview of the States' energy efficiency performance—are presented in the following chapter.

# 3 RESULTS

The **State Energy Efficiency Index 2025 (SEEI 2025)** offers a comprehensive view of India's evolving energy efficiency (EE) landscape. Building on the strong foundation laid by SEEI 2024, this year's assessment benefited from active participation and constructive engagement from all thirty-six (36) State Designated Agencies (SDAs) during the data collection process. This active participation by the States underscores the growing emphasis on data-driven decision-making, accountability, and continuous improvement in achieving India's national energy efficiency goals and fostering sustainable development across the country.

A notable feature of the SEEI 2025 is the refinement and expansion of both common and programme-specific indicators, including the addition of new sub-indicators designed to capture a more detailed and holistic picture of state-level EE performance. These enhancements enable a deeper and more accurate assessment of the progress made by States and Union Territories (UTs) in implementing energy efficiency measures across key sectors. The more granular framework also supports the identification of regional strengths, gaps, and opportunities for inter-state learning and collaboration.

**SEEI 2025 introduces enhanced indicators and new sub-indicators for a more granular and accurate assessment of state-level energy efficiency performance..**

The classification framework used to assess the performance of States and Union Territories (UTs) in SEEI 2025 has been retained from SEEI 2024 . Under this framework, each State/UT is categorized as a **Front Runner (≥ 60%), Achiever (≥ 50% and < 60%), Contender (≥ 30% and < 50%), or Aspirant (< 30%).** This structured approach ensures consistent benchmarking, facilitates comparison across jurisdictions, and enables systematic tracking of progress over time.

The distribution of States and Union Territories across these performance categories for the years **2020, 2021–22, 2023, 2024** and **2025** is provided in Table 3-1 below.

**Table 3-1: Year-wise Performance of States in SEEI**

| Performance Category | 2020 | 2021-22 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|
| **Front Runner** | 2 | 5 | 7 | 5 | 9 |
| **Achiever** | 6 | 4 | 2 | 2 | 3 |
| **Contender** | 4 | 8 | 3 | 5 | 6 |
| **Aspirant** | 24 | 19 | 24 | 24 | 18 |

In the State Energy Efficiency Index (SEEI) 2025, **Andhra Pradesh** and **Kerala** emerged as the top-performing States, with impressive overall scores of **89.25** and **75.25**, respectively. They were followed closely by **Assam (72.00), Karnataka (70.25), Chandigarh (67.50),** and **Maharashtra (67.50)**—all demonstrating strong performance and sustained commitment to advancing energy efficiency initiatives across key sectors.

Ten States have shown notable improvement, each recording an increase of over 10 points in their overall scores. These include **Gujarat** from **Group 1**, **Kerala** and **Jharkhand** from **Group 3, Assam, Goa** and **Uttarakhand** from Group 4 and **Chandigarh, Tripura, Meghalaya** and **Sikkim** from **Group 5**.

Figure 3-1 illustrates the States' performance in SEEI 2025, viz., **'Front Runner', 'Achiever', 'Contender',** and **'Aspirant'.** Along with the most improved States, which achieved a score increase exceeding 10 points:

**Figure 3-1: State-wise SEEI 2025 Performance**

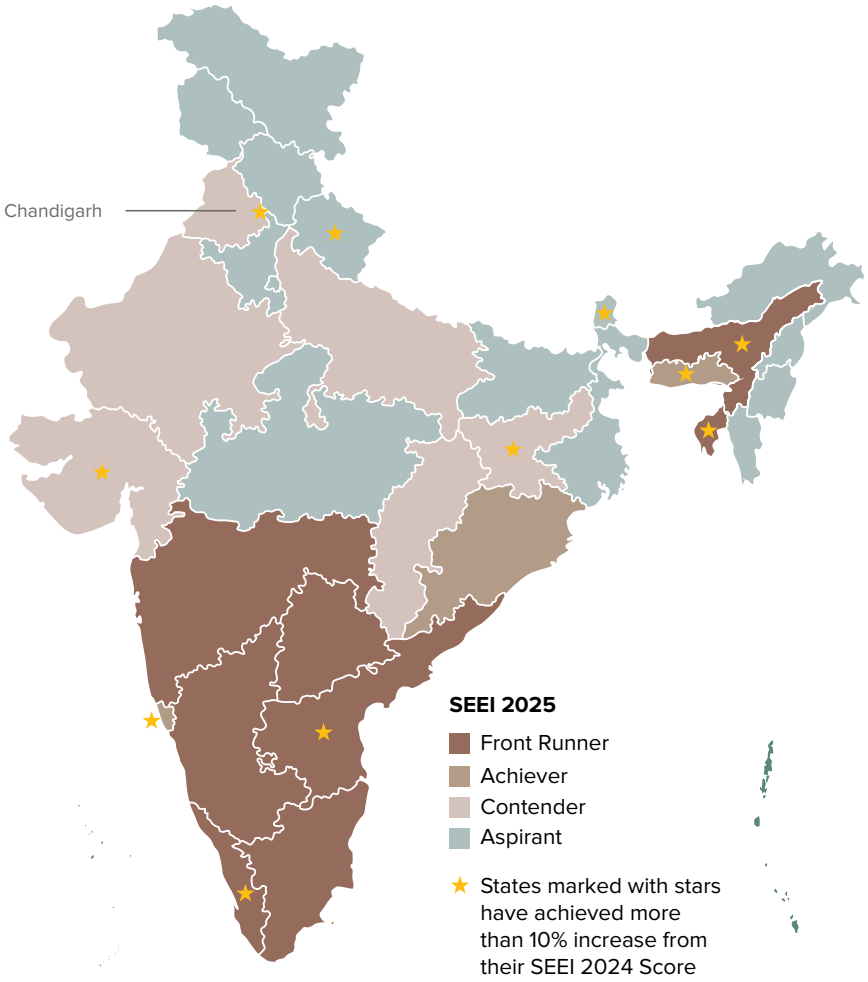



Figure 3-2 presents the state-wise scores for Total Final Energy Consumption (TFEC), organised by groups. For SEEI 2025, the earlier **Group 1** classification has been further refined based on TFEC levels: States with TFEC **greater than 20 MTOE** are classified as **Group 1**, while those with TFEC **between 15–20 MTOE** are now placed in **Group 2.** Overall, SEEI 2025 reflects an improvement in State performance, with higher scores observed across the board. All scores have been evaluated on a **100-point scale.**

**Karnataka** has emerged as the top scorer in **Group 1** in SEEI 2025, surpassing **Maharashtra**, marking a significant improvement from its second position last year. **Andhra Pradesh**, which shifted from the 5–15 MTOE TFEC category to the 15–20 MTOE category, has emerged as the top-performing State in **Group 2** despite this transition—and has also achieved the highest score across all groups. **Telangana** secured the runner-up position in **Group 2**. **Kerala** emerged as the highest-performing State in **Group 3**, followed by **Punjab** and **Jharkhand**, which shared the joint runner-up position. However, **Punjab** experienced a notable decline in its performance, with its score dropping by more than 10% compared to last year.

In **Group 4**, **Assam** secured the top position, with Goa following as the second-highest performer—mirroring their rankings from SEEI 2024. Both States showed remarkable progress, as Assam improved its score by **20%** and Goa by **30.6%.**

Demonstrating remarkable progress, **Chandigarh** emerged as the leading performer in **Group 5**, surpassing both **Tripura** and **Meghalaya**—a substantial climb from its joint second-place standing last year. Each of the three States achieved outstanding score improvements, with Chandigarh, Tripura, and Meghalaya registering mammoth increases of **44.8%, 33.5%**, and **27.7%**, respectively.

**Figure 3-2: TFEC group-wise state total scores (All Sectors)**

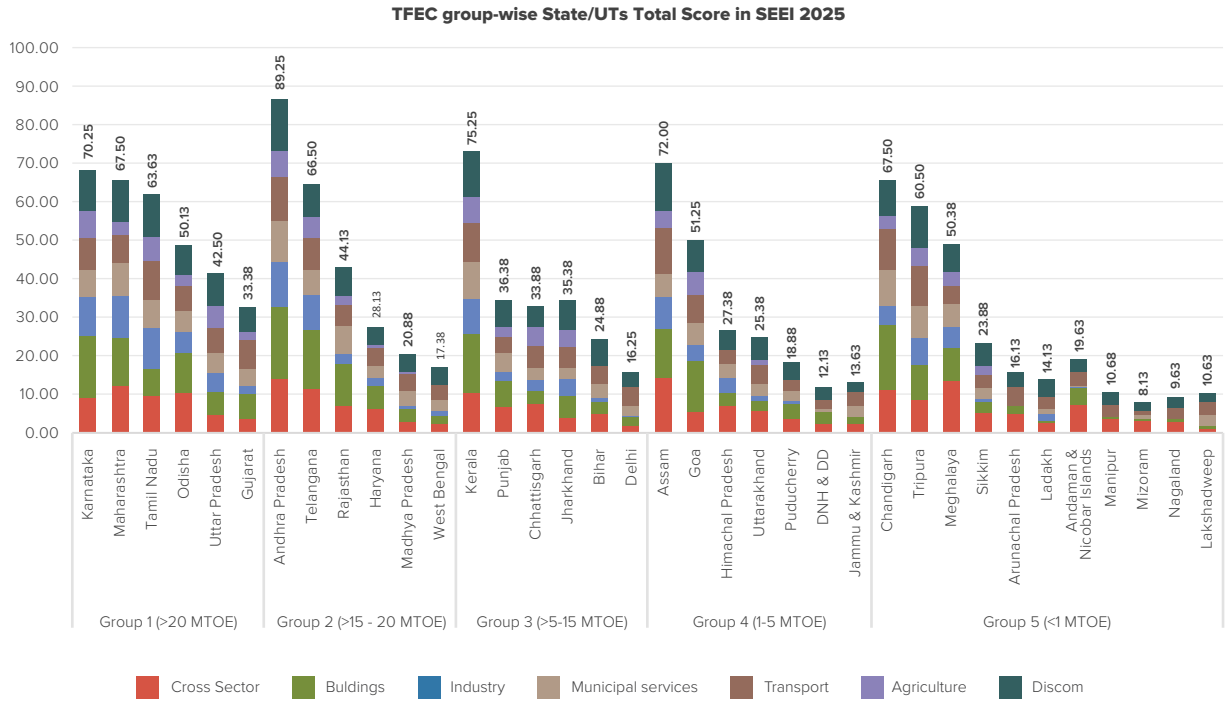
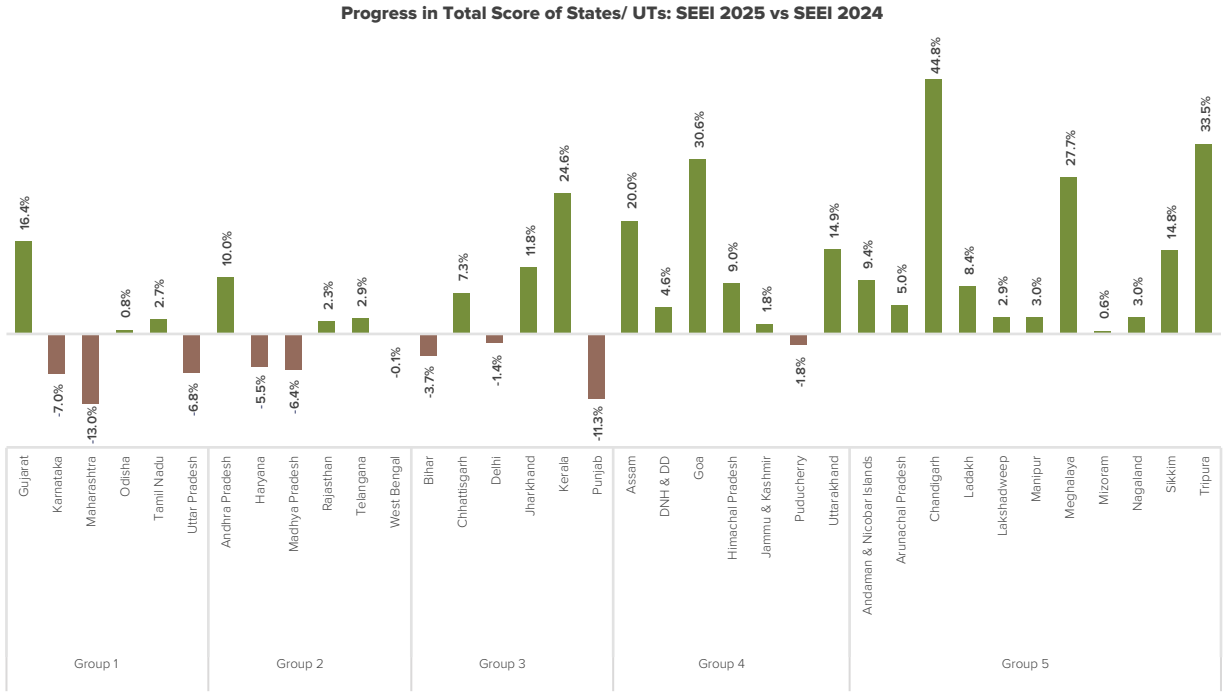



Figure 3-3 illustrates each state's progress in the SEEI for the year 2025 compared to SEEI 2024.

**Figure 3-3: TFEC group-wise total score state progress – SEEI 2025 vs SEEI 2024**



# 3.1 BUILDINGS SECTOR

## OVERVIEW

The buildings sector—one of the largest contributors to India's Total Final Energy Consumption (TFEC)—has gained increasing prominence in recent years, driven by rapid urbanisation and sustained economic growth. In SEEI 2025, State-level performance in this sector was evaluated using a comprehensive framework of **13** indicators. Of these, **9 Common Indicators** assess core elements such as policy frameworks, institutional capacity, and the adoption of energy efficiency (EE) measures across States. The remaining **4 Programme-Specific Indicators** evaluate targeted EE interventions implemented at the State and Union Territory levels.

In the **State Energy Efficiency Index (SEEI) 2025, 28 States** demonstrated improvement in their buildings-sector scores compared to SEEI 2024. This overall progress is largely attributed to strengthened performance on common indicators and enhanced data availability for programme-specific indicators.

The maximum possible score in this sector is **22 points**, including **10 points** assigned to **Common Indicators** and **12 points** to **Programme-Specific Indicators**. Table 3-2 provides an overview of the indicators used in SEEI 2025 to assess State-level performance in the buildings sector.

Figure 3-4 presents the State-wise scores across the four indicator categories—Policy, Institutional Capacity, Adoption of Energy Efficiency (EE) Measures, and Programme-Specific Initiatives—organised by TFEC groups. Figure 3-5 illustrates the comparative progress achieved by States in the buildings sector between SEEI 2025 and SEEI 2024

**In the State Energy Efficiency Index (SEEI) 2025, 28 States demonstrated improvement in their buildings-sector scores compared to SEEI 2024.**

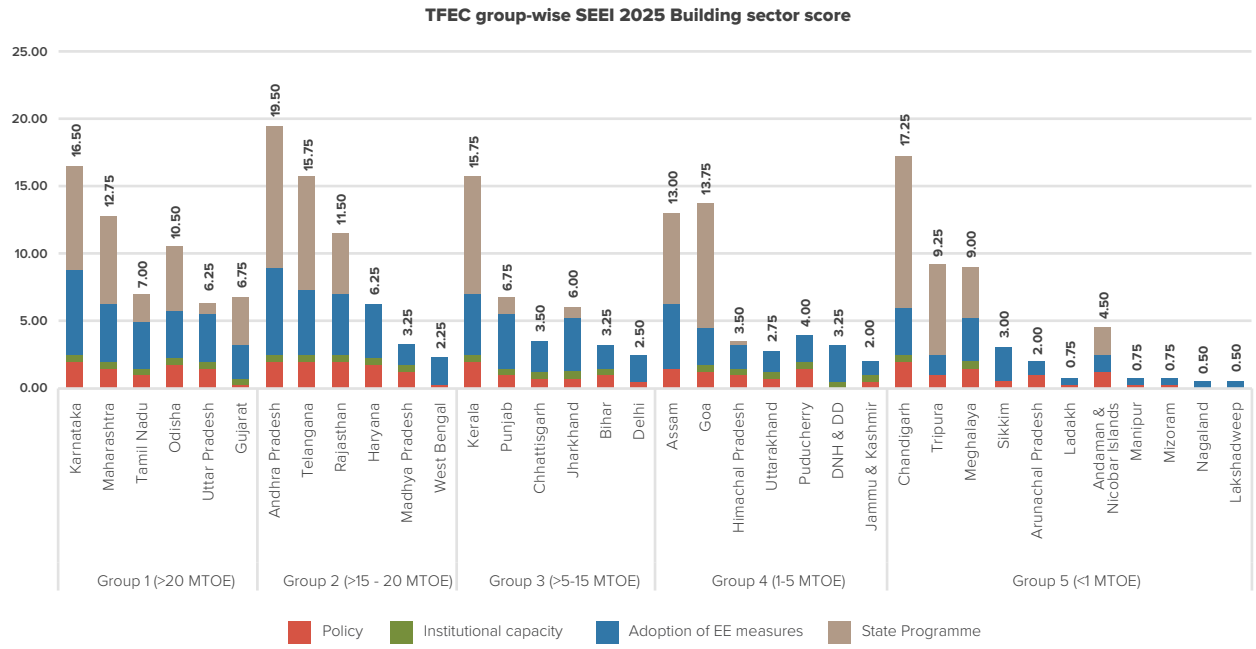
**Table 3-2: Building sector indicators under SEEI 2025**

| S. No | Indicator | Max Score | Scoring Criteria |
|---|---|---|---|
| **Policy** | | | |
| 1 | ECBC notification and adoption in by-laws | 1.5 | |
| | State/ UT has notified mandatory compliance with norms in ECBC 2017. | 0.25 | Notified= 0.25; else= 0 |
| | State/ UT has amended. included ECBC in building byelaws | 0.25 | Amended in building by laws= 0.25; else= 0 |
| | Percentage of ULBs that have incorporated ECBC provisions in building byelaws. | 0.5 | Based on percentage data= 0.5 |
| | Steps undertaken to notify ECSBC in the State/ UT. | 0.5 | Max Marks Obtainable: 0.5 Marks<br>Steps Undertaken = 0.25/ ECSBC Notified = 0.5 |
| 2 | Measures taken toward adoption of Eco Niwas Samhita (ECBC-R) in the state | 1 | |
| | State/UT has notified ENS. | 0.5 | Notified= 0.5; else= 0 |
| | State/UT has drafted the ENS code and sent it to cabinet for approval | 0.5 | Draft of ENS Complete/ Draft with BEE = 0.25<br>ENS Draft at Cabinet Approval Stage = 0.25 |
| 3 | Policy/notification/guideline/scheme for the promotion for the use of BEE star-labelled appliances | 0.5 | |
| | State/ UT has notified Policy/ Notification/ Guideline/ Scheme for promoting of BEE star-labelled appliances in the following buildings?<br>a. Public/ Govt. buildings<br>b. Commercial buildings<br>c. Residential buildings | 0.5 | Policy/ Notification/ Guideline/ Scheme for the following buildings<br>1. Public/ Govt.= 0.25, else = 0<br>2. Commercial/Residential= 0.25, else = 0 |
| **Institutional Capacity** | | | |
| 4 | Advisory, certification and enforcement capacity in state government | 0.5 | |
| | State/ UT has made advisory resources (e.g., guides, toolkits, online portals) available to stakeholders to help them implement energy-efficient practices in building sector. | 0.5 | Data provided= 0.5; else= 0 |
| **Adoption of EE measures** | | | |
| 5 | Adoption/penetration of ECBC in new construction | 2.25 | |
| | Percentage of ECBC compliant buildings out of total number of eligible buildings approved for construction in FY 2024-25. | 0.5 | Data provided= 0.5; else= 0 |
| | Total number of ECBC compliant buildings in the State/UT as of FY 2024-25<br>1. Under Construction<br>2. Completed | 1 | Data Provided (Under Construction) = 0.5, else = 0<br>Data Provided (Completed) = 0.5, else = 0 |
| | Steps undertaken for the promotion and penetration of ECBC-compliant buildings in the state (E.g., Empanelled Energy Auditors, Third Party Auditors, etc.) | 0.25 | Steps undertaken= 0.25; else= 0 |
| | Number of buildings in the state/UT as of FY 2024-25<br>1. ECBC+/Super ECBC Buildings<br>2. Net Zero Buildings | 0.5 | Data Provided (ECBC+/Super ECBC) = 0.25, else = 0<br>Data Provided (Net Zero) = 0.25, else = 0 |

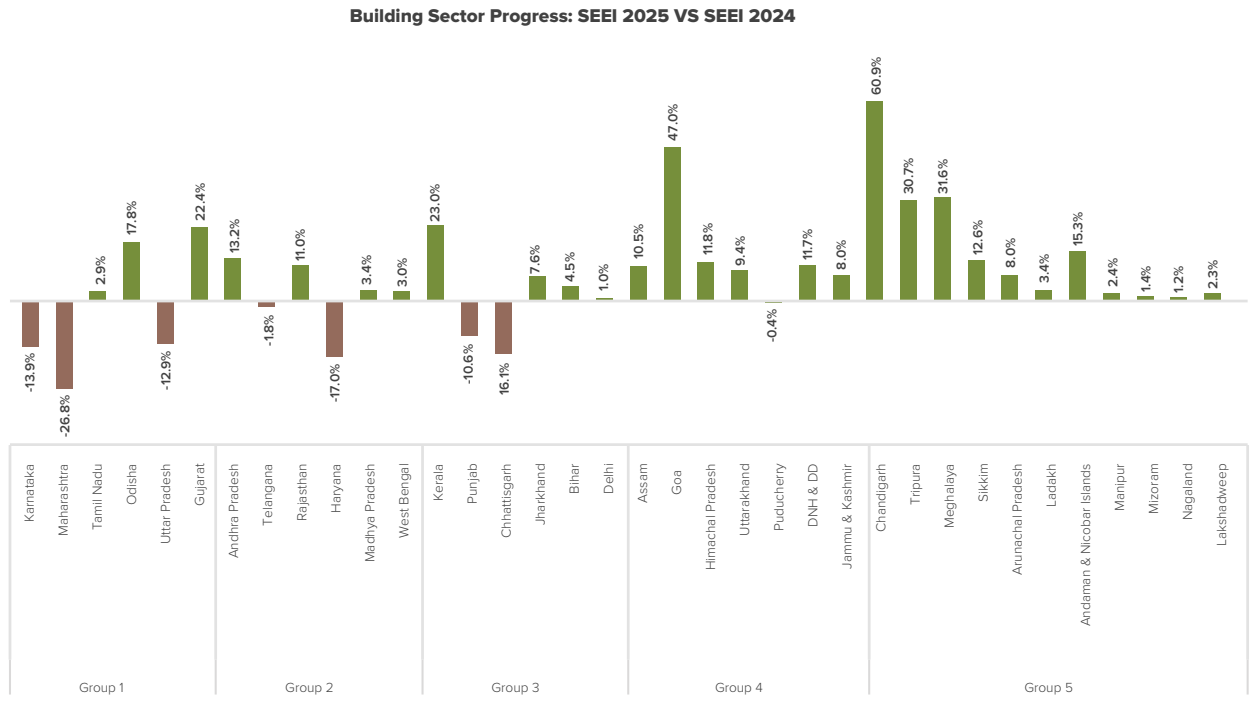
| S. No | Indicator | Max Score | Scoring Criteria |
|---|---|---|---|
| 6 | Promotion/adoption of electric cooking/solar cooking in buildings | 0.5 | |
| | State/UT has implemented electric cooking/solar cooking systems in govt buildings. (Provide the list of buildings and the number of systems deployed in each building) | 0.5 | Data provided= 0.5; else= 0 |
| **Adoption of EE measures** | | | |
| 7 | Penetration of EE/EC measures in building sector in the state/UT | 1.5 | |
| | State/ UT has a policy/guideline/incentive for the promotion of green buildings or EE/EC measures other than ECBC and ENS by the state. (e.g., Cool roof, Green roof, FAR, etc.). | 0.5 | Data provided= 0.5; else= 0 |
| | Data on Green Buildings in the State/ UT:<br>1. No of Certified Green Buildings<br>2. No of Certified Green Buildings with Performance Disclosure | 0.75 | Data Provided ((Certified Green Building) = 0.25, else = 0<br>Data Provided (Certified Green Building with Performance Disclosure) = 0.5, else = 0 |
| | Steps undertaken by State/ UT for the promotion of EE/EC measures in the affordable housing projects. | 0.25 | Steps undertaken= 0.25; else=0 |
| 8 | Star rating of commercial and residential building | 1.5 | |
| | Number of Star Rated Buildings (1-star, 2-star, 3-star, 4-star, 5-star) in the state/UT (as per building category) that have applied for/completed Star Rating Certification?<br>a) Government building<br>b) Commercial Building<br>c) Residential building | 1.5 | Data Provided - Govt. Building = 0.5, else = 0<br>Data Provided - Commercial Building = 0.5, else = 0<br>Data provided - Residential Building = 0.5, else=0 |
| 9 | Energy benchmarking in the buildings sector | 0.75 | |
| | Steps/Projects undertaken by State/ UT for benchmarking of energy use in buildings | 0.5 | Steps/Projects undertaken = 0.5; else = 0 |
| | Details on follow-up actions implemented by building owners after conducting a benchmarking study on their buildings. | 0.25 | Action/ Strategy/ Project implemented = 0.25; else= 0 |
| **State Programme** | | | |
| 10 | Programmes for EE in Government/Public Buildings | 3.75 | |
| | Does the state have any programmes for energy efficiency in government buildings in FY 2024-25? | | |
| | What is the objective of the program? (2 sentences) | 0.25 | Objective of the programme = 0.25; else = 0 |
| | What is the target set under the program? | 0.25 | Target set under the programme = 0.25; else = 0 |
| | What is the timeline? | 0.25 | Timeline = 0.25; else = 0 |
| | How much budget has been allocated & utilized to date | 0.5 | Budget allocated= 0.25, else = 0<br>Budget utilized= 0.25, else = 0 |
| | Programmes for EE in Government/Public Buildings | 3.75 | |
| | Who is running the program? (list all, e.g. SDA, state dept., municipality, industry association, PPP etc.) | 0.25 | Entities running the Programme = 0.25; else = 0 |
| | What is the progress to date? | 0.25 | Progress to date = 0.25; else = 0 |

| S. No | Indicator | Max Score | Scoring Criteria |
|---|---|---|---|
| | What are the energy savings? (deemed or measured) | 1 | Energy savings (deemed or measured) = 1; else = 0 |
| | How much emissions were avoided? (based on energy savings) | 1 | Avoided emissions = 1; else = 0 |
| 11 | Programmes for EE in Commercial Buildings | 3.75 | |
| | Does the state have any programmes for energy efficiency in commercial buildings in FY 2024-25? | | |
| | What is the objective of the program? (2 sentences) | 0.25 | Objective of the programme = 0.25; else = 0 |
| | What is the target set under the program? | 0.25 | Target set under the programme = 0.25; else = 0 |
| | What is the timeline? | 0.25 | Timeline = 0.25; else = 0 |
| | How much budget has been allocated & utilized to date | 0.5 | Budget allocated= 0.25, else = 0<br>Budget utilized= 0.25, else = 0 |
| | Who is running the program? (list all, e.g. SDA, state dept., municipality, industry association, PPP etc.) | 0.25 | Entities running the Programme = 0.25; else = 0 |
| | What is the progress to date? | 0.25 | Progress to date = 0.25; else = 0 |
| | What are the energy savings? (deemed or measured) | 1 | Energy savings (deemed or measured) = 1; else = 0 |
| | How much emissions were avoided? (based on energy savings) | 1 | Avoided emissions = 1; else = 0 |
| 12 | Programmes for EE in Residential Buildings | 3.75 | |
| | Does the state have any programmes for energy efficiency in residential buildings in FY 2024-25? | | |
| | What is the objective of the program? (2 sentences) | 0.25 | Objective of the programme = 0.25; else = 0 |
| | What is the target set under the program? | 0.25 | Target set under the programme = 0.25; else = 0 |
| | What is the timeline? | 0.25 | Timeline = 0.25; else = 0 |
| | How much budget has been allocated & utilized to date | 0.5 | Budget allocated= 0.25, else = 0<br>Budget utilized= 0.25, else = 0 |
| | Who is running the program? (list all, e.g. SDA, state dept., municipality, industry association, PPP etc.) | 0.25 | Entities running the Programme = 0.25; else = 0 |
| | Programmes for EE in Residential Buildings | 3.75 | |
| | What is the progress to date? | 0.25 | Progress to date = 0.25; else = 0 |
| | What are the energy savings? (deemed or measured) | 1 | Energy savings (deemed or measured) = 1; else = 0 |
| | How much emissions were avoided? (based on energy savings) | 1 | Avoided emissions = 1; else = 0 |
| 13 | Capacity Building Programmes in buildings sector | 0.75 | |
| | Does the state have programmes for capacity building for building sector in FY 2024-25? | | |
| | What is the target set under the program? | 0.25 | Target set under the programme = 0.25; else = 0 |
| | Who is running the program? | 0.25 | Entities running the Programme = 0.25; else = 0 |
| | What is the progress to date? | 0.25 | Progress to date = 0.25; else = 0 |

## Figure 3-4: TFEC group-wise building sector state scores




## Figure 3-5: TFEC group-wise building sector state progress – SEEI 2025 vs SEEI 2024



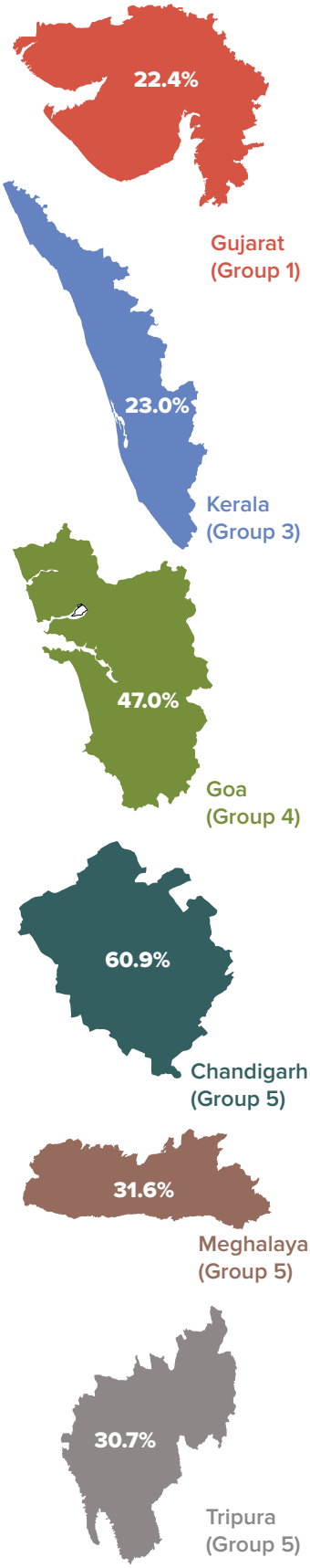
## SEEI 2025 BUILDINGS SECTOR SCORE HIGHLIGHTS

**Karnataka** has emerged as the top performer in **Group 1** for the Building Sector despite recording a **13.9%** decline in its score compared to the previous year. **Maharashtra** secured the second position, also registering a decline of **26.8%** from its previous score. In **Group 2**, **Andhra Pradesh** secured the top position with a score of **19.5** the highest in the Building Sector across all groups followed by **Telangana** with a score of **15.75.**

**Kerala** and **Punjab** emerged as the top performers in **Group 3**, while **Assam** and **Goa** secured the top positions in **Group 4**. Goa recorded a score of 13.75, reflecting a massive improvement in its previous performance. Within **Group 5**, **Chandigarh** claimed the top position, recording a score increase by **60.9%,** followed by **Tripura** in second place.

The Figure 3-6 below, presents the States which have shown more than 20% increase in the scores in comparison to SEEI 2024:

**Figure 3-6: States with more than 20% increase in Building Sector scores in comparison to SEEI 2024.**




## COMMON INDICATORS

### Policy

Significant progress has been achieved in policy formulation related to building energy codes and energy efficiency initiatives. The Energy Conservation Building Code (ECBC) 2017 has been notified by 27 States, of which 21 States have formally incorporated the code into their legal framework. Details of the States that have reported the notification and implementation status of ECBC 2017 are provided in Table 3-3.

**Table 3-3: States which have notified ECBC 2017**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha and Uttar Pradesh, |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh, Telangana, Rajasthan, Haryana, Madhya Pradesh and West Bengal |
| **Group 3 (>5 - 15 MTOE)** | Kerala, Punjab, Jharkhand, Chhattisgarh and Delhi |
| **Group 4 (1-5 MTOE)** | Assam, Goa, Himachal Pradesh and Puducherry |
| **Group 5 (<1 MTOE)** | Tripura, Chandigarh, Sikkim, Mizoram, Meghalaya, Andaman & Nicobar Islands and Arunachal Pradesh |

The details of reporting States on the amendment of building bylaws in line with the provisions of ECBC 2017 are presented in Table 3 - 4.

**Table 3-4: Reporting States on amendment of building bylaws in line with the provisions of ECBC 2017**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha and Uttar Pradesh. |
| **Group 2 (>15 - 20 MTOE)** | **Andhra Pradesh, Telangana, Rajasthan, Haryana** and **Madhya Pradesh** |
| **Group 3 (>5 - 15 MTOE)** | **Kerala**, Punjab, **Bihar,** Jharkhand, Chhattisgarh and Delhi |
| **Group 4 (1-5 MTOE)** | **Assam** and **Puducherry** |
| **Group 5 (<1 MTOE)** | **Chandigarh**, Meghalaya, Andaman & Nicobar Islands and Arunachal Pradesh |

Note: The States in Bold in the table above have also reported on the percentage of municipalities/ULBs that have included or revised building bylaws to incorporate ECBC provisions

**21** States have reported progress on drafting of Eco Niwas Samhita or under approval at cabinet level. The details of reporting States on the status of Eco-Niwas Samhita have been presented in Table 3 – 5.

**Table 3-5: Reporting States on Under Approval/Draft status of Eco Niwas Samhita**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha and Uttar Pradesh. |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh, Telangana, Rajasthan, Haryana and Madhya Pradesh |
| **Group 3 (>5 - 15 MTOE)** | Kerala, Punjab, Bihar and Jharkhand |
| **Group 4 (1-5 MTOE)** | Assam, Goa, Himachal Pradesh and Puducherry |
| **Group 5 (<1 MTOE)** | Chandigarh, Sikkim, and Andaman & Nicobar Islands |

Furthermore, **23 States** have promoted the use of BEE star-labelled appliances in public and government buildings, while **14 States** have extended this initiative to commercial buildings as well. Details of the States reporting these initiatives are provided in Table 3-6.

**Table 3-6: Reporting States on BEE star-labelled appliances in Public/Government buildings and Commercial Buildings**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha and Uttar Pradesh. |
| **Group 2 (>15 - 20 MTOE)** | **Andhra Pradesh, Telangana, Rajasthan, Haryana** and Madhya Pradesh |
| **Group 3 (>5 - 15 MTOE)** | **Kerala, Punjab**, Bihar, Jharkhand and Chhattisgarh |
| **Group 4 (1-5 MTOE)** | **Assam, Goa, Himachal Pradesh** and Puducherry |
| **Group 5 (<1 MTOE)** | **Chandigarh, Tripura** and **Meghalaya** |

Note: The States mentioned in the table above have reported on the promotion of BEE star-labelled appliances in Public/Govt. Buildings. States marked in bold have reported the promotion of BEE star-labelled appliances in both Public/Govt. Buildings and Commercial Buildings.



**The ECBC 2017 has been notified in 27 States, with 21 States having formally amended it into law.**

## Key Initiatives on Policy in the Building Sector

In **Group 1, Karnataka, Maharashtra, Odisha**, and **Uttar Pradesh** have incorporated the Energy Conservation Building Code (ECBC) 2017 into their by-laws, demonstrating strong institutional commitment to energy-efficient construction. These States have also advanced their efforts by introducing policies mandating the use of energy-efficient appliances in government buildings.

**Andhra Pradesh** in **Group 2** has made substantial progress by both integrating ECBC 2017 into its by-laws and implementing policies promoting energy-efficient appliances in government buildings. **Telangana** and **Rajasthan** have also initiated the process of notifying the **Eco Niwas Samhita (ENS) 2021**, further strengthening their policy frameworks.

**Kerala** from **Group 3** and **Assam** and **Goa** from **Group 4**, have demonstrated notable progress by introducing policies mandating the adoption of energy-efficient appliances in government buildings. In **Group 5**, **Chandigarh** has notified ECBC 2017 and incorporated its provisions into municipal by-laws. Additionally, **Meghalaya**, **Chandigarh**, and **Tripura** have implemented policies requiring the use of energy-efficient appliances in government buildings, reflecting a proactive approach toward reducing energy consumption and promoting sustainability.

## Institutional Capacity

The SEEI 2025 findings indicate significant progress in institutional capacity and readiness across several States to implement energy efficiency (EE) measures in the buildings sector. Details of the States that have reported providing advisory resources to stakeholders for supporting the adoption of energy-efficient practices in buildings are presented in Table 3-7.

**Table 3-7: Reporting States on advisory resources developed for supporting the implementation of EE practices in the Building Sector**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha, Uttar Pradesh and Gujarat |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh, Telangana, Rajasthan, Haryana and Madhya Pradesh |
| **Group 3 (>5 - 15 MTOE)** | Kerala, Punjab, Bihar, Jharkhand and Chhattisgarh |
| **Group 4 (1-5 MTOE)** | Goa, Himachal Pradesh, Puducherry, Uttarakhand, Jammu & Kashmir and Dadra & Nagar Haveli and Daman & Diu |
| **Group 5 (<1 MTOE)** | Chandigarh and Meghalaya |

## Adoption of EE Measures

The SEEI 2025 evaluates the adoption of Energy Efficiency (EE) measures across States using key indicators such as the number of certified green buildings, integration of EE features in affordable housing, implementation of electric cooking initiatives in buildings, and the disclosure of energy-use data.

A total of **27 States** reported on the adoption or penetration of ECBC-compliant practices in new construction. **16 States** demonstrated progress in both ECBC adoption and penetration in new buildings, as well as in the implementation of Energy Benchmarking initiatives.

Details of the States reporting on ECBC adoption in new constructions, along with the status of Energy Benchmarking efforts, are provided in Table 3-8.

**Table 3-8: Reporting States on the adoption and penetration of the Energy Conservation Building Code (ECBC) in new constructions and Energy benchmarking initiatives**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha, Uttar Pradesh and Gujarat |
| **Group 2 (>15 - 20 MTOE)** | **Andhra Pradesh, Telangana, Rajasthan,** Haryana, **Madhya Pradesh** and West Bengal |
| **Group 3 (>5 - 15 MTOE)** | **Kerala, Punjab**, Bihar, **Jharkhand.** Chhattisgarh and Delhi |
| **Group 4 (1-5 MTOE)** | **Assam, Goa,** Uttarakhand and Dadra & Nagar Haveli and Daman & Diu |
| **Group 5 (<1 MTOE)** | **Chandigarh,** Meghalaya, **Sikkim**, **Andaman & Nicobar Islands** and Arunachal Pradesh |

Note: States highlighted in Bold the table above have reported both adoption and penetration of the Energy Conservation Building Code (ECBC) in new constructions and Energy benchmarking initiatives.

**15 States** have initiated efforts to promote electric and solar cooking in buildings. The details of the States reporting initiatives to promote electric and solar cooking in buildings are presented in Table 3-9.



**ECBC Compliance in new construction has been reported by 27 States**

**Table 3-9: Reporting States on the promotion of electric and solar cooking in buildings**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Tamil Nadu, Odisha and Uttar Pradesh |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh, Telangana and Rajasthan |
| **Group 3 (>5 - 15 MTOE)** | Kerala and Jharkhand |
| **Group 4 (1-5 MTOE)** | Assam, Goa, Himachal Pradesh and Puducherry |
| **Group 5 (<1 MTOE)** | Tripura and Meghalaya |



**13 States have undertaken Energy benchmarking Initiatives. in the buildings sector**

## Green Building Penetration

An ideal metric for evaluating green building penetration would be the ratio of green building built-up area to the total built-up area within each State. However, due to the absence of State-wise built-up area data, SEEI 2025 standardises this indicator as the **number of certified green buildings per million connected residential and commercial building consumers** (i.e., electricity connections) in each State.

Tables 3-10 and 3-11 present the top two States in each group with the highest number of certified green buildings, based on **normalised figures** and **absolute numbers**, respectively.

**Table 3-10: Top 2 States with the highest number of normalised certified green buildings**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Maharashtra (81) and Karnataka (44) |
| **Group 2 (>15 - 20 MTOE)** | Haryana (104) and Telangana (39) |
| **Group 3 (>5 - 15 MTOE)** | Delhi (92) and Punjab (25) |
| **Group 4 (1-5 MTOE)** | Puducherry (62) and Dadra & Nagar Haveli and Daman & Diu (59) |
| **Group 5 (<1 MTOE)** | Chandigarh (157) and Andaman & Nicobar Islands (66) |

Note: The number of certified green buildings represents the consolidated total for FY 2022–23, FY 2023–24 and FY 2024-25.

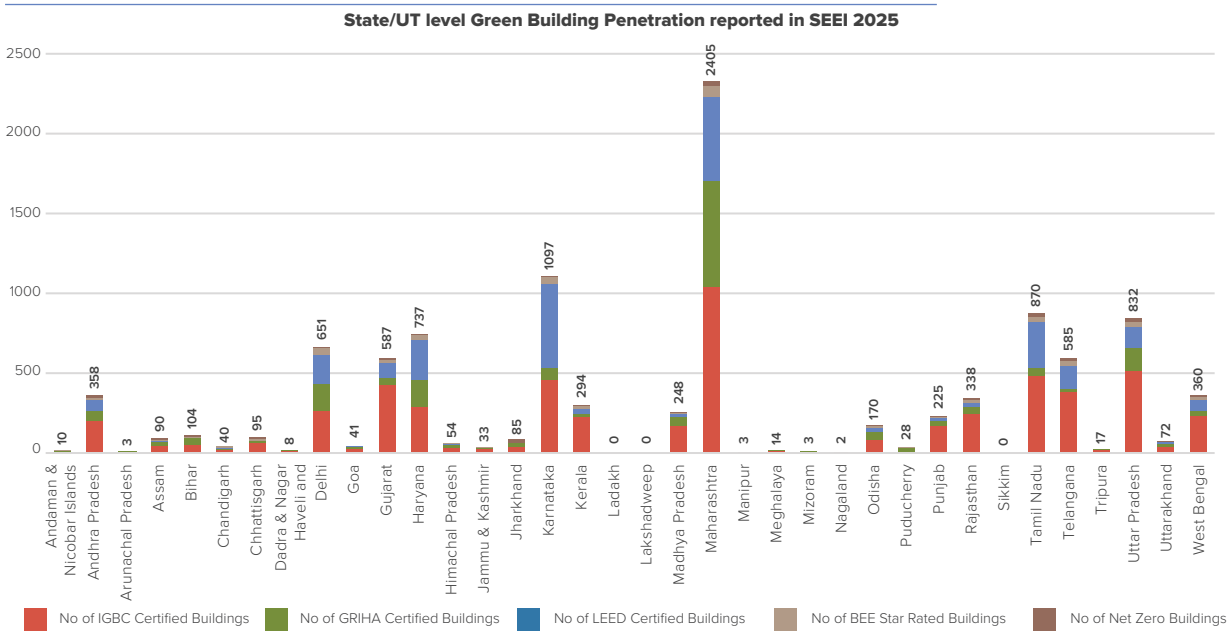
**Maharashtra, Haryana, Delhi, Assam and Chandigarh have maximum no of Certified Green Buildings within their TFEC Groups**

**Table 3-11: Top 2 States with the highest number of certified green buildings**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Maharashtra (2,405) and Karnataka (1,097) |
| **Group 2 (>15 - 20 MTOE)** | Haryana (737) and Telangana (585) |
| **Group 3 (>5 - 15 MTOE)** | Delhi (651) and Kerala (294) |
| **Group 4 (1-5 MTOE)** | Assam (90) and Uttarakhand (72) |
| **Group 5 (<1 MTOE)** | Chandigarh (40) and Tripura (17) |

**Maharashtra** stands out as the leading State with **2,405 certified green buildings**, followed by **Karnataka (1,097), Tamil Nadu (870),** and **Uttar Pradesh (832).** Comprehensive State/UT-wise details on green building penetration—including IGBC-certified buildings, GRIHA-certified buildings, GBCI data, BEE star-rated buildings, and net-zero buildings—are illustrated in Figure 3-7 below.

**Figure 3-7: State/UT Level Green building penetration**




Source: Bureau of Energy Efficiency – MoP (GoI), Green Rating for Integrated Habitat Assessment (GRIHA), Green Business Certification Inc (GBCI), Confederation of Indian Industry (CII)

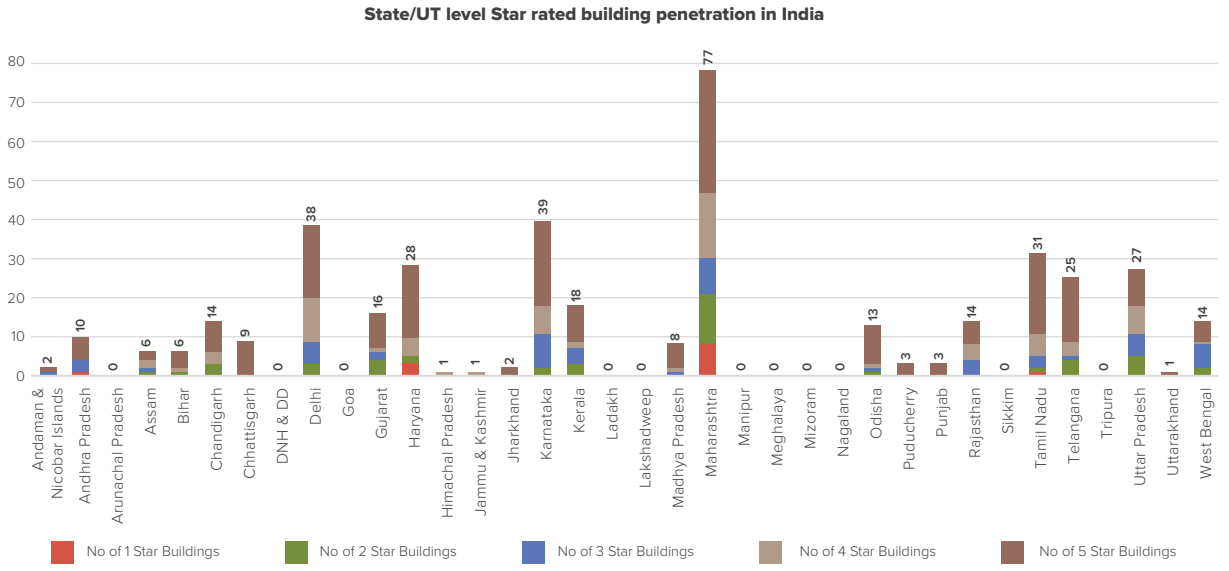
Note: No of Green Buildings is consolidated number for FY 2023-23, FY 2023-24 and FY 2024-25

## Star-Rated Building Penetration

A total of **35 States** have adopted the Star Rating Programme for government buildings, while **15 States** have extended the programme to commercial buildings. Only two States—**Karnataka** and **Andhra Pradesh,** have implemented the Star Rating Programme for residential buildings.

**Maharashtra** leads with **77** star-rated buildings, followed by **Karnataka (39), Delhi (38), Tamil Nadu (31), Uttar Pradesh (28**), and **Haryana (28).** The State/UT-wise penetration of star-rated buildings is depicted in Figure 3-8 below.

**Figure 3-8: State/UT level Star rated building penetration in India**




Source: Bureau of Energy Efficiency – MoP (GoI)

## Energy Efficiency in Affordable Housing

A total of **11 States** have reported taking steps to promote Energy Efficiency (EE) and Energy Conservation (EC) measures in affordable housing projects. The details are provided in Table 3-12 below.

**Table 3-12: Reporting States on steps undertaken for promotion of EE/EC measures in Affordable Housing Projects**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh, Rajasthan |
| **Group 3 (>5 - 15 MTOE)** | Kerala, Jharkhand |
| **Group 4 (1-5 MTOE)** | Assam, Goa |
| **Group 5 (<1 MTOE)** | Chandigarh, Sikkim |

## Key Initiatives in Electric Cooking/Solar Cooking in Building Sector

In **Group 1**, **Karnataka** has implemented **16** Indoor Solar Cooking Systems at 10 different locations within the state. **Tamilnadu** Government has implemented installation of **20** numbers of solar cooking systems at Coimbatore. Under **Group 2** the Women Development & Child Welfare Department of **Andhra Pradesh** in collaboration with EESL has launched the National Clean Cooking Programme in Anganwadis for the supply of induction stoves and utensils to **11,400 Anganwadi Centres. Rajasthan** is also in the process of supplying 10,000 induction cooktops in the state. **Jharkhand** in **Group 3** is also in the process of supplying **Surya Nutan Indoor Solar Cooking System**.

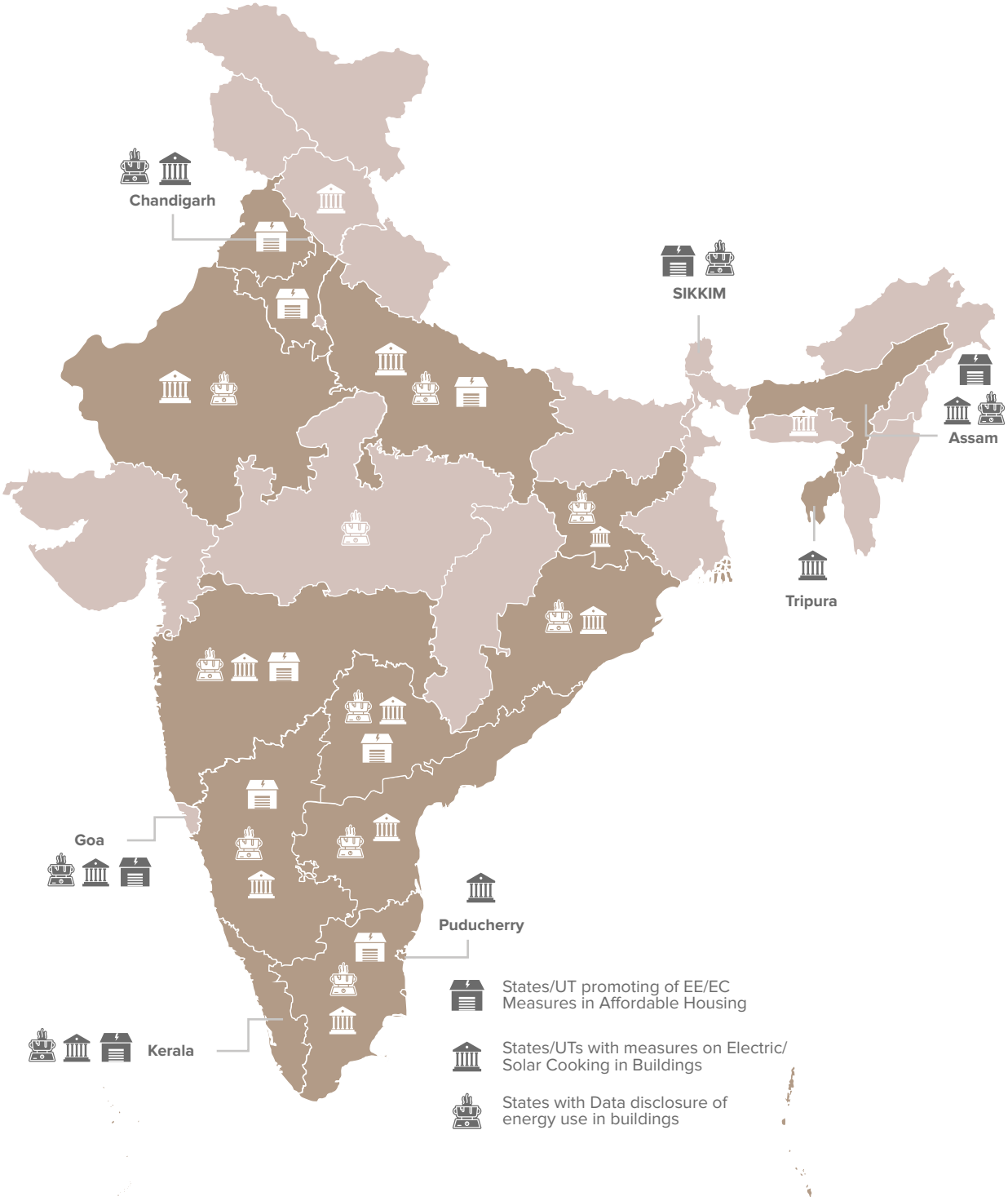
In **Group 4, Assam** has equipped **65 Anganwadi Centres** with solar cookstoves. Additionally, energy-efficient cookstoves are being distributed in **9** villages of Assam. State Designated Agency, **Electricity Department Goa** has distributed Induction Cooktops to **600 Nos. Anganwadi centres** in Goa. **Tripura** under **Group 5** has distributed **2,000** induction cooktops under the **National Clean Cooking Programme**, targeting Anganwadi Centres and the Education Department. Meanwhile**, Meghalaya** has distributed total of **306 electric rice cookers** to **153 Anganwadi Kendra buildings** across Meghalaya to replace the use of charcoal and firewood.

A map representation of the States which have reported action in the space of EE/EC measures in the Affordable Housing sector, Electric/Solar Cooking and Data disclosure of energy use in buildings has been presented in Figure 3 – 9 below:



**Tripura has distributed 2,000 Induction Cooktops under the National Clean Cooking Programme targeting the Anganwadi Centres and the Education Department.**

**Figure 3-9: Map showing States with EE in affordable housing, electric cooking measures and building energy use data disclosure**




Note: Submissions from previous SEEI have also been considered, while indicating States which have reported action in the space of EE/EC measures in the Affordable Housing sector, Electric/Solar Cooking and Data disclosure of energy use in buildings

# PROGRAMME SPECIFIC INDICATORS

## Programmes for EE in Government/Public Buildings

In **Group 1**, **Odisha** has implemented the Energy Efficiency Program (EEP) under the **Mukhya Mantri Shakti Sanrakshana Abhijaan (MMSSA)** across more than **5,000 government facilities**. This initiative has resulted in annual energy savings of **19.66 million units** and a reduction of **13,960 metric tonnes of $CO_2$ emissions. Andhra Pradesh** under **Group 2** has upgraded **236 No's Govt Buildings**, achieving annual energy savings of **749,722 kWh** and reducing $CO_2$ emissions by approximately 545 tons. **Telangana** has demonstrated **Cool Roof Project** for government buildings and also energy efficiency programmes on government collage, achieving annual cumulative energy savings of **230 MWh** and reducing $CO_2$ emissions by **163.5 Metric Ton**.

In **Group 3**, **Kerala** has implemented energy efficient programme in **72 Government Institutions**, achieving annual energy savings of approximately **4.2 million kWh** and reducing $CO_2$ emissions by about **3,570 Metric Ton**. **Chandigarh** from **Group 5** has implemented energy efficient programme in Government Building and District Court achieving annual energy savings of approximately **452.79 MWh** and reducing $CO_2$ emissions by about **416 Metric Ton**.

These collective efforts underscore a nationwide movement toward energy efficiency in public infrastructure, resulting in significant energy savings and emission reductions. The details of reporting States on programmes for energy efficiency in Government and Public Buildings are presented in Table 3–13.

**Table -13: Reporting States on Programmes for EE in Government/Public Buildings**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha and Gujarat |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh, Telangana and Rajasthan |
| **Group 3 (>5 - 15 MTOE)** | Kerala and Punjab |
| **Group 4 (1-5 MTOE)** | Assam and Goa |
| **Group 5 (<1 MTOE)** | Chandigarh, Tripura, Meghalaya and Andaman & Nicobar Islands |

## Programmes for EE in Commercial Buildings

In **Group 1**, **Karnataka** implemented energy efficient programme in **9 Hotels** achieving annual energy savings of approximately **253 TOE** and reducing $CO_2$ emissions by about **753 tonnes**. **Maharashtra** has achieved **1.135 million units** of savings thus reducing $CO_2$ emissions by **537.28 tonnes**.

**Andhra Pradesh** under **Group 2** has implemented Energy Efficiency Measures in **21 APTRANSCO EHT Substation** in **Kadapa Zone - Tirupati Circle**, achieving annual energy savings of **989,372 kWh** and reducing $CO_2$ emissions by approximately **719 tonnes**. **Telangana** has implemented a **Cool Roof Project** for commercial buildings and has also confirmed **299 ECBC-compliant buildings**. Together, these initiatives have resulted in annual cumulative energy savings of **56.4 million units** and a reduction of **60,093 tonnes of $CO_2$ emission.**

**Assam** under **Group 4**, has conducted compliance checks under the **Demonstration Project** for Star Labelling in commercial buildings, reinforcing its commitment to performance-based energy efficiency standards. In **Group 5, Chandigarh** has implemented energy efficient programme in Commercial Building achieving annual energy savings of approximately **690.612 MWh** and reducing $CO_2$ emissions by about **6,125 metric tonnes.**



**12**
**States have reported EE Programs in Commercial Buildings**

Collectively, these initiatives highlight India's growing commitment to advancing energy efficiency in the commercial building sector, driving both environmental benefits and long-term energy savings. The details of reporting States on programmes for energy efficiency in Commercial Buildings, have been presented in Table 3–14.

**Table 3-14: Reporting States on Programmes for EE in Commercial Buildings**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Odisha and Gujarat |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh and Telangana |
| **Group 3 (>5 - 15 MTOE)** | Kerala |
| **Group 4 (1-5 MTOE)** | Assam and Goa |
| **Group 5 (<1 MTOE)** | Chandigarh, Tripura and Meghalaya |

## Programmes for EE in Residential Buildings

**Andhra Pradesh** under **Group 2** supplied energy-efficient appliances to **18,000 households**, resulting in annual savings of **3.65 MU** and a $CO_2$ reduction of **2650 metric tonnes**. **Telangana** has **Cool Roof Project** for Residential buildings, achieving annual energy savings of **14 MU** of savings and reducing $CO_2$ emissions by **14,917 metric tonnes**. **Rajasthan** conducted survey to identify potential energy-efficient opportunity on residential building.

In **Group 3, Assam** conducted compliance checks and star labelling for residential buildings through its EEB Cell. **Chandigarh** in **Group 5** has implemented energy efficient programme in Residential Building achieving annual energy savings of approximately **266.203 MWh** and reducing $CO_2$ emissions by about **244.7 metric tonnes**.

The details of reporting States on programmes for energy efficiency in Residential Buildings, have been presented in Table 3 – 15.

**Table 3-15: Reporting States on Programmes for EE in Residential Buildings**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Uttar Pradesh and Gujarat |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh, Telangana and Rajasthan |
| **Group 3 (>5 - 15 MTOE)** | Kerala |
| **Group 4 (1-5 MTOE)** | Assam and Goa |
| **Group 5 (<1 MTOE)** | Chandigarh and Tripura |

## Capacity Building Programmes in the Buildings Sector

In **Group 1**, **Karnataka** organised training programmes for municipal officials to strengthen their understanding of the Energy Conservation Building Code (ECBC) and process of online approval. **Maharashtra** conducted a stakeholder consultation for Vernacular and Innovative Construction Alternatives for Low-carbon-development Practices for the **VICALP Project** and one-day programme on Investment Bazaar for Energy Efficiency Financing for the concerned stakeholders. **Tamil Nadu** has adopted capacity building initiatives focused on green building practices and general skill development. **Andhra Pradesh** in **Group 2**, delivered **3** physical training sessions, while **Telangana** has conducted **8** capacity building and training programmes for government officials, architects, engineers.

In **Group 3**, **Kerala** organised capacity building programs under **Low Carbon building programs**, **ECSBC**, **Cool Roof** and **Building Energy Efficiency**, while **Punjab** has conducted programme on **ECBC & ENS Awareness and capacity building**. In **Group 4**, **Assam** hosted **8** while **Goa** organised **6** physical training programmes on **Daylight Simulation, Energy Simulation, ECBC** and **ENS** Awareness and **Building envelope optimization**. **Chandigarh** in **Group 5** has successfully conducted physical workshops on **Energy Conservation Building Code (ECBC) and Eco-Niwas Samhita (ENS),** while **Tripura** conducted **3** training programs (2 virtual and 1 physical) and **Meghalaya** hosted **2** training programs (1 virtual and 1 physical) on Energy Conservation Building Code (ECBC).

The details of reporting States on Capacity Building Programmes on energy efficiency in the Buildings Sector have been presented in Table 3 – 16.

**Table 3-16: Reporting States on Capacity Building programmes for EE in buildings sector**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu and Uttar Pradesh |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh and Telangana |
| **Group 3 (>5 - 15 MTOE)** | Kerala, Punjab and Jharkhand |
| **Group 4 (1-5 MTOE)** | Assam, Goa and Himachal Pradesh |
| **Group 5 (<1 MTOE)** | Chandigarh, Tripura, Meghalaya and Andaman & Nicobar Islands |

**16**
**States reported Capacity Building Programmes in the Buildings**

## BUILDING SECTOR SPOTLIGHT

- **Andhra Pradesh** has emerged as a frontrunner in advancing energy efficiency and sustainability across the building sector. Andhra Pradesh has achieved substantial progress by both adopting ECBC 2017 bye-laws and implementing policies promoting energy-efficient appliances in government buildings. In Andhra Pradesh, the Women Development & Child Welfare Department, in collaboration with EESL, launched the National Clean Cooking Programme in Anganwadis for the supply of induction stoves and utensils to 11,400 Anganwadi centres.
- **Maharashtra** stands out as the leading State with 2405 certified green buildings, followed by Karnataka (1097), Tamil Nadu (870), and Uttar Pradesh (832). It also leads all the States with 77 star-rated buildings, followed by Karnataka (39), Delhi (38), Tamil Nadu (31), Uttar Pradesh (28) and Haryana (28).

# 3.2 INDUSTRY SECTOR

## OVERVIEW

The industrial sector—India's largest energy consumer—offers substantial potential for energy savings. According to NITI Aayog's India Energy Security Scenarios (IESS) model, the industry sector is projected to deliver the highest energy-saving potential in the country by 2047.

In SEEI 2025, energy efficiency (EE) initiatives in the industrial sector are evaluated using **12 indicators**. Of these, **9 Common Indicators** assess policy frameworks, institutional capacity, and the extent of adoption of EE measures, while the remaining **3 Programme-Specific Indicators** measure the performance and impact of State-level EE programmes. The maximum achievable score for this sector is **15**, comprising **6 points for common indicators** and **9 points for programme-specific indicators.**

Table 3-17 presents the detailed list of these indicators, while Figure 3-10 depicts the States' scores based on their Total Final Energy Consumption (TFEC). Figure 3-11 illustrates the comparative progress of States in SEEI 2025 vis-à-vis SEEI 2024.

**The India Energy Security Scenarios (IESS) model by NITI Aayog projects that the industry sector holds the greatest potential for energy savings in India by 2047**

Table 3-17: Industry Sector indicators under SEEI 2025

| S. No | Indicator | Max Score | Scoring Criteria |
|---|---|---|---|
| **Policy** | | | |
| 1 | **EE & EC provisions in Industry/ MSME policy** | **0.5** | |
| | State/UT has incorporated Energy Efficiency (EE) or Energy Conservation (EC) provisions in its Industry or MSME policy. | 0.5 | EE provisions in Industry/ MSME policy = 0.5; else = 0 |
| 2 | **Mandatory Energy Audit (MEA) in non-PAT industries/MSME.** | **2** | |
| | State/ UT has notified policy/ guidelines on mandatory energy audits (MEA) for non-PAT industries or MSMEs. | 0.5 | Policy/ Guidelines for carrying out MEA = 0.5; else = 0 |
| | Number of non-PAT industries/ MSMEs that have undergone MEA under this policy/guideline since notification. | 0.5 | Data provided= 0.5; else= 0 |
| | State/ UT has notified policy/ scheme/ financial incentive for implementing the recommendations of the MEAs in non-PAT industries/MSMEs. | 0.5 | Policy/scheme/financial incentive for implementing the MEA recommendation= 0.5; else= 0 |
| | Number of non-PAT industries/ MSMEs that have availed incentives under this policy/ scheme/ financial incentive for the implementation of EE/EC measures post MEA. | 0.5 | Data provided= 0.5; else= 0 |
| **Institutional Capacity** | | | |
| 3 | **Advisory, certification and enforcement capacity in state government** | **0.5** | |
| | State/UT has a dedicated entity, committee, or cell within the Industry or MSME department to build capacity and provide technical expertise on energy efficiency and decarbonization in the industry/ MSME sector. | 0.25 | Entity to develop capacity & provide technical expertise = 0.25, else = 0 |
| | SERC/JERC has appointed an Adjudicating Officer (AO) as per section 27 of the Energy Conservation Act 2001. | 0.25 | Appointed AO = 0.25; else = 0 |
| **Adoption of EE measures** | | | |
| 4 | **MSME Cluster Profile** | **0.5** | |
| | Steps taken by State/ UT to identify energy intensive MSME Clusters. (State Specific, excluding BEE Initiatives) | 0.5 | Steps taken to identify energy-intensive MSME Clusters = 0.5; else = 0 |
| 5 | **PAT Widening and Deepening** | **0.5** | |
| | Number of Industrial Units identified by State/ UT in FY 2024-25 under:<br>1. PAT Deepening<br>2. PAT Widening | 0.5 | Data Provided on PAT Widening = 0.25;<br>Data Provided on PAT Deepening= 0.25 |
| 6 | **Adoption of ISO 50001 in industrial units** | **0.5** | |
| | Steps taken by State/ UT to promote adoption of ISO 50001 in Industrial Units. (E.g.: Policy/ Notification/ Scheme, etc.) | 0.25 | Steps undertaken= 0.25, else= 0 |
| | Number of industrial units which have adopted ISO 50001 standards in the State/ UT. | 0.25 | Data provided on No. of industrial units= 0.25; else= 0 |
| 7 | **Measures for electrification of end-use in industry** | **0.25** | |
| | Steps undertaken by the State/ UT for electrification of end-use energy in industries (e.g. Industrial Heating). | 0.25 | Steps undertaken= 0.25, else= 0 |
| 8 | **Energy conservation awards** | **1** | |
| | Number of industrial units that have won energy conservation awards through State/ National/ Industry Association Awards. | 1 | 1 - 15 Awards: 0.25; 16 – 30 Awards: 0.5; 31-45 Awards: 0.75; >45 Awards: 1 |

| S. No | Indicator | Max Score | Scoring Criteria |
|---|---|---|---|
| **9** | **Financing MSME Decarbonization** | **0.25** | |
| | Initiatives taken by State/ UT under ADITEEE scheme | 0.25 | Initiatives undertaken = 0.25; else = 0 |
| **State Programme** | | | |
| **10** | **Programmes for energy efficiency in large industries** | **3.75** | |
| | Does the state have programme(s) for energy efficiency in large industries in FY 2024-25? | | |
| | What is the objective of the program? (2 sentences) | 0.25 | Objective of the programme = 0.25; else = 0 |
| | What is the target set under the program? | 0.25 | Target set under the programme = 0.25; else = 0 |
| | What is the timeline? | 0.25 | Timeline = 0.25; else = 0 |
| | How much budget has been allocated & utilized to date | 0.5 | Budget allocated= 0.25, else = 0<br>Budget utilized= 0.25, else = 0 |
| | Who is running the program? (list all, e.g. SDA, state dept., municipality, industry association, PPP etc.) | 0.25 | Entities running the Programme = 0.25; else = 0 |
| | What is the progress to date? | 0.25 | Progress to date = 0.25; else = 0 |
| | What are the energy savings? (deemed or measured) | 1 | Energy savings (deemed or measured) = 1; else = 0 |
| | How much emissions were avoided? (based on energy savings) | 1 | Avoided emissions = 1; else = 0 |
| **11** | **Programmes for energy efficiency in MSME industries** | **4** | |
| | Does the state have programmes for energy efficiency in MSME industries in FY 2024-25? | | |
| | What is the objective of the program? (2 sentences) | 0.25 | Objective of the programme = 0.25; else = 0 |
| | What is the target set under the program? | 0.25 | Target set under the programme = 0.25; else = 0 |
| | What is the timeline? | 0.25 | Timeline = 0.25; else = 0 |
| | How much budget has been allocated & utilized to date | 0.5 | Budget Allocated= 0.25<br>Budget Utilized= 0.25 |
| | Who is running the program? (list all, e.g. SDA, state dept., municipality, industry association, PPP etc.) | 0.25 | Entities running the Programme = 0.25; else = 0 |
| | What is the progress to date? | 0.5 | Progress to date = 0.5; else = 0 |
| | What are the energy savings? (deemed or measured) | 1 | Energy savings (deemed or measured) = 1; else = 0 |
| | How much emissions were avoided? (based on energy savings) | 1 | Avoided emissions = 1; else = 0 |
| **12** | **Capacity Building Programmes in industry sector** | **1.25** | |
| | Does the state have programme(s) for capacity building in industry sector in FY 2024-25? | | |
| | What is the objective of the program? (2 sentences) | 0.25 | Objective of the programme = 0.25; else = 0 |
| | What is the target set under the program? | 0.25 | Target set under the programme = 0.25; else = 0 |
| | Who is running the program? | 0.25 | Entities running the Programme = 0.25; else = 0 |
| | What is the progress to date? | 0.5 | Progress to date = 0.5; else = 0 |

Figure 3 – 10 shows the TFEC group-wise scores for the Industry Sector in SEEI 2025.

**Figure 3-10: TFEC group-wise industry sector state scores**

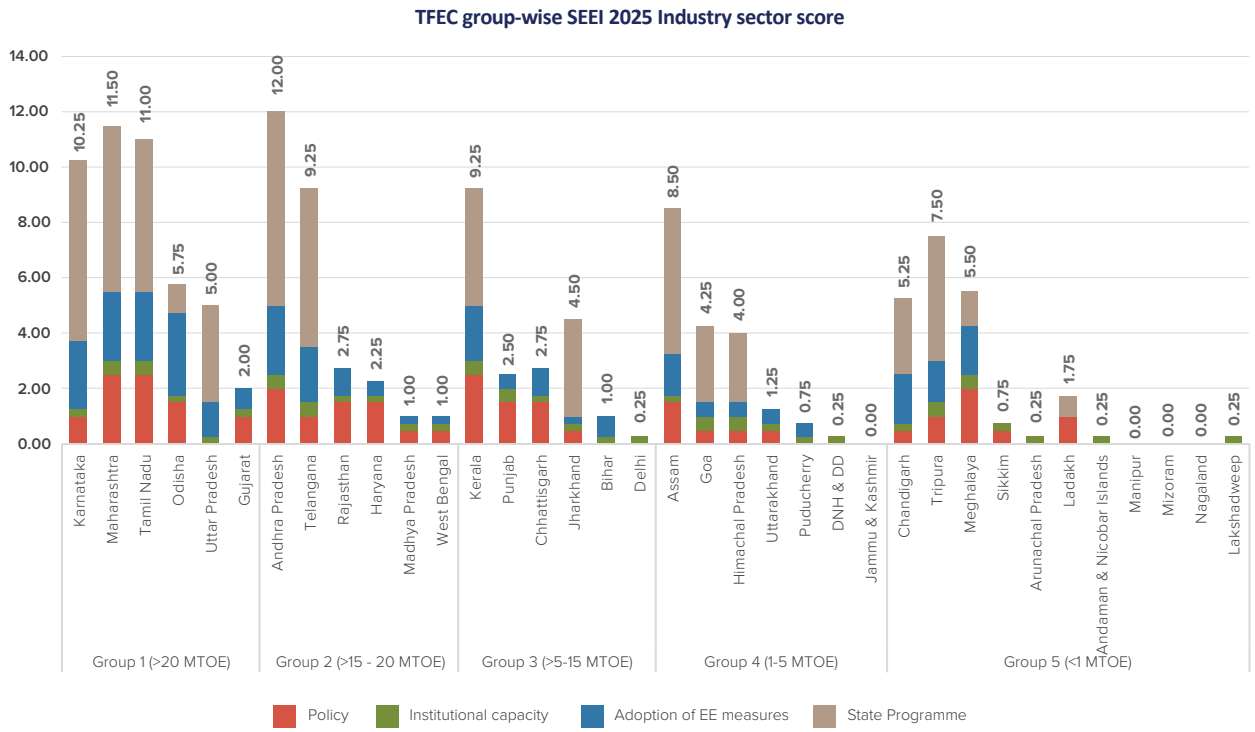
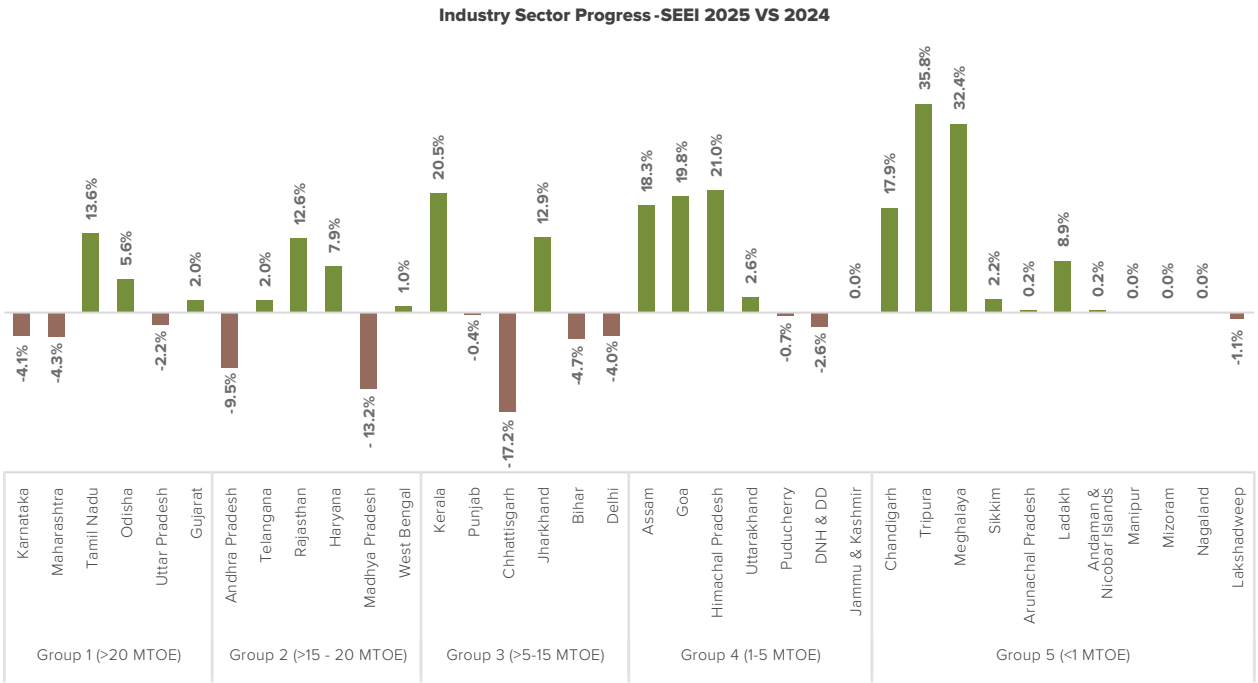



Figure 3 – 11 depicts the progress of the industry sector for each state in SEEI 2025 in comparison to SEEI 2024.

**Figure 3-11: TFEC group-wise industry sector state progress – SEEI 2025 vs SEEI 2024**

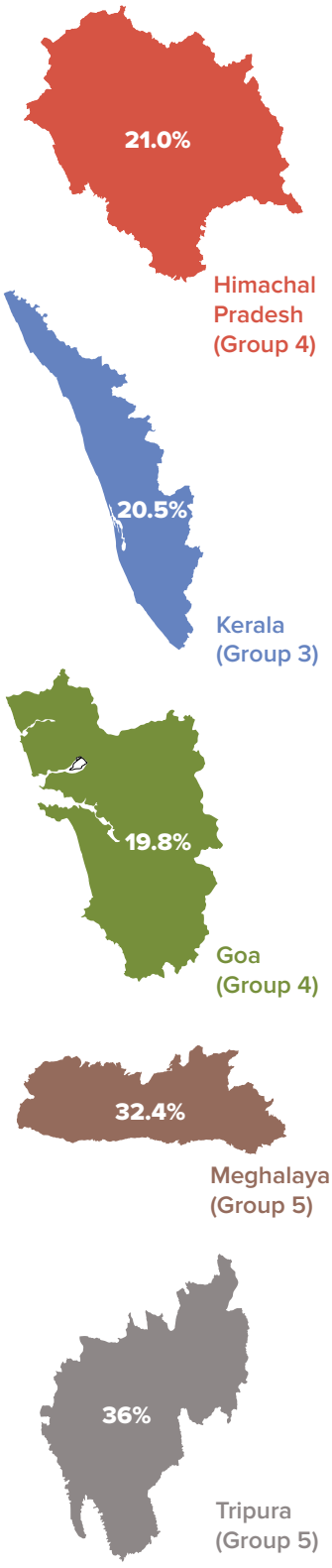


## SEEI 2025 INDUSTRY SECTOR SCORE HIGHLIGHTS

**Andhra Pradesh** emerged as the top performer in the industry sector with a score of **12.00**. However, despite retaining its leading position, the State recorded a **~10% decline** compared to the previous year. In **Group 1**, **Maharashtra** led with a score of **11.50**, followed by **Karnataka** with **10.25**. Both States experienced a decline from last year. **Andhra Pradesh** secured the top position in **Group 2,** with **Telangana** following in second place. In **Group 3**, **Kerala** topped the rankings, achieving an **20% improvement**, while **Jharkhand** ranked second with a **13% increase**. **Assam** has claimed the top position in **Group 4** with a **18% improvement**, and **Goa** ranked second with a **20% increase**. In **Group 5**, **Tripura** emerged as the leading State with a remarkable **36% improvement**—the highest recorded in the industry sector—followed by **Meghalaya** achieving **32% increase** and **Chandigarh**, which achieved a **18% increase.**

The Figure 3-12 presents the States which have shown more than 20% increase in the scores in comparison to SEEI 2024:

**Figure 3-12: States with more than 20% increase in Industry Sector scores in comparison to SEEI 2024.**




## COMMON INDICATORS

### Policy

As per the SEEI data pertaining to industry policy, **24 States and Union Territories (UTs)** have integrated **Energy Efficiency (EE) and Energy Conservation (EC) provisions within their Industry/MSME policies.** However, the adoption of mandatory energy audit mechanisms remains moderate, with only **11 States** having notified **policies or guidelines mandating Energy Audits (MEA) for non-PAT industries and MSMEs**. Additionally, **14 States** have introduced specific policies, schemes, or financial incentives to support the **implementation of MEA recommendations**.

In terms of comprehensive policy coverage—encompassing EE/EC provisions, mandatory energy audit guidelines, and incentive mechanisms—**Maharashtra, Tamil Nadu, Andhra Pradesh, Kerala**, and **Meghalaya** emerge as leading States. These States exhibit relatively stronger institutional frameworks to advance energy efficiency within the industrial sector.

### Key Initiatives on Policy in the Industry Sector

**Karnataka** under **Group 1** has adopted the **Energy Conservation and Energy Efficiency Policy (2022–27)** for MSMEs and conducted **12 walk-through audits**. Under its **Industrial Policy 2025–30**, the State offers **subsidies for energy audits, soft loans, and tax rebates for EE equipment**. **Maharashtra** integrated EE provisions into its Industrial Policy and conducted detailed MEAs covering five foundry and machine shop units, 146 MEAs in the Ahmednagar Auto Cluster, and **500 walk-through audits** in the Kolhapur Foundry and Engineering Cluster. Financial incentives have been provided for implementing audit recommendations, with **MEDA** issuing work orders for EE technologies. **Tamil Nadu** promotes EE through its Industrial and MSME policies and the MSME PEACE Scheme, offering **50% capital subsidy (up to ₹10 lakh)** for efficient machinery. Odisha offers reimbursement of **up to ₹5 lakh or 75%** of energy audit costs under its Energy Conservation Incentive Scheme. **Odisha** supports industrial EE through the **Energy Conservation Incentive Scheme for MSMEs**, offering reimbursement of up to **₹5 lakh** or **75% of audit cost**, whichever is lower.

In **Group 2**, **Andhra Pradesh** has embedded EE/EC in its **Industrial and MSME Policies (2024–29)**, under which the State supports **Energy and Water audits, EE implementation, Rooftop Solar Adoption, Electrification of industrial energy use**, and **Circular Economy Infrastructure** in MSME parks. Financial incentives include **75% reimbursement of audit costs (up to ₹2 lakh for energy and ₹1 lakh for water)** and **25% subsidy on EE**

**equipment**, subject to a minimum 10% savings, with caps of ₹**20 lakh (micro),** ₹**40 lakh (small), and** ₹**50 lakh (medium) enterprises**. The State is moving toward mandatory Investment-Grade Energy Audits for industries ≥1000 kVA, and implementation have been undertaken in **Food Processing, Jewellery**, and **Pharmaceutical** MSMEs. Additional incentives are available under the **AP Food Processing Policy (2024–29). Telangana** has integrated Energy Efficiency (EE) and Energy Conservation (EC) measures across its Industrial, MSME, Textile, IoT, and Clean & Green policies under the **Telangana Industrial Policy**. The State offers a **25% subsidy** for cleaner production and pollution control equipment and supports the adoption of **ISO 50001**. Energy audits and EE measures are mandatory in designated industrial areas, where eco-industrial parks are equipped with LED lighting, efficient water systems, and solar rooftops. **Rajasthan's MSME Policy 2024** promotes energy efficiency and clean production through fiscal incentives such as **cost reimbursements** and **duty exemptions**, reinforced by the State Energy Efficiency Action Plan (SEEAP). SEEAP recommends three-yearly energy audits for non-PAT industries and periodic audits with reimbursement support for MSMEs. Further, the **Rajasthan Investment Promotion Scheme (RIPS) 2024 and the MSME Policy** offers financial incentives for **implementing EE measures identified through energy audits**.

In **Group 3**, **Kerala's** new Industrial Policy promotes a sustainable, investment-friendly industrial ecosystem by mandating energy audits for all HT and EHT consumers. The State has operationalized the **Kerala State Energy Conservation Fund (KSECF)** and introduced a **2% interest subvention scheme** to support EE projects, with four projects funded to date and four industries availing audits under **EMC's deposit scheme. Punjab** offers up to **75% reimbursement** for **energy, water, safety, environment**, and **steam audits** for MSMEs under its **Industrial & Business Development Policy, 2022**, along with financial support for implementing audit recommendations. Additionally, the State is implementing a ₹**11.72 crore** project to promote green manufacturing and energy efficiency in MSMEs through the **Department of Industries & Commerce**. **Chhattisgarh** promotes Energy Conservation and Energy Efficiency in industries and MSMEs through **financial incentives for energy audits and EE measures** under its **Industrial Policy 2024–30**. **Jharkhand** has also introduced dedicated energy efficiency policies for industries and MSMEs.

**Meghalaya** under **Group 5** has notified multiple EE/EC-related policies and schemes—including the **Meghalaya Energy Conservation Regulations, UNNATI, MSME, Start-up, and Industrial Promotion Policies**. The State Designated Agency has also mandated energy audits for non-PAT industries. **Chandigarh** promotes periodic, **standardised energy audits for MSMEs** based on connected load, with **reimbursement support**, and is advancing DSM and energy efficiency measures under its State Energy Efficiency Action Plan (SEEAP) and Strategic Investment Plan.

The details of reporting States on EE & EC provision in their Industry/MSME Policies have been presented in Table 3 - 18.

**Table 3-18: Reporting States on EE & EC provision in their Industry/MSME Policy**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha and Gujarat |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh, Telangana, Rajasthan, Haryana, Madhya Pradesh and West Bengal |
| **Group 3 (>5 - 15 MTOE)** | Kerala, Punjab, Jharkhand, Chhattisgarh, Bihar and Delhi |
| **Group 4 (1-5 MTOE)** | Assam, Goa, Himachal Pradesh, Uttarakhand and Jammu & Kashmir |
| **Group 5 (<1 MTOE)** | Tripura, Chandigarh, Sikkim, Meghalaya and Ladakh |

The details of reporting States on Policies/Guidelines for mandatory energy audits in non-PAT Industries/MSME have been presented in Table 3-19.

**Table 3-19: Reporting States on Policy/Guidelines for mandatory energy audit in non-PAT Industries/MSMEs**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Maharashtra, Tamil Nadu, Odisha and Gujarat |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh, Rajasthan and Haryana |
| **Group 3 (>5 - 15 MTOE)** | Kerala, Punjab and Chhattisgarh |
| **Group 4 (1-5 MTOE)** | |
| **Group 5 (<1 MTOE)** | Meghalaya |

The details of reporting States on Policy/Scheme/Financial Incentives for implementation of the recommendations of a mandatory energy audit in non-PAT Industries/MSME have been presented in Table 3-20.

**Table 3-20: Reporting States on Policy/Scheme/Financial Incentives for implementation of the recommendations of a mandatory energy audit in non-PAT Industries/MSME**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu and Odisha |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh, Telangana, Rajasthan and Haryana |
| **Group 3 (>5 - 15 MTOE)** | Kerala and Punjab |
| **Group 4 (1-5 MTOE)** | |
| **Group 5 (<1 MTOE)** | Tripura, Chandigarh and Meghalaya |

## Institutional Capacity

**29 States** have appointed an Adjudicating Officer (AO) under Section 27 of the Energy Conservation Act, 2001, through their respective State Electricity Regulatory Commissions (SERC) or Joint Electricity Regulatory Commissions (JERC).

The details of reporting States on appointing an Adjudicating Officer (AO) under Section 27 of the Energy Conservation Act, 2001, have been presented in Table 3 – 21.

**Table 3-21: Reporting States on appointing an Adjudicating Officer (AO) under Section 27 of the EC Act, 2001**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha and Uttar Pradesh |
| **Group 2 (>15 - 20 MTOE)** | **Andhra Pradesh**, **Telangana**, Rajasthan, Haryana, Madhya Pradesh and West Bengal |
| **Group 3 (>5 - 15 MTOE)** | **Kerala, Punjab,** Jharkhand, Chhattisgarh, Bihar and Delhi |
| **Group 4 (1-5 MTOE)** | Assam**, Goa, Himachal Pradesh,** Uttarakhand and Puducherry |
| **Group 5 (<1 MTOE)** | **Tripura**, Chandigarh, Sikkim, **Meghalaya**, Andaman & Nicobar Islands, Arunachal Pradesh and Lakshadweep |

Note: The States marked in bold have also reported their Industry/MSME department having an entity/committee/ cell to provide technical expertise on energy efficiency/decarbonization in the industry/MSME sector.

## Adoption of EE measures

**25 States** have reported implementing the measures to **identify energy-intensive MSME Clusters**. Additionally, **19 States** have actively undertaken **PAT Widening and Deepening** initiatives. The details of the reporting States have been presented in Table 3 – 22.

**Table 3-22: Reporting States on the identification of energy-intensive MSME clusters and pursuing PAT Widening and Deepening**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu and Odisha |
| **Group 2 (>15 - 20 MTOE)** | **Andhra Pradesh** and **Telangana** |
| **Group 3 (>5 - 15 MTOE)** | Kerala, Chhattisgarh**, Bihar** and Delhi |
| **Group 4 (1-5 MTOE)** | **Assam**, Goa, Himachal Pradesh, Uttarakhand and Puducherry |
| **Group 5 (<1 MTOE)** | Tripura, Chandigarh, Meghalaya |

Note: The States marked in bold have reported pursuing both PAT Widening & Deepening, along with identification of energy intensive MSME clusters. Rest States have reported PAT Deepening along with identification of energy intensive MSME clusters.

ISO 50001 has been implemented in industrial units across **10 States**, contributing to enhanced energy efficiency. Meanwhile, **11 States** have reported initiatives aimed at electrifying end-use applications in industry. The details of the reporting States have been presented in Table 3 – 23.

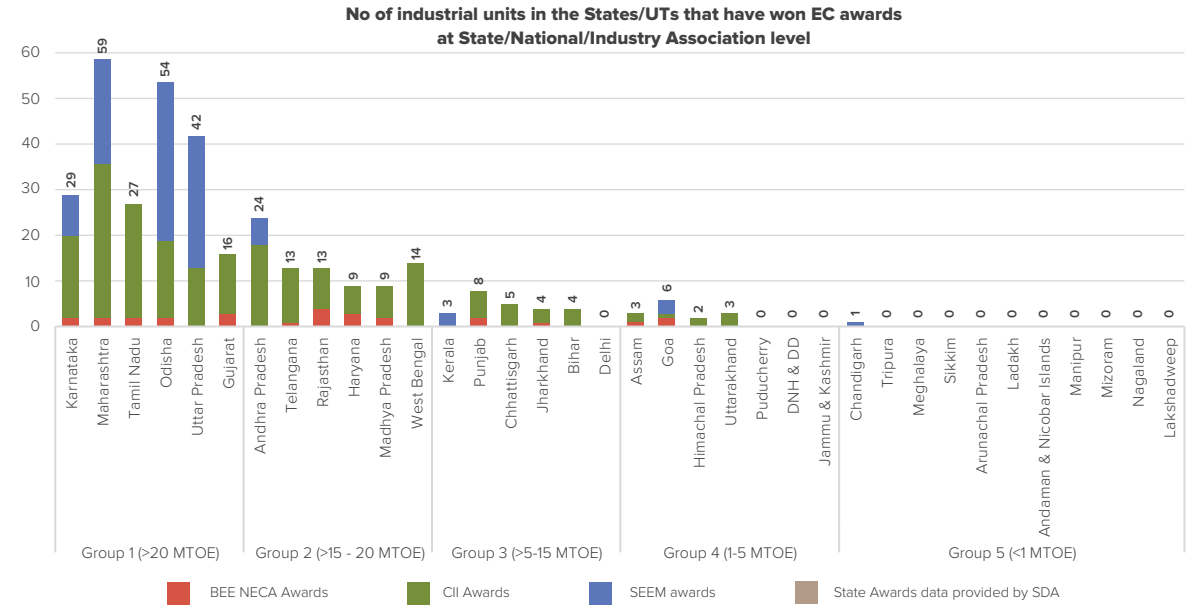
**Table 3-23: Reporting States on implementation of ISO 50001 and electrification of end-use in industry**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha and Uttar Pradesh |
| **Group 2 (>15 - 20 MTOE)** | **Andhra Pradesh,** (Telangana), (Rajasthan) |
| **Group 3 (>5 - 15 MTOE)** | **Kerala** |
| **Group 4 (1-5 MTOE)** | (Assam) |
| **Group 5 (<1 MTOE)** | **Tripura, Chandigarh** and **Meghalaya** |

Note: The States marked in bold have also reported electrification of end-use in the industry. States marked in bracket (Telangana), (Rajasthan)– Group 2, and (Assam) – Group 4, have reported electrification of end-use only.

In recognition of energy conservation efforts, **22 States** have received Energy Conservation Awards, with **Maharashtra, Odisha, and Uttar Pradesh** leading in total awards, followed closely by **Karnataka**. Maharashtra stands out for honouring **59 industrial units**, the highest among all States, while Odisha and Uttar Pradesh recognised **54** and **42 units**, respectively. Figure 3-13 presents the distribution of Energy Conservation Awards conferred on industrial units across States through State-level, national, and industry association platforms.

**Figure 3-13 : States and UT's with Energy Conservation Awards for industrial units**




Source: Data provided by Bureau of Energy Efficiency and State Designated Agencies

## Key Initiatives on Institutional Capacity in the Industry Sector

- **Karnataka** has identified several energy-intensive MSME clusters across sectors such as **rice (Karatagi/Gangavathi), poha (Chitradurga), resins (Vijayapur/ Bagalkot), auto tool rooms (Hubli/Bidar), spices (Sirsi), and steel & foundry (Belgaum, Shivamogga, Bengaluru)**. Through BEE's ADEETIE Scheme and voluntary audits, the State provides support for energy audits, technical assistance, interest subvention, and ISO 50001 certification. MSMEs are also incentivised with up to ₹**5 lakh per project** for **green certifications** and the **adoption of energy-efficient technologies**. Additionally, Karnataka promotes improvements in industrial heating, cooling, and indoor air quality to enhance both productivity and energy efficiency.
- **Maharashtra** has identified energy-intensive MSME clusters across sectors such as sugar, automobile, chemicals, pharmaceuticals, food processing, tyre manufacturing, and glass & ceramics. Under MEDA's **Energy Conservation Policy**, the State promotes ISO 50001 certification by offering financial assistance of up to **50% of the certification cost** (capped at ₹**50,000**). Maharashtra is advancing decarbonisation and energy-efficient technology adoption in MSMEs, including major **foundry upgrades in Kolhapur**, and is facilitating coal-load reduction through **biomass co-firing in thermal power plants**. Additionally, awareness workshops under the **ADEETEE Scheme** have been conducted to strengthen energy-efficiency adoption across MSME clusters.
- **Tamil Nadu** promotes energy efficiency (EE) in MSMEs through the **PEACE Scheme**, targeting key priority sectors. The State supports cluster development in **forging, foundry, leather, textiles, brass, paper, plastics,** and **pulp** through its **Micro Cluster Development Programs**, facilitating new project implementation. Under the Tamil Nadu Industrial and MSME Policies 2021, MSMEs receive **subsidies of up to 50% (₹25 lakh maximum)** for ISO 50001 and other quality and environmental certifications. Additional incentives include electricity tax exemptions, access to green energy, EV-related subsidies, and recognition through National Energy Conservation Awards. Capacity-building programmes are also conducted to enhance EE adoption across MSME sectors.

- **Odisha** promotes cluster-based development across sectors such as **metal, engineering, agriculture & food processing**, **pharmaceuticals, plastics & polymers**, **steel & stainless steel**, and **aluminium** under the **MSME Development Policy 2022**. The policy supports MSMEs in these clusters through technology upgradation, energy audits, and adoption of cleaner, energy-efficient technologies. It also encourages green initiatives and renewable energy integration, backed by **subsidies, audit cost reimbursements**, and **capacity-building programmes**.
- **Uttar Pradesh** has identified three energy-intensive **MSME clusters—Moradabad (brass), Varanasi (brick), and Bhadohi (carpet)**. The State has issued letters to industries within these clusters to collect annual energy consumption and production data, enabling targeted energy-efficiency (EE) interventions and improved monitoring of resource use.
- **Andhra Pradesh** promotes energy efficiency (EE) and decarbonisation in MSME clusters such as **pharmaceuticals, gold ornaments, imitation jewellery**, and **food processing**. EE studies were conducted in five units per cluster, with major measures implemented in four clusters. Under **MEDP (2024–29)**, MSMEs receive incentives for resource-efficient and sustainable production, adoption of standards like **ISO 50001, technology upgrades, cleaner technologies, energy audits**, and renewable energy integration. The State also supports electricity cost reduction measures for energy-intensive sectors, including ferroalloys, to ensure a level playing field with fossil fuel-based producers.
- **Telangana** has identified energy-intensive MSME clusters in sectors such as **food processing, textiles**, and **engineering** through TGREDCO energy studies, supported by a dedicated industrial/MSME dashboard. Around **80% of industries have adopted ISO 50001**. The State promotes electrification of heat (electric boilers, induction furnaces, heat pumps) under SEEAP and the **Clean & Green Energy Policy 2025**. **TGREDCO** provides technical assistance, financial incentives, and pilot projects, and implements schemes like **ADEETIE** and **SIDHIEE** to support energy-efficient technology adoption and decarbonisation in industrial clusters.
- **Kerala** promotes low-carbon and sustainable industrial development through its **Industrial Policy 2023, ESG policies**, and sustainability incentives, supporting electrification and renewable energy integration in industrial clusters. Key sectors include **high-tech manufacturing** and **process industries**, with **25% financial reimbursement (up to ₹25 lakh)** for power substitution and other sustainability measures. The **Energy Management Centre (EMC)** facilitates **mandatory and voluntary energy audits, training, and consultancy**, identifying electrifiable end-uses such as heat pumps, electric boilers, and induction heating. Policies further enable green power procurement, Open Access, Net Metering, and future-ready renewable energy infrastructure, while cluster-level initiatives aim for carbon-neutral industrial operations.
- **Chhattisgarh** promotes energy efficiency (EE) in MSMEs and industries under its **Industrial Policy 2024–2030**, offering incentives for **ISO certification** and supporting energy-intensive industrial units in adopting energy-efficient practices.
- **Assam** has identified energy-intensive MSME clusters, including plastic parks, through **NCAER surveys** and promotes energy efficiency (EE) via **follow-up audits and capacity-building workshops**. The State encourages ISO 50001 adoption through SEEAP-linked workshops and policy incentives, while its **Industrial and Clean Energy Policy (ICEP 2025)** supports electrification of industrial end-uses and ongoing EE initiatives.
- **Chandigarh** has identified energy-intensive MSME clusters using billing data and promotes ISO 50001 adoption through structured energy management and capacity-building programs. Under the **State Energy Efficiency Action Plan (SEEAP)** and **Strategic Investment Plan**, the UT provides incentives for reliable 24/7 power supply, supporting electrification and efficient energy use. The **ADITEE scheme** is actively promoted via SDA social media to encourage MSMEs to adopt energy-efficient technologies



**Kerala offers 25% reimbursement (up to ₹25 Lakhs) for electrification and renewable energy integration under its Industrial and ESG policies.**

**16 States** have taken Initiatives under **ADITEEE scheme**. A Complete List of States given in the Table 3 – 24.

**Table 3-24: Reporting States that have undertaken initiatives under ADITEEE Scheme**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha and Gujarat |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh, Telangana and Rajasthan |
| **Group 3 (>5 - 15 MTOE)** | Kerala and Punjab |
| **Group 4 (1-5 MTOE)** | Assam, Goa, Himachal Pradesh, Uttarakhand and Puducherry |
| **Group 5 (<1 MTOE)** | Tripura and Chandigarh |

## PROGRAMME SPECIFIC INDICATORS

In SEEI 2025, there are **3 Programme-Specific Indicators** i) **Programmes for energy efficiency in large industries**; ii) **Programmes for energy efficiency in MSME industries**; and iii) **Capacity-building initiatives within the Industry sector** to monitor and assess the implementation of programmes by SDAs, state government entities through interdepartmental collaborations or in partnerships with BEE, industry associations, or in PPPs to advance EE in the industry sector.



**Karnataka's PAT program has resulted in annual energy savings of 134,866.9 TOE and a reduction of 427,527.9 tonnes of CO2 emissions**

### Programmes for EE in large industries

The Bureau of Energy Efficiency's (BEE) **Perform, Achieve, and Trade (PAT) scheme** is a market-based mechanism actively implemented in several States, including **Karnataka, Maharashtra, Telangana, Andhra Pradesh, Uttar Pradesh, Odisha, and Assam**. The primary goal of PAT is to **reduce energy consumption in energy-intensive industries** by enabling the **trading of verified excess energy savings.**

In **Group 1**, **Karnataka's PAT program** has resulted in annual energy savings of **1,34,866.9 TOE** and a reduction of **4,27,527.9 tonnes of $CO_2$ emissions**, with an investment of ₹**8,872.1 Lakhs**. **Maharashtra** has achieved **621205.28 MTOE** and **7224.6 MU** in energy savings and a reduction of **5924.18 tonnes of $CO_2$ emissions** annually. **Tamil Nadu** contributed to energy savings of **93,107 TOE** and a reduction of **7,64,692 tonnes of $CO_2$ emissions**, investing ₹**17375 Lakhs**.

In **Group 2**, **Andhra Pradesh** has reported significant results, with energy savings of **1,348 Million units** and a reduction of **9,54,465 tonnes of $CO_2$ emissions** annually, backed by an investment of ₹**1,509.4 Crore** for 40 Large Industries. **Kerala** under **Group 3** has achieved **36.18 lakh kWh** and + **350 KL FO** in energy savings and a reduction of **19,324 tonnes of $CO_2$ emissions** annually.

The details of the reporting States on Programmes for Energy Efficiency in Large Industries have been presented in Table 3 – 25.

**Table 3-25: Reporting States on Programmes for Energy Efficiency in Large Industries**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu and Uttar Pradesh |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh and Telangana |
| **Group 3 (>5 - 15 MTOE)** | Kerala and Jharkhand |
| **Group 4 (1-5 MTOE)** | Goa |
| **Group 5 (<1 MTOE)** | Tripura, Chandigarh and Meghalaya |

## Programmes for EE in MSME industries

**Andhra Pradesh** in **Group 2** achieved significant annual energy savings of **6.76 lakh units** and reduced **479 tonnes of CO2 emissions** following the implementation of energy efficiency (EE) measures guided by energy auditors. Meanwhile, the **Assam State Energy Efficiency Action Plan (SEEAP)** focuses on the tea industry clusters under the national BEE SME Programme for baseline energy assessment and improvement. The current Specific Energy Consumption (SEC) for tea processing is estimated at **0.68 TOE /tonne**. By 2030, projected SEC reductions are targeted at **0.544 TOE /tonne (20% reduction)** under a moderate scenario, with an estimated total energy savings of **8,297 TOE** and corresponding CO2 emissions reduction of **0.03 MtCO2** by FY 2030–31. The more ambitious scenario targets an SEC of **0.408 TOE /tonne (40% reduction),** yielding **23,232 TOE** in energy savings and **0.08 MtCO2** in emission reductions by the same period.

The details of the reporting States on Programmes for Energy Efficiency in MSME have been presented in Table 3 – 26.

**Table 3-26: Reporting States on Programmes for Energy Efficiency in MSME**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu and Uttar Pradesh |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh and Telangana |
| **Group 3 (>5 - 15 MTOE)** | Jharkhand |
| **Group 4 (1-5 MTOE)** | Assam, Goa and Himachal Pradesh |
| **Group 5 (<1 MTOE)** | Ladakh |

**Assam is focusing on tea industry under BEE SME Programme under its State Energy Efficiency Action Plan (SEEAP)**

## Capacity Building Programmes in industry sector

In **Group 1**, several States implemented targeted capacity-building and awareness programs to boost Energy Efficiency (EE) and advance their Net-Zero goals. **Karnataka** promoted EE in industries and MSMEs by hosting an **Investment Bazaar** and a **PAT Enforcement Workshop**. It also organized **9** training programs, including **4** for MSMEs and **5** on ISO 50001, along with **3** cluster-level sessions, to enhance awareness of BEE schemes, incentives, and financing. **Maharashtra** sanctioned ₹**40 lakh** to support extensive energy conservation awareness and capacity-building programs targeting industries, MSMEs, and government personnel, highlighted by a dedicated **one-day MSME training program** and an **Investment Bazaar Workshop** to connect industry with financing institutions. **Tamil Nadu** conducted extensive capacity-building initiatives in FY 2024–25 focusing on managerial, technical, and entrepreneurial development for various groups, resulting in **65** awareness programmes **(2,739 participants)** and **193** training programmes **(3,414 participants)**. **Odisha** focused on financing with an **Investment Bazaar in Rourkela** and conducted capacity programs emphasizing **CCTS (Clean Energy Trading Systems)** and **RPO/RCO compliance**, ultimately completing baseline CCTS energy audits for **73 industrial units**. **Uttar Pradesh** conducted capacity-building workshops for large industries and MSMEs, organizing **cluster-specific workshops** and stakeholder consultations in the **Moradabad (Brass), Varanasi (Brick), and Bhadohi (Carpet) clusters** to promote low-carbon adoption.

In **Group 2,** the **Andhra Pradesh** State Energy Conservation Mission (APSECM) conducted both capacity-building programmes and decarbonization workshops for MSMEs, organizing **5** workshops in each identified cluster to raise awareness and encourage the adoption of advanced EE technologies. Similarly, in **Telangana**, **TGREDCO** collaborated with organizations like **CII, EPTRI, ESCI**, and **FTCCI** to host numerous capacity-building workshops and training programs for industries and MSMEs. These initiatives included sector-specific training and an international conference during Energy Conservation

Week 2024, focusing on key areas such as **ISO 50001, energy audits, renewable energy, and clean technologies**, ultimately benefiting around **300 industrial participants** across key clusters.

**Kerala** in **Group 3**, through **Energy Management Centre (EMC)** is conducting capacity-building programmes for industry officials to promote the adoption of energy-efficient technologies and sustainable industrial practices. The initiative has benefited over **500 officials** and supports the state's decarbonization, competitiveness, and low-carbon development goals. **Jharkhand's** capacity-building efforts are led by **JSDMS** under the **Mukhyamantri Sarthi Yojana and allied schemes (SJKVY, BIRSA, DDUKK)**, providing demand-driven skill training aligned with industry needs across key sectors. Over **2.79 lakh youth** have been trained and **1.47 lakh placed**, supporting the Industrial Policy target of large-scale job creation and strengthening MSME and industrial workforce readiness.

**15 States reported Capacity Building Programmes in the Industry Sector.**

In **Group 4**, **Assam's State Designated Agency (SDA)**, collaborating with BEE, is executing capacity-building programs in tea and other MSME clusters under the SEEAP. These initiatives focus on energy audits, awareness, and the adoption of EE technologies like **VFDs and high-efficiency motors**. The program aims for **50–70% EE technology penetration** in tea clusters, projecting savings of **8,297–23,232 TOE by 2030**, and has achieved approximately **60% progress in FY 2024–25 (Q2)**. **Himachal Pradesh** is promoting **Resource Efficient and Cleaner Production (RECP)** across industries, initiating implementation in about **1,900 MSME units**. The Department of Industries has conducted **125 RECP studies** and **20 awareness workshops** to accelerate the adoption of resource- and energy-efficient practices. Lastly, **Goa** is undertaking extensive capacity-building for MSMEs under the **RAMP and PMFME schemes**, delivering training through **EDII Goa** and **St. Joans Education Society**. As of FY 2024–25, over **3,198 MSMEs** have been trained through business management, technical, and skill-based programs, supported by credit-linked subsidies and seed capital to enhance productivity and entrepreneurship.

**Chandigarh** under **Group 5**, has conducted capacity-building programs to promote energy efficiency and **industrial decarbonization, training industrial stakeholders, energy managers, and technical personnel on sustainable practices, low-carbon technologies, and energy-efficient measures**. **Tripura** conducted **5** workshop-cum-training programs over three years to build capacity in government departments on energy-efficient measures, sustainable growth, improved systems, innovation, and stakeholder collaboration. **Meghalaya** organized an **ISO 50001 workshop** for representatives from **20 industries, promoting energy management, adoption of ISO 50001, and installation of Waste Heat Recovery Systems** to reduce energy consumption and achieve state energy efficiency goals.

The details of the reporting States on capacity building programmes in the industry are presented in Table 3 – 27:

**Table 3-27: Reporting States on Capacity Building Programmes in industry sector**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha and Uttar Pradesh |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh and Telangana |
| **Group 3 (>5 - 15 MTOE)** | Kerala and Jharkhand |
| **Group 4 (1-5 MTOE)** | Assam, Goa and Himachal Pradesh |
| **Group 5 (<1 MTOE)** | Tripura, Chandigarh and Meghalaya |

## INDUSTRY SECTOR SPOTLIGHT

- **Karnataka's** PAT program achieved annual energy savings of 1,34,866.9 TOE and a reduction of 4,27,527.9 tonnes of $CO_2$ emissions, with an investment of ₹8,872.1 lakh.
- **Maharashtra** recorded 621,205.28 MTOE and 7,224.61 MU in energy savings, reducing 5,924.18 tonnes of $CO_2$ emissions annually.
- **Tamil Nadu** contributed 93,107 TOE in energy savings and 7,64,692 tonnes of $CO_2$ emissions reduction, with an investment of ₹17,375 lakh.
- **Andhra Pradesh** reported energy savings of 1,348 million units and a reduction of 9,54,465 tonnes of $CO_2$ emissions annually, supported by an investment of ₹1,509.4 crore across 40 large industries.
- **Kerala** achieved 36.18 lakh kWh and 350 KL FO in energy savings, resulting in an annual reduction of 19,324 tonnes of $CO_2$ emissions.

# 3.3 MUNICIPAL SERVICES

## OVERVIEW

Municipal services like **water supply, wastewater treatment, and street lighting** are critical to urban infrastructure and rank among the most energy-intensive public sectors. Given that nearly **30% of India's population** resides in urban areas, enhancing **Energy Efficiency (EE)** is a critical priority, as it strengthens access to essential services, improves utility reliability and affordability, and supports climate resilience. Adopting EE technologies in municipal operations yields substantial savings in energy and water, lowers operational costs, improves service delivery, and contributes to environmental sustainability and climate mitigation efforts.

The **SEEI 2025** framework evaluates EE progress in this sector using **6 indicators** — **3 Common Indicators** (assessing policy and adoption) and **3 Programme–Specific Indicators** (capturing implementation and impact)—covering street lighting and water/sewerage systems. The sector has a maximum attainable score of **11 points**, with common indicators assigned 2 points and programme-specific indicators assigned **9** points.

Table 3-28 details these indicators, while Figure 3-14 presents the States' scores, based on their TFEC. Figure 3-15 highlights the States' progress in SEEI 2025 compared to SEEI 2024.

**With nearly 30% of India's population living in urban areas, improving energy efficiency in energy-intensive municipal services is vital to reducing costs, enhancing service delivery, and supporting sustainability and climate resilience.**

**Table 3-28: Municipal Services sector indicators under SEEI 2025**

| S. No | Indicator | Max Score | Scoring Criteria |
|---|---|---|---|
| **Policy** | | | |
| **1** | **City-level action plan on climate change** | **0.5** | |
| | Number of cities in the State/ UT that have developed Climate Action Plan/ Net Zero Plan/ Heat Action Plan/ any other to mitigate/ adapt to the effects of climate change. | 0.25 | Data provided = 0.25; else= 0 |
| | SDA/ State designated department for climate change has collaborated with ULB/ Municipal Corporation on energy efficiency actions under their Climate Action Plan/ Net Zero Plan/ Heat Action Plan/ any other plan? | 0.25 | Yes= 0.25, else= 0 |
| **Institutional Capacity** | | | |
| **2** | **Advisory, certification and enforcement capacity in state government** | **0.75** | |
| | State's/ UT's UDD/PHED has issued advisory on energy efficiency practices in:<br>1. Street Lighting<br>2. Municipal Water Pumping<br>3. Municipal Buildings | 0.75 | Advisory on Street Lighting = 0.25; else = 0<br>Advisory on Municipal Water Pumping = 0.25; else = 0<br>Advisory on Municipal Buildings = 0.25; else = 0 |
| **Adoption of EE measures** | | | |
| **3** | **Adoption of EE practices in street lighting, water pumping and sewerage systems** | **0.75** | |
| | Type of energy efficiency practices implemented by State/ UT in street lighting (e.g., feeder level pillar, smart street lighting systems) and in water pumping and sewerage systems (e.g., IE2 or higher efficiency class motors, VFDs). | 0.5 | Data provided= 0.5, else= 0 |
| | Type of systems deployed in State/ UT to monitor street lighting/ water pumping station/ sewerage treatment plant. (For ex. SCADA, Energy Management System etc.). | 0.25 | Data provided= 0.25, else= 0 |
| **State Programme** | | | |
| **4** | **Programmes for energy-efficient street lighting** | **4** | |
| | Does the state have programmes for energy-efficient street lighting in FY 2024-25? | | |
| | What is the objective of the program? (2 sentences) | 0.25 | Objective of the programme = 0.25; else = 0 |
| | What is the target set under the program? | 0.25 | Target set under the programme = 0.25; else = 0 |
| | What is the timeline? | 0.25 | Timeline = 0.25; else = 0 |
| | How much budget has been allocated & utilized to date | 0.5 | Budget allocated= 0.25, else = 0<br>Budget utilized= 0.25, else = 0 |
| | Who is running the program? (list all, e.g. SDA, state dept., municipality, industry association, PPP etc.) | 0.25 | Entities running the Programme = 0.25; else = 0 |
| | What is the progress to date? | 0.5 | Progress to date = 0.5; else = 0 |
| | What are the energy savings? (deemed or measured) | 1 | Energy savings (deemed or measured) = 1; else = 0 |
| | How much emissions were avoided? (based on energy savings) | 1 | Avoided emissions = 1; else = 0 |

| S. No | Indicator | Max Score | Scoring Criteria |
|---|---|---|---|
| **5** | **Programmes for energy-efficient water/ sewerage system** | **4** | |
| | Does the state have programmes for energy-efficient water/sewerage system in FY 2024-25? | | |
| | What is the objective of the program? (2 sentences) | 0.25 | Objective of the programme = 0.25; else = 0 |
| | What is the target set under the program? | 0.25 | Target set under the programme = 0.25; else = 0 |
| | What is the timeline? | 0.25 | Timeline = 0.25; else = 0 |
| | How much budget has been allocated & utilized to date | 0.5 | Budget allocated= 0.25, else = 0<br>Budget utilized= 0.25, else = 0 |
| | Programmes for energy-efficient water/ sewerage system | 4 | |
| | Who is running the program? (list all, e.g. SDA, state dept., municipality, industry association, PPP etc.) | 0.25 | Entities running the Programme = 0.25; else = 0 |
| | What is the progress to date? | 0.5 | Progress to date = 0.5; else = 0 |
| | What are the energy savings? (deemed or measured) | 1 | Energy savings (deemed or measured) = 1; else = 0 |
| | How much emissions were avoided? (based on energy savings) | 1 | Avoided emissions = 1; else = 0 |
| **6** | **Capacity Building Programmes in municipal services sector** | **1** | |
| | Does the state have programme(s) for capacity building in municipal services sector in FY 2024-25? | | |
| | What is the objective of the programme? (2 sentences) | 0.25 | Objective of the programme = 0.25; else = 0 |
| | What is the target set under the program? | 0.25 | Target set under the programme = 0.25; else = 0 |
| | Who is running the program? | 0.25 | Entities running the Programme = 0.25; else = 0 |
| | What is the progress to date? | 0.25 | Progress to date = 0.25; else = 0 |

**Figure 3-14: TFEC group-wise municipal services sector state scores**

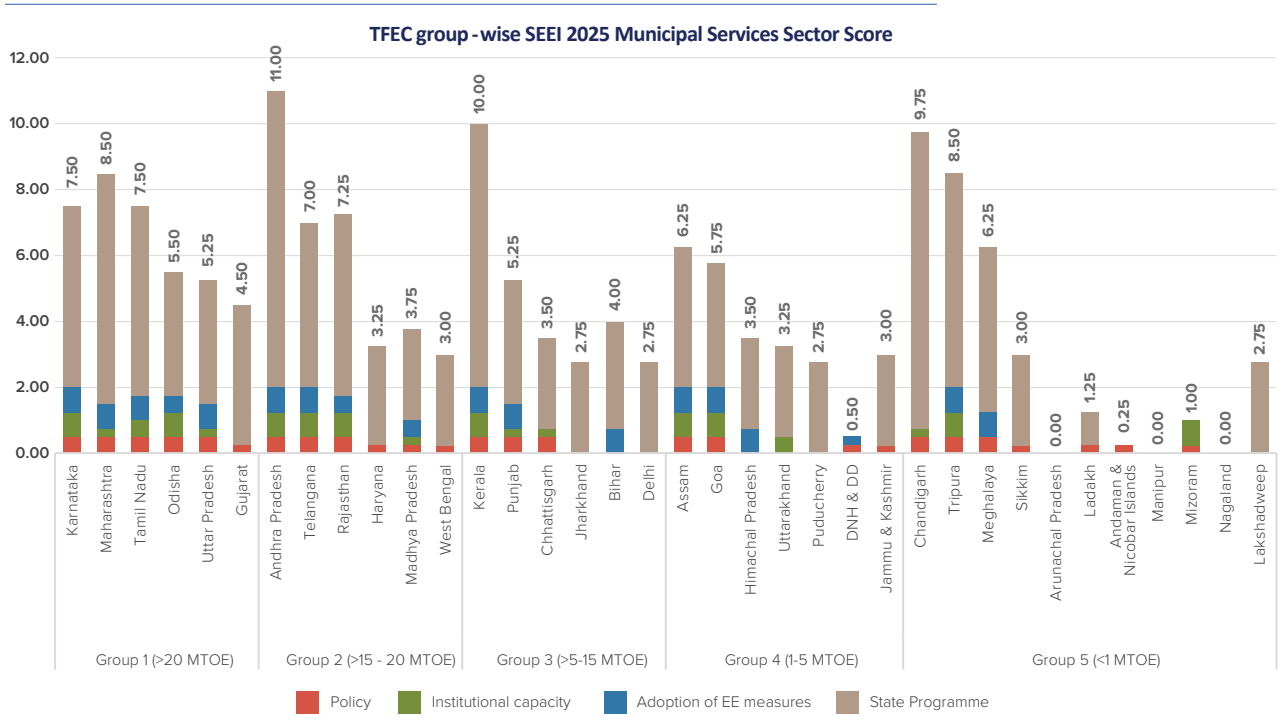
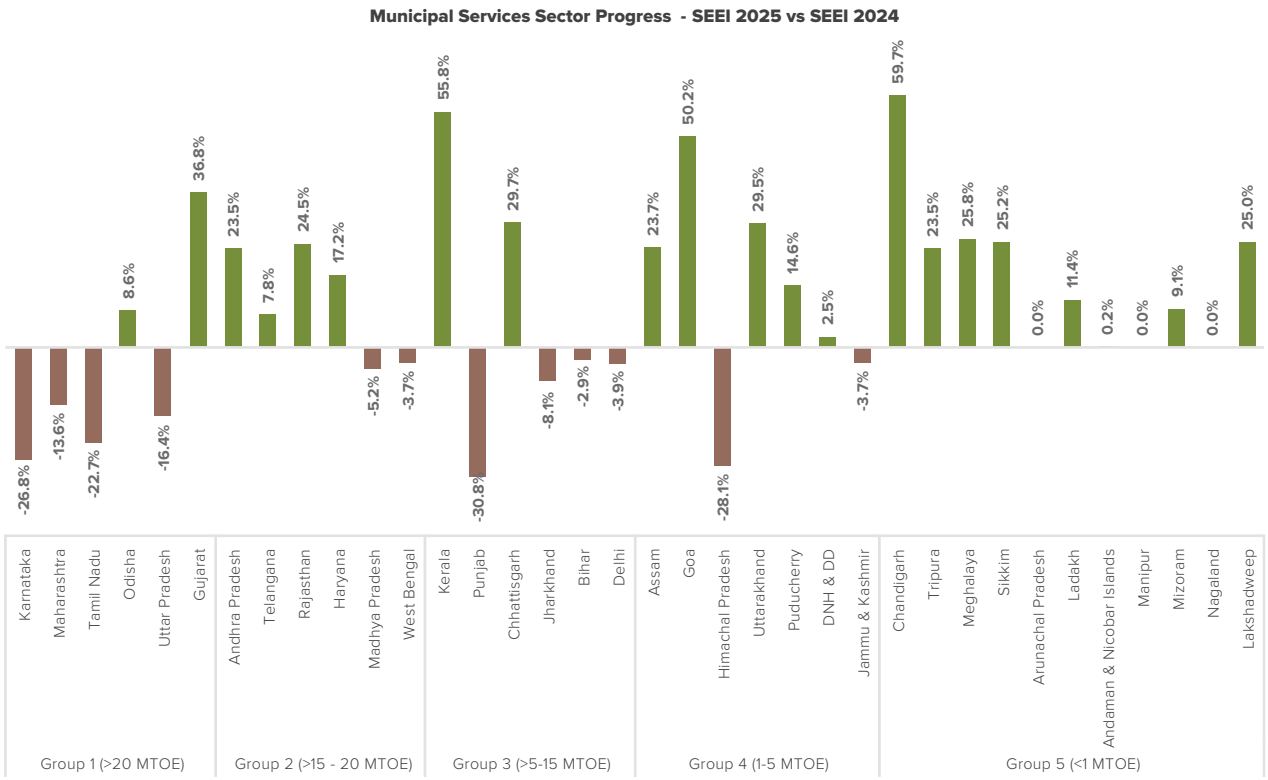


**Figure 3-15: TFEC group-wise municipal services sector state progress – SEEI 2025 vs SEEI 2024**




## SEEI 2025 MUNICIPAL SERVICES SECTOR SCORE HIGHLIGHTS

**Andhra Pradesh** emerged as the overall top performer in the Municipal Services Sector for **SEEI 2025**, achieving the maximum score of **11**, followed by **Kerala (10.00)** and **Chandigarh (9.75)**. In the group rankings, **Maharashtra** topped **Group 1** but saw its score decline by 14%, while second-place **Karnataka** recorded a substantial **27% drop**. **In Group 2**, **Andhra Pradesh** ranked first with a **24% improvement**, closely followed by **Rajasthan**, which improved by an even higher **25%**. **Kerala** led **Group 3** with a remarkable **56%** improvement, though second-place **Punjab** experienced a notable **31% decline**. **Assam** topped **Group 4** with a **24% improvement**, while **Goa**, placing second, registered an exceptionally high **50% increase**, primarily due to its low base score in 2024. Finally, **Chandigarh** emerged as the **Group 5** leader with an impressive **60%** improvement, and **Tripura** secured second place with a **24% score** increase.

Notably, **Thirteen States** demonstrated remarkable progress, increasing their scores by over 20% compared to the previous evaluation, and have been presented in Figure 3-16.



**Andhra Pradesh emerged as the top performer with a score of 11 followed by Kerala in second place with 10.**

# COMMON INDICATORS

## Policy

A total of 26 States and Union Territories (UTs) have developed city-level strategic plans, including Climate Action Plans, Net Zero Plans, or Heat Action Plans. Among these 26 States, 16 have initiated the implementation of energy efficiency (EE) measures within these plans through partnerships between their State Designated Agencies (SDAs) and Urban Local Bodies (ULBs) or Municipal Corporations. The specific details of these reporting States are documented in Table 3–29.

**Table 3-29: Reporting States on the development of Climate Action Plans/Net Zero Plans/Heat Action Plan**

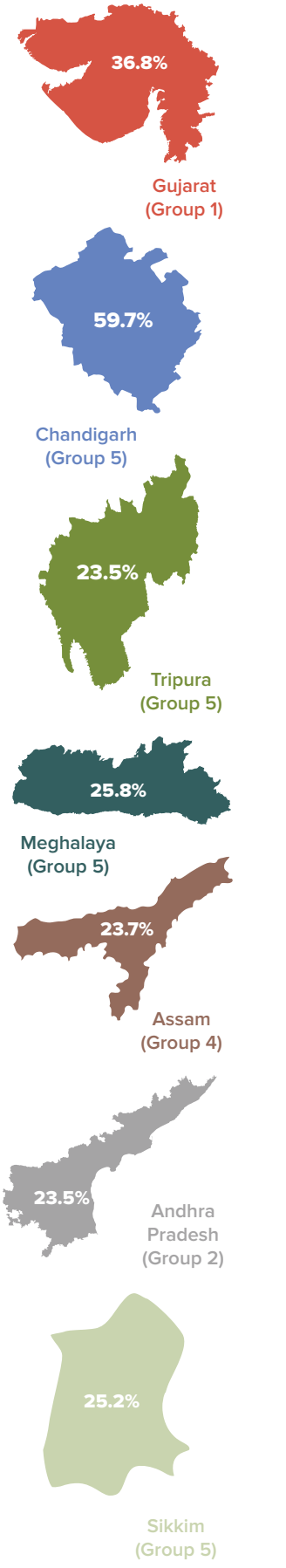
| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha, Uttar Pradesh and Gujarat |
| **Group 2 (>15 - 20 MTOE)** | **Andhra Pradesh, Telangana, Rajasthan**, Haryana, Madhya Pradesh and West Bengal |
| **Group 3 (>5 - 15 MTOE)** | **Kerala, Punjab** and **Chhattisgarh** |
| **Group 4 (1-5 MTOE)** | **Assam**, **Goa**, Jammu & Kashmir and Dadra & Nagar Haveli and Daman & Diu |
| **Group 5 (<1 MTOE)** | **Tripura, Chandigarh**, Sikkim, Mizoram**, Meghalaya**, Andaman & Nicobar Islands and Ladakh |

Note: The States marked in bold have also reported their SDAs collaborating with the ULBs/Municipal Corporations on the development of Climate Action Plans, Net Zero Plans, or Heat Action Plans

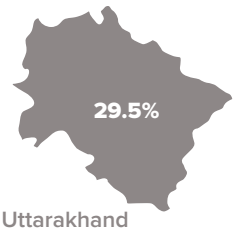
## Key Initiatives in Municipal Sector Policy

- **Karnataka** is actively implementing the **Bangalore Climate Action Plan (BCAP)** alongside a comprehensive **State Action Plan on Climate Change**. These plans operate under a **multi-sectoral framework** led by the **EMPRI**, involving key agencies such as the Urban Development Department, Energy Department, and municipal bodies. Furthermore, the Government has established **high-level and steering committees** specifically to promote **energy efficiency (EE)** across all sectors. A notable municipal EE initiative is the **100% LED streetlight retrofitting** being executed across municipalities, with **KREDL** serving as a key implementation stakeholder.
- The **Government of Rajasthan** has prepared **Heat Action Plans** for **41 cities** to effectively address rising urban heat risks and strengthen overall climate resilience. Implementation is coordinated by the **Energy Department (RRECL)** through the **State Level Steering Committee (SLSC) on Energy Transition**, which is chaired by the Chief Secretary. This effort is further supported by the existing **Rajasthan Action Plan on Climate Change and Human Health (2022–27).**
- The **Government of Maharashtra**, in collaboration with its **Climate Action Cell**, has prepared a **draft State Climate Action Plan**. This comprehensive plan is designed to **mainstream climate mitigation and adaptation** across the state's urban and municipal sectors. It provides a strategic **policy framework** aimed at promoting **energy efficiency**, developing **low-carbon infrastructure**, and ensuring **climate-resilient municipal services**.
- The **Andhra Pradesh State Energy Conservation Mission (APSECM)** is actively partnering with both **municipal corporations** and the **Department of Municipal Administration and Urban Development** to effectively integrate its **State Energy Efficiency Action Plan (SEEAP)** targets and broader **climate action strategies** at the city level. As part of these efforts, **energy audits** have been successfully conducted in **16 municipal corporations**, leading to the implementation of specific **energy efficiency measures** in select cities across the state.

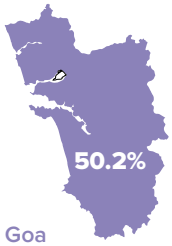
**Figure 3-16: States with more than 20% increase in Municipal Sector scores in comparison to SEEI 2024.**



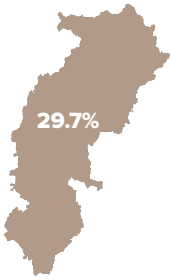
- **Odisha** has prepared a city-level climate action plan supported by a **dedicated climate budget** to strengthen mitigation and adaptation measures in the municipal service sector.
- **Telangana** has designated the **Environmental Protection Training and Research Institute (EPTRI)** as its nodal agency responsible for **climate action and the Clean Development Mechanism (CDM)**, and is currently developing a comprehensive **state climate action plan**. As part of this overarching effort, the state has issued a pioneering **Cooled Roof Policy** applicable to all **Urban Local Bodies (ULBs)**, specifically designed to **enhance urban climate resilience** by mitigating the effects of urban heat.
- **Kerala** is advancing city-level climate action through multiple initiatives. Specifically, the state is developing a **Net Zero Carbon and Resilient Buildings Action Plan** for **Thiruvananthapuram** in collaboration with WRI India. Concurrently, **urban greening initiatives** are being implemented in **Kochi** to directly address and mitigate heat and flood risks. Furthermore, the **Kerala State Disaster Management Authority's Heat Action Plan**, which incorporates input from the Energy Management Centre, integrates **early warning systems**, **public awareness**, and energy-efficient measures—notably the **Cool Roof initiative**—across all **Urban Local Bodies** in the state.
- **Chhattisgarh** is implementing **energy-efficient building measures** through the **Energy Conservation Building Code (ECBC) mandate** and subsequent amendments to **municipal building byelaws**. The **Chhattisgarh Renewable Energy Development Agency (CREDA)** is actively supporting **Urban Local Bodies (ULBs)** under the **State Action Plan on Climate Change** to promote comprehensive **low-carbon and climate-resilient urban development** throughout the state.
- **Assam** is strengthening municipal energy efficiency through the **Assam State Designated Agency's (ASDA)** collaboration with **Urban Local Bodies (ULBs)** for **Energy Conservation Building Code (ECBC)** adoption, **public building energy audits**, and **capacity-building** under the State Energy Efficiency Action Plan. Beyond municipal services, the State is also implementing **Cooling Action Plans** in **five major cities** and rolling out comprehensive **energy efficiency programmes** across **18 districts** and **47 health facilities** in partnership with the **National Health Mission (NHM)**.
- **Goa** has formally implemented its **State Action Plan on Climate Change (2023–2033)** and concurrently notified the **Goa Heatwave Action Plan 2024** to proactively address rising urban heat risks. Additionally, the Government has authorized and facilitated **Memorandums of Understanding (MoUs)** between the **Imagine Panaji Smart City Development Limited (IPSCDL)**, the **Margao Municipal Council**, and the **Council on Energy, Environment and Water (CEEW)** for the preparation of dedicated **city-specific Heat Wave Action Plans** for **Panaji and Margao**.
- **Chandigarh** is focusing its city-level climate and sustainability plan on four key areas: **renewable energy adoption**, **energy efficiency (EE)**, **sustainable mobility**, and **urban resilience**. The **Energy Management Centre (EMC)/State Designated Agency (SDA)** is actively collaborating with the **Municipal Corporation, Chandigarh**, to implement specific EE measures, including the adoption of **energy-efficient pumping systems** and improved **solid waste management solutions**, with the goal of enhancing overall municipal service efficiency.
- **Tripura** is advancing city-level climate action across **eight districts** through the development of both **Climate Action** and **Net Zero Plans**. The **State Designated Agency (SDA)** is actively collaborating with **Urban Local Bodies (ULBs)** and **Municipal Corporations** to implement **energy efficiency (EE) measures** within municipal services. This collaborative effort is aimed at supporting **low-carbon and climate-resilient urban development** throughout the state.
- **Meghalaya** has developed a **State Climate Change Action Plan** to guide both mitigation and adaptation efforts. The State Designated Agency (SDA) is collaborating with **Urban Local Bodies (ULBs)** to promote **energy-efficient municipal services** through several initiatives. These include **LED street lighting**, **sewage treatment initiatives**, and **capacity-building workshops**. Furthermore, the state is utilizing **digital signage** across all **nine municipal offices** to effectively raise public awareness on crucial topics like **energy efficiency (EE)**, **waste management**, and **water conservation**.



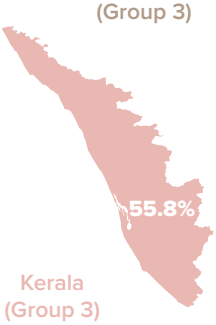
Uttarakhand
(Group 4)



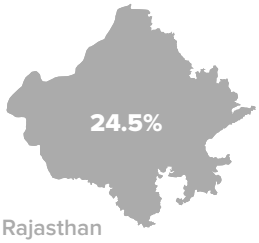
Goa
(Group 4)



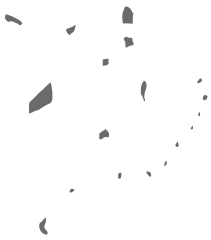
Chhattisgarh
(Group 3)



Kerala
(Group 3)



Rajasthan
(Group 2)


**25.0%**
Lakshadweep
(Group 3)

## Institutional Capacity

Advisories promoting **energy efficiency (EE) practices** in municipal services have been issued by either the **Urban Development Department (UDD)** or the **Public Health Engineering Department (PHED)** across numerous States and Union Territories (UTs). Specifically, **street lighting** advisories have been issued in **18 States**. Furthermore, advisories concerning **municipal water pumping** have been issued in **9 States**, and guidance for **municipal buildings** has been provided in **8 States**. The specific list of reporting States is detailed in **Table 3–30**.

**Table 3-30: Reporting States on advisory issued by UDD/PHED on EE practices in the Municipal Services Sector**

| | Street Lighting | Municipal Water Pumping | Municipal Buildings |
|---|---|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha and Uttar Pradesh | Karnataka, Tamil Nadu and Odisha | Karnataka and Odisha, |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh, Telangana, Rajasthan and Madhya Pradesh | Andhra Pradesh, Telangana and Rajasthan | Andhra Pradesh, Telangana and Rajasthan |
| **Group 3 (>5 - 15 MTOE)** | Kerala, Punjab and Chhattisgarh | Kerala | Kerala |
| **Group 4 (1-5 MTOE)** | Assam, Goa and Uttarakhand | Assam and Goa | Assam and Goa |
| **Group 5 (<1 MTOE)** | Tripura, Chandigarh and Mizoram | | |

## Key Initiatives on Institutional Capacity

In **Group 1**, **Karnataka's UDD** mandated **100% LED and CCMS street light replacement** under the PPP model across Smart Cities, while also mandating **BEE 4/5-star rated pumps** for municipal water and solar heating systems for certain buildings. **Odisha** allocated ₹**200 crore** for LED street lighting across 110 ULBs and directed five Municipal Corporations to implement **ECBC-compliant buildings**. Moving to **Group 2**, **Andhra Pradesh** mandated **100% LED replacement** for street lights, implemented **smart lighting** and **SCADA-based water management**, and mandated **BEE 4/5-star pumps** and **compulsory energy audits** in municipal buildings. **Telangana** issued advisories for **LED retrofitting**, **VFD standardization**, and **EE pumps** in water systems, alongside a state-wide LED replacement program. **Rajasthan** implemented large-scale **LED street lighting** via PPP and is strengthening **EE municipal water pumping** under RUIDP, with proposals for EE appliances and energy audits in government buildings under SEEAP.



**Andhra Pradesh has mandated 100% LED replacement for streetlights along with implementation of Smart-Lighting**

**Kerala** in **Group 3** has institutionalized EE by notifying **Energy Consumption Standards** for equipment, mandating efficiency across public lighting, buildings, and water systems. In **Group 4**, **Goa** enacted the **Public Lighting Duty Act, 2021**, centralizing LED replacement, introduced **SCADA/RTDAS** for water management under the **Goa State Water Policy, 2021**, and mandated star-rated EE appliances in government and municipal buildings. Finally, in **Group 5**, **Mizoram's** UDD and PHED issued advisories for transitioning to **LED/ smart street lighting**, adopting **EE motors/VFDs** in water pumping, and ensuring **EE lighting, HVAC, appliances, and ECBC compliance** in municipal buildings.

## Adoption of EE Measures

**Energy efficiency (EE) practices** have been formally adopted in **street lighting, water pumping, and sewerage systems** across **17 States and Union Territories (UTs)**. Additionally, **15 States** have reported utilizing **monitoring systems** to track the

performance and impact of these EE measures within their municipal services. The specific details of the reporting States are presented in Table 3–31.

**Table 3-31: Reporting States on the adoption of EE practices in Streetlighting/Water Pumping/Sewerage Systems**

| | Reporting States on adoption of EE practices in street lighting and water pumping and sewerage systems | Reporting States on utilisation of Monitoring systems for street lighting /water pumping /sewerage systems |
|---|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha and Uttar Pradesh, | Karnataka, Maharashtra, Tamil Nadu and Uttar Pradesh |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh, Telangana, Rajasthan and Madhya Pradesh, | Andhra Pradesh and Telangana |
| **Group 3 (>5 - 15 MTOE)** | Kerala, Punjab and Bihar | Kerala, Punjab and Bihar |
| **Group 4 (1-5 MTOE)** | Assam, Goa and Himachal Pradesh | Assam, Goa, Himachal Pradesh and Dadra & Nagar Haveli and Daman & Diu |
| **Group 5 (<1 MTOE)** | Tripura and Meghalaya | Tripura and Meghalaya |

## Key Initiatives on Adoption of EE measures

Seventeen States, including Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, Telangana, Kerala, and others, have reported efforts to promote **energy-efficient (EE) pumps and motors** in their municipal water and sewerage systems, supported by extensive monitoring and technology upgrades.

In **Group 1**, **Karnataka** implemented **LED street lighting with CCMS**, deployed **IE2/IE3 motors, VFDs power factor correction systems, energy-efficient starters, and 4/5-star rated transformers** in water systems, WTPs and STPs, and used **SCADA** for real-time monitoring. **Maharashtra** installed over 38,500 **LED fittings**, replaced old pumps with **IE3 motors**, and operated **EE STPs** with automated controls. **Tamil Nadu** achieved **100% LED street lighting**, mandated EE pump sets, and deployed **SCADA** in water schemes. **Odisha** also implemented **LEDs, VFDs, and IE2 motors**, monitored via **CADA systems**. **Uttar Pradesh** upgraded street lighting to **LEDs with CCMS** and modernized municipal water pumps.

In **Group 2**, **Andhra Pradesh** has converted almost all street lighting to LEDs and replaced old pumps with IE3 motors, with **63,858 CCMS** for streetlights and **71,239 pump sets** connected to control panels. VFDs, and **SCADA-based monitoring** in **GVMC** and other projects to optimize operations and reduce non-revenue water losses. In **Telangana, HMWS&SB** has implemented **VFD-based pumping** and high-efficiency motors, with real-time **SCADA** monitoring, alongside a statewide **LED replacement** program through **EESL**, with **CCMS** operated by SDA for centralized monitoring and maintenance. **Rajasthan** has replaced conventional 48–550 W streetlight fixtures with **5–112 W LEDs** to improve illumination and energy savings. A statewide **Water Information Management System (WIMS) with SCADA** is deployed for real-time monitoring and management of municipal water supply, pumping, and treatment facilities.

In **Group 3**, **Kerala's** Thiruvananthapuram Corporation replaced over **50,000 streetlights** with **CCMS-integrated LEDs** for high energy savings, while the **Kerala Water Authority** modernized WTPS and pumping stations with **VFDs, high-efficiency pumps, and SCADA**. In **Punjab**, Smart Cities including **Jalandhar, Ludhiana, Amritsar**, and **Bathinda** have implemented energy-**efficient LED street lighting** with **smart** and **auto-timer controls**. Municipal water pumping systems have been upgraded with efficient pumps, with monitoring and operational optimization enabled through **centralized control systems**.

In **Group 4**, **Assam** implemented **LED street lighting with CCMS and IoT controllers**, upgrading water/sewerage systems with **BEE star-rated pumps, VFDs, and SCADA**.



**Rajasthan has deployed state-wide Water Information Management System (WIMS) for real-time monitoring and management of Municipal Water Supply, Pumping and Treatment Facilities.**

**Goa** has replaced all conventional streetlights with LEDs under the **Streetlight National Programme**, using **CCMS-based centralized monitoring** and **automated control** for efficient operation. The state has also deployed solar-powered water pumping systems, and upgraded municipal sewerage systems with **VFDs, capacitor banks, active harmonic filters**, and **PLC/SCADA automation** to optimize energy use and operational efficiency. In **Group 5**, **Tripura** has implemented energy-efficient LED street lighting across municipalities, with **EESL installing 800 systems equipped with electronic time switches** and **centralized monitoring** to optimize energy use. Meghalaya has replaced **3,000 conventional streetlights with smart LED lights**, of which about **700 are integrated with a cloud-based centralized monitoring system** through the Integrated Command and Control Centre (**ICCC)**, enabling remote switching, dimming, fault detection, and energy monitoring for efficient street lighting operations.

## Programme specific indicators

The **SEEI 2025** framework evaluates the efforts of State Designated Agencies (SDAs) and state government entities in promoting **energy efficiency (EE)** within the **municipal services sector**. This assessment covers programmes implemented individually, through interdepartmental collaborations, in partnership with the Bureau of Energy Efficiency (BEE), or under Public-Private Partnership (PPP) models. Three **programme-specific indicators** are used for this evaluation: those focusing on **energy-efficient street lighting**, those addressing **energy-efficient water and sewerage systems**, and finally, **capacity-building programmes** within the municipal services sector.

## Programme for energy-efficient street lighting

In **Group 1**, **Karnataka** is near completion, having upgraded approximately **68,000** of 76,000 existing streetlights to LEDs. **Maharashtra**, under the SLNP, installed **83,814 LEDs** in Kalyan–Dombivali alone in FY 2024–25, promoting solar LEDs and automatic timers for enhanced conservation. **Tamil Nadu** has installed over **8 lakh LEDs** across urban and town local bodies under the **Directorate of Municipal Administration, Greater Chennai Corporation**, and **Town Panchayats**, resulting in annual savings of **4.5 million kWh** and avoiding **3,195 tonnes of $Co_2$ emissions**. **Odisha** launched a state-wide programme covering **all 110 ULBs** under the **Urban Infrastructure Development Fund (OUIDF)**, along with village-level street lighting initiatives, achieving **36.22 million kWh** in annual savings. **Gujarat** installed **2,200** EE LED fixtures across four districts.

In **Group 2**, **Andhra Pradesh** achieved near-universal conversion to LEDs under **SLNP** and **Smart City initiatives**, with **CCMS/dimmable smart lights** in major areas including large-scale installations in **Nellore, Vijayawada, Kadapa**, and **APCRDA**, resulting in cumulative energy savings of about **272.91 GWh** and notable **$Co_2$ emissions** reductions, including **961 tonnes** in **Nellore** alone.

**Telangana** is converting streetlights in 12,753 Gram Panchayats, installing **1,52,498 LEDs** and **3,337 CCMS** installed so far through **TGREDCO** and **EESL**, delivering about **21 MU** in annual energy savings and an estimated **0.14–0.40 MtCO2 emission reduction per year**, with savings verified through DISCOM billing. **Rajasthan** covered all **191 ULBs** with LED replacements, including **107,328 SLNP installations**, demonstrating up to **77% energy savings** and an estimated reduction of **0.305 million tonnes of $CO_2$ emissions**.

In **Group 3**, **Kerala's** Thiruvananthapuram Corporation achieved **100% LED coverage**, upgrading about **50,000** lights, which resulted in around **9 MU** annual energy savings and **7,000 tonnes of $Co_2$ emissions reduction**. In **Group 4**, **Assam** implemented a large-scale LED programme in Guwahati with **20,667 installations**. **Goa** achieved **100% LED street lighting** under the Public Lighting Duty Act, installing **450 new LEDs** and **462 solar LEDs**, yielding total annual energy savings of about **4.38 lakh kWh**.



**Odisha has launched a statewide programme covering all 110 ULBs under OUIDF, achieving 36.22 million kWh in annual savings.**

In **Group 5**, **Chandigarh** achieved citywide LED street lighting and upgraded to smart LEDs with centralized control, recently installing 140 smart fittings that deliver **10,950 kWh** in annual savings. **Tripura** replaced **54,200** CFL streetlights with LEDs and CCMS, achieving about **50% energy savings** and ₹**3.02 crore** in annual monetary savings. **Meghalaya's** Shillong City replaced **3,000 conventional streetlights with smart LED systems**, delivering annual savings of **2.29 million kWh** and reducing **1,945 tonnes of $CO_2$ emissions**.

The details of reporting States have been presented in Table 3 – 32:

**Table 3-32: Reporting States on state programme on energy-efficient street lighting**

| | |
|---|---|
| Group 1 (>20 MTOE) | Karnataka, Maharashtra, Tamil Nadu, Odisha, Uttar Pradesh and Gujarat |
| Group 2 (>15 - 20 MTOE) | Andhra Pradesh, Telangana, Rajasthan, Haryana, Madhya Pradesh and West Bengal |
| Group 3 (>5 - 15 MTOE) | Kerala, Punjab, Jharkhand, Chhattisgarh, Bihar and Delhi |
| Group 4 (1-5 MTOE) | Assam, Goa, Himachal Pradesh, Uttarakhand, Puducherry and Jammu & Kashmir |
| Group 5 v(<1 MTOE) | Tripura, Chandigarh, Sikkim, Meghalaya and Lakshadweep |

## Programme for energy-efficient water pumping/sewerage system

In **Group 1**, **Karnataka** installed solar-based submersible and vertical split-case water pumps (50 HP) integrated with renewable power generation at a cost of ₹**182.82 lakh**. **Maharashtra**, through a MEDA project, replaced conventional pumps with EE pumps in 22 municipal councils, costing ₹**1.42 crore** and achieving **17.06 million kWh** in annual energy savings and 1,399 tonnes of $CO_2$ reduction. **Tamil Nadu**, through **TWAD Board** and **CMWSSB**, implemented EE upgrades in 228 older pump sets across 20 water supply schemes under a PPP model at an estimated cost of ₹**93.23 crore**.

In **Group 2**, **Andhra Pradesh** implemented EE water and sewage systems under **GVMC** and **APCRDA**, including **SCADA-enabled Non-Revenue Water (NRW) reduction**, **100% ultrasonic smart water meters**, and IE3 motors in STPs, achieving 353,685 kWh in energy savings and **257 tonnes of $CO_2$ reduction**. **Telangana's HMWSSB and Mission Bhagiratha** are using VFDs, SCADA-based monitoring, and progressively replacing conventional pumps with IE3+ motors to optimize pumping efficiency. Rajasthan, under **RUIDP**, is upgrading municipal water and sewerage systems with efficient pumping and new STPs, scheduled for completion by 2027.

In **Group 3, Kerala Water Authority** implemented 10 EE improvement projects in water and sewerage systems, achieving **5.1 lakh kWh** savings and reducing 418 tonnes of $CO_2$ reduction with a budget of ₹**5 crore**. In **Group 4, Assam** is implementing water supply projects in **Hailakandi** and **Karimganj** that integrate SCADA-based automation and district-metered areas to reduce water losses and improve EE, aiming to provide 135 lpcd to over 1 lakh people.

In Group 5, **Chandigarh** is implementing a **2 MLD MBR-based sewage treatment plant** at **Sukhna Lake**, costing ₹**19.90 Crore**, which is achieving **4.48 million kWh** energy savings and **4,120 tonnes of $CO_2$ reduction**. **Tripura** is retrofitting 158 municipal water pumps with BEE Star-rated EE pumps under the ICCC project, targeting a **0.558 MW reduction** in peak load.

The details of reporting States have been presented in Table 3 – 33:



**Andhra Pradesh has deployed advanced EE upgrades, including SCADA-based non-revenue water reduction and ultrasonic smart water meters in water pumping.**

**Table 3-33: Reporting States on state programme on energy-efficient water pumping/ sewerage systems**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha, Uttar Pradesh and Gujarat |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh, Telangana and Rajasthan |
| **Group 3 (>5 - 15 MTOE)** | Kerala, Punjab and Delhi |
| **Group 4 (1-5 MTOE)** | Assam |
| **Group 5 (<1 MTOE)** | Tripura, Chandigarh, Meghalaya and Ladakh |

## Programme for Capacity Building in the Municipal Services Sector

In **Group 1**, **Karnataka** successfully completed **26 capacity-building programs** across 16 Polytechnic and 10 ITI colleges, training pump/equipment technicians and students. **Maharashtra**, under MuDSM, held **two programs** for municipal officials and pump operators, focusing on EE pumps, case studies, and policy initiatives. **Tamil Nadu** trained **360 engineers annually** through its Annual Training Program on EE, smart water meters, water quality monitoring, and the O&M of water/sewerage systems, including equipment selection.

**12 States reported Capacity Building Programme in Municipal Services Sector**

In **Group 2**, **Andhra Pradesh** conducted **two workshops** in FY 2024-25, training **94 operators** and over **65 municipal officials** on sustainable urban management, EE, water/ waste management, and smart city practices. **Telangana** trained HMWS&SB engineers and O&M staff on **EE operations, pump optimization, and SCADA-based monitoring**, institutionalizing best practices with support from EPTRI and ESCI. **Rajasthan** conducted **10 programs** for **359 ULB officials** under RUSDP and AIILSG in FY 2024-25, enhancing their technical and managerial skills for improved municipal service delivery.

In **Group 3**, **Kerala's** Energy Management Centre (EMC) conducted **five capacity-building programs** involving officials from Local Self-Government Department (LSGD) and Kerala Water Authority (KWA) to enhance urban service management skills. In **Group 5**, **Chandigarh** implemented capacity-building for the municipal sector, including training on **EE, DSM, and the operation of STPs/solar systems**, with **23 students** trained by NITTTR under the ENVIS Centre.

The details of reporting States have been presented in Table 3 – 34.

**Table 3-34: Reporting States on state programme on Capacity Building in Municipal Services sector**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Uttar Pradesh and Gujarat |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh and Telangana |
| **Group 3 (>5 - 15 MTOE)** | Kerala and Bihar |
| **Group 4 (1-5 MTOE)** | Goa |
| **Group 5 (<1 MTOE)** | Chandigarh and Meghalaya |

## MUNICIPAL SERVICES SECTOR SPOTLIGHT

- **Karnataka** has modernized urban lighting by completing the large-scale **LED conversion of 68,000** of 76,000 streetlights
- **Maharashtra** has installed EE pumps in 22 municipal councils under a MEDA demonstration project, costing ₹1.42 crore, which resulted in 17.06 million kWh in annual energy savings and a 1,399 $tCO_2$ reduction.
- **Tamil Nadu** has converted over 8 lakh streetlights to LEDs across various Urban Local Bodies (ULBs) and corporations, avoiding 3,195 $tCO_2$ emission reductions and saving approximately 4.5 million kWh annually.
- **Andhra Pradesh** achieved near-universal LED street lighting adoption through SLNP and Smart City projects, including CCMS/ dimmable lights. This delivered cumulative energy savings of 272.91 GWh, with $CO_2$ reduction reaching 961 tonnes in Nellore alone.
- **Telangana** implemented LED conversion across 12,753 Gram Panchayats, installing 1,52,498 LED lights and 3,337 CCMS. This delivered 21 MU in annual energy savings and an estimated 0.14–0.40 $MtCO_2$ reduction per year.
- **Rajasthan** covered all 191 ULBs under Street Lighting National Programme, installing 107,328 LED streetlights. The program achieved up to 77% energy savings and an estimated 0.305 $MtCO_2$ reduction.
- **The Kerala Water Authority** executed 10 EE projects in water and sewerage systems, achieving 5.1 lakh kWh savings and 418 $tCO_2$ reduction. Additionally, Thiruvananthapuram achieved 100% LED coverage, with the upgrade of 50,000 streetlights delivering 9 MU in annual savings and 7,000 tonnes of $CO_2$ reduction.
- **Chandigarh** completed a citywide LED upgrade with smart control, with recent installations of 140 smart LEDs yielding 10,950 kWh in annual energy savings and a 10 tonne $CO_2$ reduction.

# 3.4 TRANSPORT

## OVERVIEW

India's transport sector is a vital economic driver facing rapidly increasing energy demand and severe environmental challenges, as approximately **90%** of its energy is sourced from fossil fuels, making it a major contributor to greenhouse gas emissions and urban air pollution. The sector's intensifying energy use, driven by urbanization and rising vehicle ownership, underscores the urgent need to improve **energy efficiency (EE)**, enhance fuel economy, and accelerate the shift to electric mobility.

The **SEEI 2025** framework evaluates transport sector EE initiatives using **9 indicators**: **6 Common Indicators** (covering policy, EE adoption, and savings) and **3 Programme-Specific Indicators** (assessing state implementation). The maximum score for the sector is **14 points**, allocated as **5 points** for common indicators and **9 points** for programme-specific indicators, with detailed results provided in Table 3-35 and comparative state progress shown in Figures 3-17 and 3-18.

**Transport Sector's intensifying energy use, driven by urbanization and rising vehicle ownership, underscores the urgent need to improve energy efficiency (EE), enhance fuel economy, and accelerate the shift to electric mobility.**

Table 3-35: Transport Sector Indicators under SEEI 2025

| S. No | Indicator | Max Score | Scoring Criteria |
|---|---|---|---|
| **Policy** | | | |
| 1 | State transport policy or guidelines to advocate fuel efficiency | 0.25 | |
| | State/ UT has a transport policy/guideline to advocate fuel efficiency. | 0.25 | Yes = 0.25, else = 0 |
| **Adoption of EE measures** | | | |
| 2 | Demand Side Incentives to consumers | 1.5 | |
| | State/ UT provides subsidies to consumers for the purchase of private 2-wheeler/ 3-wheeler/ 4-wheeler/ / e-Cycles/ Strong Hybrid Vehicle. | 0.5 | Yes= 0.5, else= 0 |
| | State/ UT provides subsidy to consumers on interest rates for purchase of EVs. | 0.5 | Yes= 0.5, else= 0 |
| | Number of people that have applied and received incentive for purchasing EVs. | 0.5 | Data provided= 0.5, else= 0 |
| 3 | Adoption of electric/ hybrid vehicles | 1.5 | |
| | Percentage of the targets under the EV policy for transport fleet electrification (bus fleet and government vehicle fleet) achieved in the State/ UT. | 1 | Percentage of target achieved in Bus Fleet= 0.5, else = 0<br>Percentage of target achieved in Govt. Vehicle Fleet= 0.5, else = 0 |
| | Penetration of hybrid and electric vehicles in transport in FY 2024-25 at State/ UT level. | 0.5 | >0% to <=10%: 0.125; >10% to <=20%: 0.25; >20% to <=30%: 0.375; >30%: 0.5 |
| **Adoption of EE measures** | | | |
| 4 | Availability of charging infrastructure for electric mobility | 1.25 | |
| | State/ UT has provided guidelines/ mandate for charging infrastructure in the commercial and residential buildings | 0.5 | Guidelines/ Mandate for Commercial Buildings = 0.25, else = 0<br>Guidelines/ Mandate for Residential Buildings = 0.25, else = 0 |
| | Ratio of Charging Stations per EV in the State/ UT | 0.75 | <10%: 0.25; 10% - 20%: 0.5; >20% = 0.75 |
| 5 | Adoption of biofuels in the state | 0.25 | |
| | Proportion of ethanol blended with petrol (sales) in the State/ UT. | 0.25 | Data Provided = 0.25, else= 0 |
| **Energy savings** | | | |
| 6 | Fuel efficiency of SRTC fleet | 0.25 | |
| | Fuel efficiency achieved by SRTC in the state in terms of km/litre. | 0.25 | Data provided=0.25, else=0 |
| **State Programme** | | | |
| 7 | Programmes for energy-efficient public transport | 4 | |
| | Does the state have programmes for energy-efficient public transport in FY 2024-25? | | |
| | What is the objective of the program? (2 sentences) | 0.25 | Objective of the programme = 0.25; else = 0 |
| | What is the target set under the program? | 0.25 | Target set under the programme = 0.25; else = 0 |
| | What is the timeline? | 0.25 | Timeline = 0.25; else = 0 |
| | How much budget has been allocated & utilized to date | 0.5 | Budget allocated= 0.25<br>Budget utilized= 0.25 |

| S. No | Indicator | Max Score | Scoring Criteria |
|---|---|---|---|
| | Who is running the program? (list all, e.g. SDA, state dept., industry association, PPP etc.) | 0.25 | Entities running the Programme = 0.25; else = 0 |
| | What is the progress to date? | 0.5 | Progress to date = 0.5; else = 0 |
| | What are the energy savings? (deemed or measured) | 1 | Energy savings (deemed or measured) = 1; else = 0 |
| | How much emissions were avoided? (based on energy savings) | 1 | Avoided emissions = 1; else = 0 |
| 8 | Programmes for energy-efficient private transport | 4 | |
| | Does the state have programmes for energy-efficient private transport in FY 2024-25? | | |
| | What is the objective of the program? (2 sentences) | 0.25 | Objective of the programme = 0.25; else = 0 |
| | Programmes for energy-efficient private transport | 4 | |
| | What is the target set under the program? | 0.25 | Target set under the programme = 0.25; else = 0 |
| | What is the timeline? | 0.25 | Timeline = 0.25; else = 0 |
| | How much budget has been allocated & utilized to date | 0.5 | Budget allocated= 0.25<br>Budget utilized= 0.25 |
| | Who is running the program? (list all, e.g. SDA, state dept., industry association, PPP etc.) | 0.25 | Entities running the Programme = 0.25; else = 0 |
| | What is the progress to date? | 0.5 | Progress to date = 0.5; else = 0 |
| | What are the energy savings? (deemed or measured) | 1 | Energy savings (deemed or measured) = 1; else = 0 |
| | How much emissions were avoided? (based on energy savings) | 1 | Avoided emissions = 1; else = 0 |
| 9 | Capacity Building Programmes in transport sector | 1 | |
| | Does the state have programmes for capacity building in transport sector in FY 2024-25? | | |
| | What is the objective of the programme? (2 sentences) | 0.25 | Objective of the programme = 0.25; else = 0 |
| | What is the target set under the program? | 0.25 | Target set under the programme = 0.25; else = 0 |
| | Who is running the program? | 0.25 | Entities running the Programme = 0.25; else = 0 |
| | What is the progress to date? | 0.25 | Progress to date = 0.25; else = 0 |

Figure 3 – 17 shows the TFEC group-wise scores for the Transport Sector in SEEI 2025:

**Figure 3-17: TFEC group-wise SEEI 2025 Transport Sector Score**

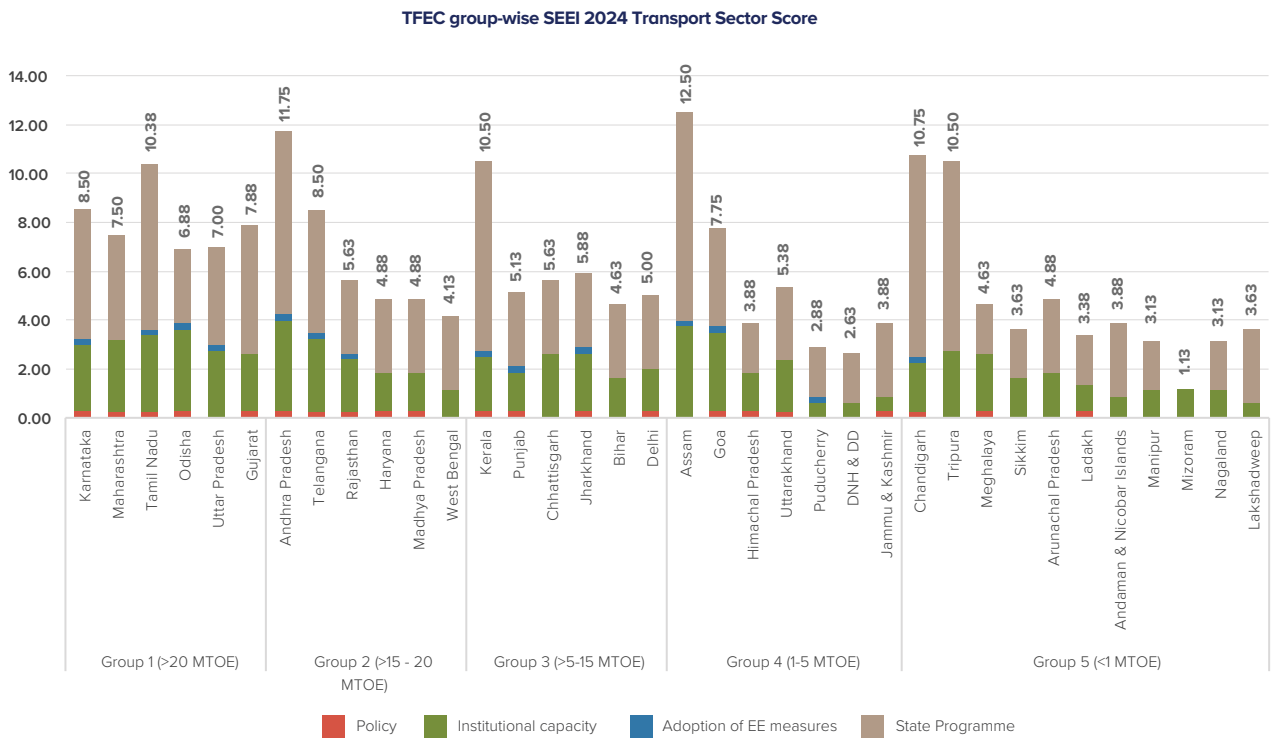
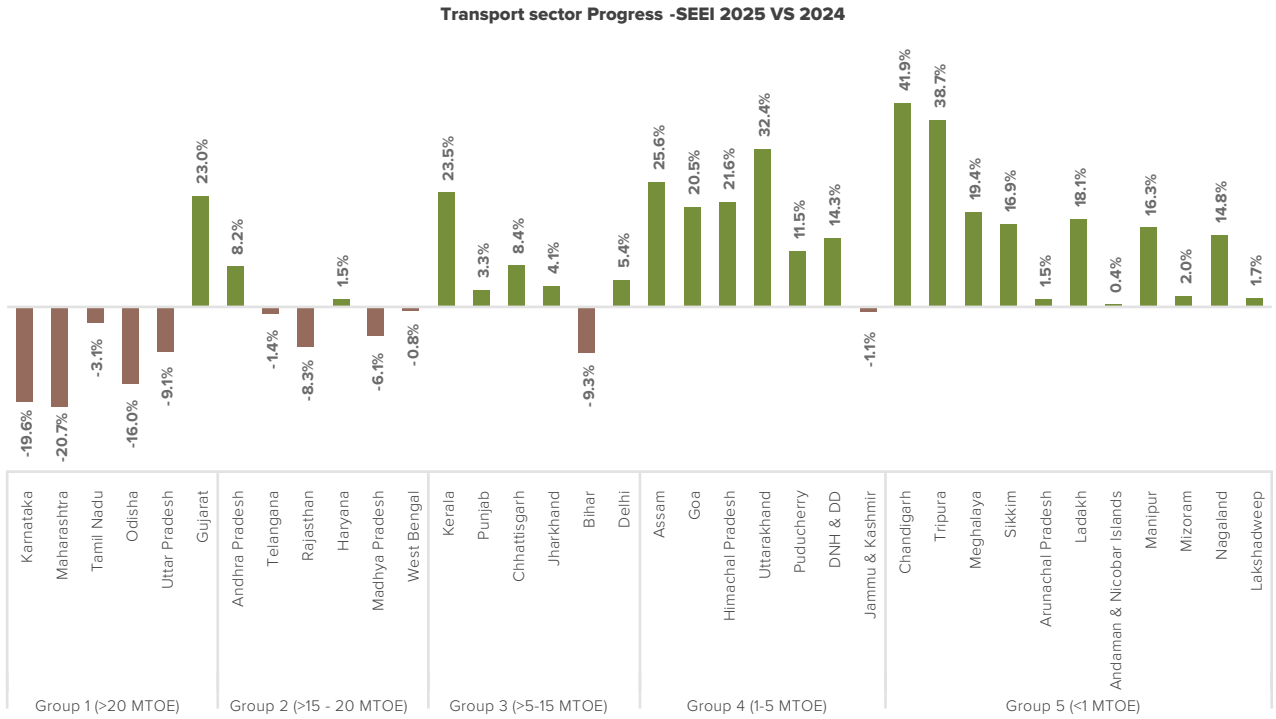



Figure 3 – 18 depicts the progress of the Transport Sector for each state in SEEI 2025 in comparison with SEEI 2024.

**Figure 3-18: TFEC group-wise transport sector state progress – SEEI 2025 vs SEEI 2024**



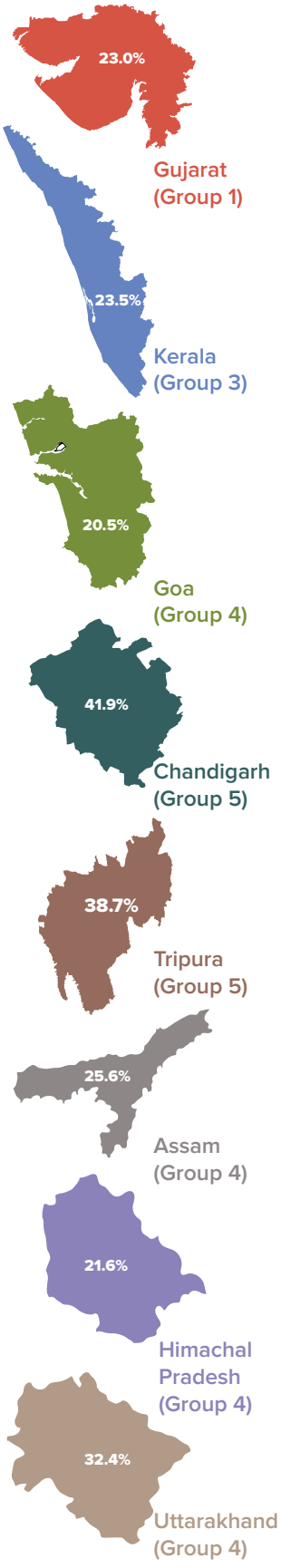
## SEEI 2025 TRANSPORT SECTOR SCORE HIGHLIGHTS

**Assam** emerged as the overall top scorer in the Transport Sector in **SEEI 2025** with a score of **12.5**, followed by **Andhra Pradesh (11.75)**, **Chandigarh (10.75)**, and **Kerala and Tripura** tied at **10.5**.

In **Group 1**, **Tamil Nadu** ranked first despite a 3% score drop, while **Karnataka** secured second place despite a significant 20% drop. **Group 2** was led by **Andhra Pradesh**, which showed a **8%** improvement, with **Telangana** ranking second, experiencing a 2% score drop. In **Group 3**, **Kerala** led with a remarkable **24%** improvement, followed by **Jharkhand**. **Group 4** saw **Assam** as the top scorer and **Goa** securing second place with outstanding improvements of **26%** and **21%**, respectively. Finally, in **Group 5**, **Chandigarh** was the top scorer with a notable **42%** improvement, and **Tripura** secured the second spot with a significant gain of **39%**.

Additionally, Eight States—Gujarat, Assam, Kerala, Goa, Uttarakhand, Chandigarh, Tripura and Himachal Pradesh. Demonstrated exceptional progress, achieving over 20% score increases compared to the previous evaluation. And have been presented in Figure 3-19.

**Figure 3-19 : States with more than 20% increase in Transport Sector scores in comparison to SEEI 2024.**




## COMMON INDICATORS

### Policy

A total of 20 States have reported implementing specific transport policies or guidelines that are focused on promoting fuel efficiency. The detailed list of these reporting States is presented in Table 3-36.

**Table 3-36: Reporting States on Transport Policy/ Guidelines to advocate fuel efficiency**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha and Gujarat |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh, Telangana, Rajasthan, Haryana and Madhya Pradesh, |
| **Group 3 (>5 - 15 MTOE)** | Kerala, Punjab, Jharkhand and Delhi |
| **Group 4 (1-5 MTOE)** | Goa, Himachal Pradesh, Uttarakhand and Jammu & Kashmir, |
| **Group 5 (<1 MTOE)** | Sikkim and Meghalaya |

### Adoption of EE Measures

In **Group 1, Karnataka** offers comprehensive demand-side incentives for EV adoption, including **full exemption from vehicle taxes, fees, and permit charges across all EV categories**. These measures have supported the registration of **85,739 pure EVs, 8,644 EV hybrids**, and **88,081 battery-operated EVs**, significantly lowering consumer ownership costs. **Maharashtra's EV Policy 2021** offers demand-side incentives of **₹5,000/kWh** across segments, capped between **₹10,000 (2W)** and **₹20 lakh (e-buses)**, alongside preferential loan rates. This has supported the registration of **4.70 lakh EV four-wheelers, 6,404 e-rickshaws, and 86,858 pure EVs**. **Tamil Nadu** promotes adoption through subsidies for retrofitting commercial 2W/3W (**20–25% cost reduction**), **interest subvention on EV loans**, and the **Amma Two-Wheeler Scheme** offering up to **50% subsidy** for working women. **Odisha's EV Policy 2021** offers substantial direct purchase subsidies (up to **₹20,000** for 2W, **₹1.5 lakh** for LMV), a **5% interest subvention** for the public, and **100% interest-free loans** for state employees. As of October 2025, over **1.59 lakh EV buyers** have received **₹333.71 crore** in subsidies. **Uttar Pradesh** utilizes SGST reimbursement, exemption from registration fees/road tax, capital subsidies, and interest subsidies, alongside incentives like tariff capping and land concessions for charging infrastructure. **Gujarat** offers purchase subsidies for students (e-2W) and organizations

(e-3W/e-rickshaws) and reduced the motor vehicle tax for EVs from 6% to 1%. In FY 2025–26 (till Oct), **38,725 EVs** benefited from ₹**85.82 crore** in tax benefits, contributing to a total EV stock of **2.96 lakh vehicles**.

**Andhra Pradesh** in **Group 2** provides **100% road tax exemption** and purchase incentives of **5–10% of the ex-showroom price** under its Sustainable Electric Mobility Policy, with enhanced benefits linked to vehicle scrappage. These incentives resulted in **56,420 EVs** (including battery-operated vehicles, hybrids, and pure EVs) being sold in FY 2024–25. **Telangana** offers **100% exemption from road tax and registration fees** for EVs until December 2026. Additionally, it provides concessional EV loan schemes for state power utility employees through TGREDCO. These incentives have facilitated large-scale adoption, with **72,806 EVs** receiving life tax exemption. **Rajasthan** provides a comprehensive package, including **100% exemption from road tax, green tax, and permits**, along with **100% SGST reimbursement**. The state also offers an upfront purchase subsidy of ₹**30,000 – ₹50,000** for Battery Electric Vehicles (BEVs), supported by a dedicated ₹**200 crore fund** targeting up to 1.6 lakh eligible EV buyers, in addition to a **5% interest subsidy** on enterprise loans.



**Telangana offers 100% exemption from Road Tax and Registration Fees for EV purchase until December 2026.**

In **Group 3**, **Kerala** provides a **50%** reduction in motor vehicle (road) tax for EVs for the first five years, along with a ₹**30,000 purchase subsidy** for electric three-wheelers. Around **1,000** beneficiaries have received incentives for EV purchases so far. **Jharkhand** offers direct purchase subsidies for private EVs across 2W, 3W, 4W, e-cycles and strong hybrids, along with interest subsidies on EV loans. About **1.15 lakh** consumers have applied for and received EV purchase incentives. **Assam** in **Group 4** is facilitating adoption with a **five-year exemption from registration charges and road tax** for 2, 3, and 4-wheeler EVs, alongside a **100% waiver on parking charges**. The state also offers a **retro fitment incentive of 15% (up to ₹15,000)** for three-seater auto-rickshaws, and has demonstrated commitment by launching **200 electric buses and 100 e-bikes**. Under the **Goa Electric Mobility Promotion Policy**, the state provides **direct purchase incentives** for new 2W/3W/4W EVs and a **5% interest subvention** on loans for e-autos through CESL. So far, **7,327 consumers** have applied, with **5,819** availing state incentives for EV purchases.

States in **Group 5** utilize direct subsidies, tax exemptions, and tariff support to encourage Electric Vehicle (EV) adoption. In **Chandigarh**, the **Renewable Energy & Science & Technology (REST) Department** serves as the nodal agency for EV purchase subsidies under the UT's EV policy. A total of **5,809 applicants** have received incentives amounting to ₹**3.63 crore**, though there is currently no separate interest subsidy scheme. **Tripura** provides a **tariff subsidy** along with a **25% exemption on applicable road tax** for EVs during the policy period. These demand-side incentives supported the registration of **9,851 EVs** in FY 2024–25. Under the **Meghalaya EV Policy 2021**, the state offers **kWh-based purchase subsidies** for e-2W, e-3W, e-4W, e-buses, and strong hybrids, with subsidies ranging from ₹**4,000–₹10,000 per kWh**. Furthermore, the state provides a **full waiver of road tax and registration fees**, alongside additional support like **preferential electricity tariffs**, to boost early-stage EV adoption.



**10**

**States have reported providing subsidy on interest rates for EV purchase to consumers.**

The details of reporting States on incentives on EVs and subsidies on interest rates for EV purchase have been presented in Table 3–37.

**Table 3-37: Reporting States on EV Incentives and Subsidy on Interest Rates for EV Purchase**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka₹, Maharashtra₹, Tamil Nadu₹, Odisha₹, Uttar Pradesh₹ and Gujarat₹ |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh₹, **Telangana**₹, **Rajasthan**, Haryana, **Madhya Pradesh** and West Bengal, |
| **Group 3 (>5 - 15 MTOE)** | Kerala₹, Punjab, **Jharkhand**₹, **Chhattisgarh**₹, Bihar and Delhi₹ |

| | |
|---|---|
| **Group 4 (1-5 MTOE)** | **Assam**₹, **Goa**₹, Himachal Pradesh₹ and **Uttarakhand** |
| **Group 5 (<1 MTOE)** | Chandigarh₹, **Tripura**₹, **Meghalaya**₹, Sikkim, Andaman & Nicobar Islands, Arunachal Pradesh₹, Ladakh and Manipur |

Note: The States marked in bold reported in the table above have reported providing subsidies on Interest Rates for EV purchases. The States with "₹" have provided information on number of people that have applied and received incentives for purchasing EVs.

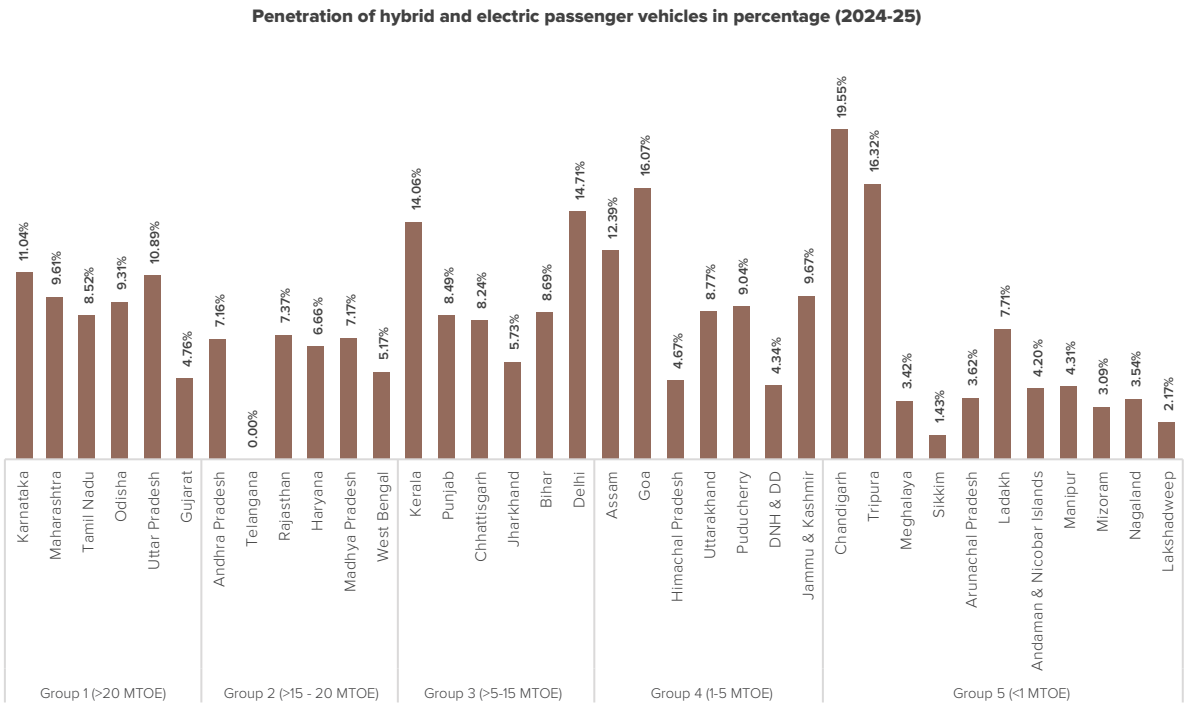


**Chandigarh has the highest percentage of hybrid and electric vehicle penetration in the fiscal year 2024–25.**

The analysis of hybrid and electric vehicle penetration among registered passenger vehicles reveals clear and differentiated trends across groups. In **Group 1**, **Karnataka** recorded the highest penetration rate at **11%**, closely followed by **Uttar Pradesh** at **10.9%. Group 2** was led by **Rajasthan** with a penetration rate of **7.4%**, while **Andhra Pradesh** and **Madhya Pradesh** shared the second position at **7.2%** each. In **Group 3**, **Delhi** emerged as the frontrunner with a penetration rate of **14.7%**, followed by **Kerala** at **14.1%**. In **Group 4**, **Goa** achieved the highest penetration rate at **16.1%**, with **Assam** ranking second at **12.4%**. Notably, **Group 5** registered the strongest performance overall, with **Chandigarh** topping all groups at a penetration rate of **19.6%**, followed by Tripura at **16.3%**.

The penetration of hybrid and electric passenger vehicles continues to grow, with FY 2024-25 registration rates derived from the **VAHAN dashboard** reflecting a clear shift toward sustainable mobility solutions. The penetration of hybrid and electric vehicles among registered passengers is shown in Figure 3-20 below.

**Figure 3-20: Penetration of hybrid and electric passenger vehicles (%)**




Source: VAHAN Portal, MoRTH – GoI: https://vahan.parivahan.gov.in/vahan4dashboard/vahan/vahan/view/reportview.xhtml

Note: Data is not available for Telangana

Guidelines or mandates for installing Electric Vehicle (EV) charging infrastructure have been introduced by **23 States** for commercial buildings and by **13 States** specifically for residential buildings.

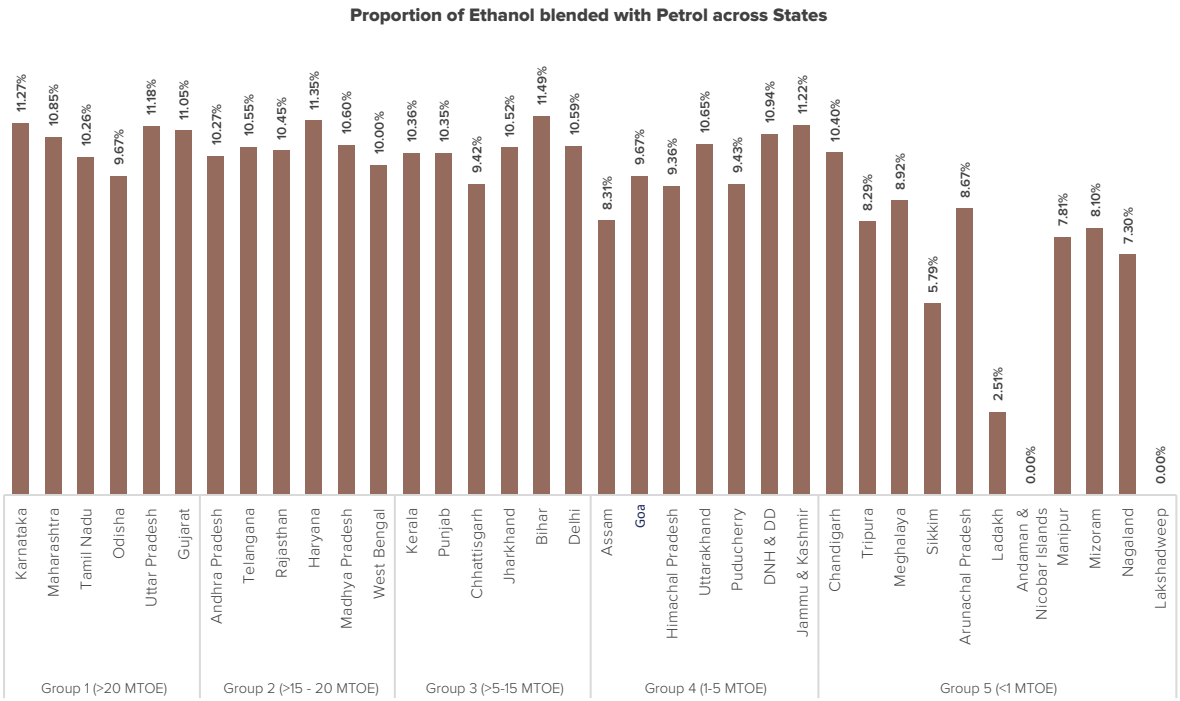
Among all groups, **Arunachal Pradesh, Sikkim, and Nagaland** have excelled in implementing these mandates. The remaining States are currently in the initial to moderate stages of implementing their charging infrastructure policies. The specific ratio of charging infrastructure units per EV within each state is detailed in Table 3–38.

**Table 3-38: Ratio of Charging Infrastructure per EV for all States**

| States | No. of EV | No. of operational public charging infrastructure | Ratio |
|---|---|---|---|
| Andaman & Nicobar Islands | 416 | 4 | 0.96% |
| Andhra Pradesh | 180089 | 614 | 0.34% |
| Arunachal Pradesh | 317 | 42 | 13.25% |
| Assam | 279245 | 307 | 0.11% |
| Bihar | 403057 | 388 | 0.10% |
| Chandigarh | 23066 | 14 | 0.06% |
| Chhattisgarh | 158138 | 290 | 0.18% |
| Dadra & Nagar Haveli and Daman & Diu | 1363 | | 0.00% |
| Delhi | 444202 | 1951 | 0.44% |
| Goa | 36009 | 155 | 0.43% |
| Gujarat | 315185 | 1007 | 0.32% |
| Haryana | 165718 | 793 | 0.48% |
| Himachal Pradesh | 6853 | 112 | 1.63% |
| Jammu & Kashmir | 38150 | 153 | 0.40% |
| Jharkhand | 97106 | 277 | 0.29% |
| Karnataka | 657149 | 5871 | 0.89% |
| Kerala | 302347 | 1288 | 0.43% |
| Ladakh | 99 | 1 | 1.01% |
| Lakshadweep | 123 | 1 | 0.81% |
| Madhya Pradesh | 332223 | 942 | 0.28% |
| Maharashtra | 830189 | 3836 | 0.46% |
| Manipur | 2495 | 50 | 2.00% |
| Meghalaya | 1719 | 43 | 2.50% |
| Mizoram | 1414 | 13 | 0.92% |
| Nagaland | 171 | 36 | 21.05% |
| Odisha | 207155 | 534 | 0.26% |
| Puducherry | 14147 | 42 | 0.30% |
| Punjab | 133832 | 595 | 0.44% |
| Rajasthan | 418618 | 1265 | 0.30% |
| Sikkim | 49 | 11 | 22.45% |
| Tamil Nadu | 459089 | 1492 | 0.32% |
| Telangana | 72806 | 976 | 1.34% |
| Tripura | 34911 | 53 | 0.15% |
| Uttar Pradesh | 1404448 | 2099 | 0.15% |
| Uttarakhand | 91843 | 201 | 0.22% |
| West Bengal | 176485 | 785 | 0.44% |

Source: EV Yatra Portal – Bureau of Energy Efficiency, MoP – GoI: https://evyatra.beeindia.gov.in/state-govt/ To advance low-carbon development in the transport sector, India has prioritized the expanded use of biofuels, particularly by promoting higher levels of ethanol blending in petrol. This practice has been adopted by 34 States, with 19 States reporting ethanol blending rates of 10% or higher. Bihar leads this effort, achieving a blending rate of 11.5%. Figure 3-21 provides a visual illustration of the proportion of ethanol blending in petrol across the various States.

**Figure 3-21: Proportion of Ethanol blended Petrol (%) across States (FY 2022-23)**




Source: Indian Petroleum & Natural Gas Statistics 2023-24: MoPNG Economic & Statistics Division – GoI - Table VII.3: State-wise Percentage of Ethanol Blended with Petrol (Sales) by CPSEs

## Energy Savings

Fuel efficiency standards directly influence both the carbon emissions per litre of fuel and the overall vehicle mileage. To achieve mandated $CO_2$ reduction targets and accelerate the adoption of alternative fuel vehicles, implementing strong corporate-level fuel efficiency standards is essential. While the introduction of Bharat Stage VI norms has tightened emission regulations, measures specifically targeting the energy efficiency and the overall carbon footprint of vehicles are currently considered inadequate. Details regarding the reporting States in this context are presented in Table 3–39.

**Table 3-39: Reporting States on Fuel efficiency of SRTCs**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka (4.71 Km/Litre), Tamil Nadu (5.18 Km/Litre), Odisha (4.25 Km/Litre), Uttar Pradesh (5.44 Km/Litre) |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh (5.2 Km/Litre), Telangana (5.2 Km/Litre), Rajasthan (5.12 Km/Litre) |
| **Group 3 (>5 - 15 MTOE)** | Kerala (4.8 Km/Litre), Punjab (4.8 Km/Litre), Jharkhand (7.1 Km/Litre) |
| **Group 4 (1-5 MTOE)** | Assam (5 Km/Litre), Goa (3.91 Km/Litre), Puducherry (4.38 Km/Litre) |
| **Group 5 (<1 MTOE)** | Chandigarh (3.61 Km/Litre), Tripura (5.5 Km/Litre) |

# PROGRAMME SPECIFIC INDICATORS

## Programme for energy-efficient public transport

In **Group 1**, **Karnataka** notified the **Clean Mobility Policy 2025–30,** targeting 100% public transport electrification by 2030, supported through the **PM e-Drive scheme** in Bengaluru. In FY 2024–25, **1,616 KSRTC/BMTC** buses achieved **28.37 MU** in energy savings and reduced $CO_2$ emissions by **14,448 tonnes**. **Maharashtra** is accelerating

EE public transport under its **revised EV Policy (2025),** with a sanctioned outlay of ₹**930 crore** for large-scale deployment of electric buses by various urban transport corporations. The state has already inducted over **5,050 e-buses** (150+ under PMPML and over 4,900 through BEST), contributing to estimated annual savings of **1,109 GWh** and **14,803 tCO$_2$ reduction**. **Tamil Nadu** is deploying 1,725 electric buses under **KfW** and **World Bank**-supported projects for MTC/STUs, with a phased rollout by 2026. This transition is expected to save **54.38 lakh litres of diesel** and reduce CO$_2$ emissions by about **1,45,730 tonnes** annually.

Under **Group 2**, **Andhra Pradesh** aims to fully electrify the APSRTC fleet by 2029 under its Sustainable Electric Mobility Policy. The state has approved 750 e-buses, with 300 more under tendering, and the phased induction of 1,151 e-buses is expected to save approximately **276.16 lakh litres of diesel** annually, resulting in **6.94 GWh energy savings** and **1,871 tonnes of CO$_2$ reduction**. **Telangana** is enhancing energy efficiency in public transport through TGSRTC's Fuel Conservation Programme, which has achieved **5.2 kmpl** via driver training and operational optimization. The state currently operates 735 e-buses, achieving an annual 60,856 tonnes of CO$_2$ reduction, with plans for an additional 275 e-buses that are projected to further reduce CO$_2$ emissions by **14,426 tonnes** per year.

**35**
**States have reported programmes on EE in Public Transport**

In **Group 3**, **Kerala** promotes energy-efficient transport by offering subsidies and tax reductions for electric auto-rickshaws and EVs. This is estimated to result in annual savings of **1.2 million litres of fuel** and a **1,008 tonne CO$_2$ reduction**. **Assam** in **Group 4** is rapidly scaling up energy-efficient public transport under its **EV Policy 2021**. It has already deployed 256 electric buses and has 100 more planned under **PM e-Bus Sewa**, supported by ₹**3 crore** for charging infrastructure. The state aims for **100% electrification of public buses** by 2030, which is projected to deliver annual savings of **3.8 million litres of diesel** and avoid about **9,800 tonnes of CO$_2$ emissions**. **Goa** is strengthening its EE public transport through electric bus operations under **PM e-Bus Sewa** and Green Urban Mobility Initiatives; KTCL currently operates 17 e-buses in Panaji, with 100 e-buses each selected for induction in both Panaji and Margao.

In **Group 5**, **Chandigarh** is promoting energy-efficient public transport by deploying 80 electric buses under the GCC mode, with plans for 500 more by 2026 under FAME-II. Coupled with city-wide Intelligent Traffic Management Systems and automated signals, these measures have resulted in significant savings of **3.72 million litres of diesel** and an emission reduction of over **9,800 tonnes of CO$_2$**. **Tripura** is promoting energy-efficient transport through its **Electric Vehicle Policy 2022**, which targets 60,000 EVs in five years with a **25% road tax incentive**. By FY 2024–25, 5,684 EVs were registered, achieving about **2,493 kWh** in energy savings and nearly a **30%** emission reduction.

The details of reporting States have been presented in Table 3 – 40.

**Table 3-40: Reporting States on State Programme on Energy-Efficient Public Transport**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha, Uttar Pradesh and Gujarat |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh, Telangana, Rajasthan, Haryana, Madhya Pradesh and West Bengal |
| **Group 3 (>5 - 15 MTOE)** | Kerala, Punjab, Jharkhand, Chhattisgarh, Bihar and Delhi |
| **Group 4 (1-5 MTOE)** | Assam, Goa, Himachal Pradesh, Uttarakhand, Puducherry, Jammu & Kashmir, and Dadra & Nagar Haveli and Daman & Diu |
| **Group 5 (<1 MTOE)** | Tripura, Chandigarh, Sikkim, Meghalaya, Andaman & Nicobar Islands, Arunachal Pradesh, Ladakh, Manipur, Lakshadweep and Nagaland |

## Programme for energy-efficient private transport

In **Group 1**, **Karnataka** leads nationally in promoting energy-efficient private transport, having commissioned **5,960 EV charging stations** across the state through **BESCOM** and **PPP models**, supported by ₹**35 crore** and **Green Cess funding**. This initiative has enabled approximately **493 MU** of deemed energy savings and reduced around **1,17,906 MT of $CO_2$ emissions**. **Maharashtra** is advancing energy-efficient private transport through **concessional residential charging tariffs notified by MERC** and financial incentives for EV charging infrastructure under its **EV Policy 2021**, backed by a total outlay of ₹**930 crore**. With **9%** of new vehicle registrations already electric, the programme has delivered about **1,147.8 GWh of energy savings** and **reduced emissions by 0.67 MT$CO_2$**. **Gujarat**, under its **EV Policy**, has driven large-scale adoption of private EVs through **registration-linked subsidies**, resulting in over **95,000 electric two-wheelers** (87% of the target) and about **7,600 electric four-wheelers** (38% of the target), along with additional uptake of three-wheelers through **GEDA schemes**—significantly accelerating the shift towards energy-efficient private transport.

**Andhra Pradesh** under **Group 2**, is strengthening energy-efficient private transport through its **Sustainable Electric Mobility Policy** by deploying **9 pilot EV charging hubs** under a **PPP model with APEPDCL**, supported by an investment of ₹**3.5 crore**. One hub is operational and two are under development, enabling annual energy savings of about **2.88 lakh kWh** and avoiding nearly **36 tonnes of $CO_2$ emissions**. **Telangana** is promoting energy-efficient private transport through **TGREDCO-led EV incentives**, FAME support, and non-motorized mobility initiatives under the **Smart Cities** and **AMRUT missions**, complemented by private EV leasing and sharing platforms. By March 2025, the state had recorded over **2.59 lakh EV registrations**, delivering deemed energy savings of approximately **66,400 TOE per year** and avoiding about **1.75 lakh tonnes of $CO_2$ emissions** annually.

Under **Group 3**, **Kerala** through the **Energy Management Centre (EMC)** in partnership with **CESL** and **Kudumbashree**, has launched the **S.T.R.E.E.** initiative under the **Go Electric campaign** to promote energy-efficient private transport among rural women entrepreneurs. The programme involves the distribution of **600 electric cycles** with a budget of ₹**75.6 lakh** and is expected to save about **133 litres** of petrol annually while reducing nearly **151.2 tonnes of $CO_2$ emissions** per year.

**Assam** in **Group 4**, is promoting energy-efficient private transport through ambitious EV adoption targets, including **10,000 private EVs**, installation of charging stations in all district headquarters, and capacity-building of transport personnel through state-wide training programmes. These measures support a long-term transition away from diesel vehicles and are expected to help **avoid a projected 63.7% rise in fleet-related $CO_2$ emissions by 2033**. **Goa** has **exempted** electric vehicles from **motor vehicle tax** and **registration fees since 2018** and is installing public EV charging stations at petrol pumps across the state to encourage private EV adoption. Together, these measures aim to promote clean, non-polluting transport and reduce greenhouse gas emissions.

**11**
**States have reported programmes on EE in Private Transport**

In **Group 5**, **Chandigarh** is advancing energy-efficient private transport through mandatory **fuel-efficiency training for aggregators**, the deployment of **app-based electric cab services**, state-wide EV charging infrastructure, and a large public bike-sharing system. These initiatives are estimated to save about **3.8 lakh litres of fuel** and reduce approximately **1,200 tonnes of $CO_2$ emissions** annually. **Tripura** is promoting energy-efficient private transport through an **incentive-based EV policy** offering a **25% road-tax rebate** and targeting **60,000 EVs** over five years, with **10%** electrification across two-wheelers, three-wheelers, four-wheelers, and buses. By FY 2024–25, **35,684 EVs** had been registered, supporting the state's transition to cleaner and more energy-efficient mobility.

The details of reporting States have been presented in Table 3 – 41.

**Table 3-41: Reporting States on State Programme on Energy-Efficient Private Transport**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu and Gujarat |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh and Telangana |
| **Group 3 (>5 - 15 MTOE)** | Kerala |
| **Group 4 (1-5 MTOE)** | Assam and Goa |
| **Group 5 (<1 MTOE)** | Tripura and Chandigarh |

## Capacity Building Programmes in the Transport Sector

In **Group 1**, **Karnataka** conducted stakeholder workshops, trainings, and apprenticeships focused on EV charging infrastructure, successfully completing a multi-stakeholder program involving manufacturers and charge point operators. **Tamil Nadu** implemented large-scale capacity-building under the **KfW project**, training **48,062 STU employees** in 2024–25 on sustainable and electric mobility, including advanced training for drivers and decision-makers. **Odisha** conducted EV road shows and awareness programs, reaching over **1,000 people**, and trained **91,310 HMV drivers** in defensive driving and fuel efficiency since April 2023, exceeding training targets. **Uttar Pradesh** trained over **2,133 drivers** and transport staff on EE driving practices, successfully completing the targeted programs. **Gujarat** organized awareness workshops and roadshows under **BEE's 'Go Electric' campaign** to promote EV adoption.

In **Group 2**, **Andhra Pradesh** trained **2,082 drivers, mechanics, and officials** on diesel fuel efficiency, e-bus operations, and EV charging infrastructure in 2024–25. **Telangana** conducted **20 workshops** and **training programs** through various agencies, focusing on **fuel efficiency, EVs, intelligent transport systems, and efficient driving practices,** emphasizing **KMPL benchmarking and OEM-led sessions**. **Assam** in **Group 4** trained **420 personnel** through **35 workshops on EV operations, maintenance, and sustainable mobility**, against targets of **500 personnel** and **50 workshops**. **Goa** organized a validation workshop on its State Energy Efficiency Action Plan (SEEAP) to finalize plans for capacity building supporting large-scale EV transition, charging infrastructure, and alternative fuels.

In **Group 5**, **Chandigarh** conducted capacity-building programs to train officials and stakeholders on fuel-efficient practices and operational improvements in the transport sector. **Tripura's EV Policy 2022** promotes awareness and adoption, targeting **12,000 EVs** per year, with **35,684 EVs** registered by FY 2024–25.

The details of reporting States have been presented in Table 3 – 42.

**Table 3-42: Reporting States on State Programme on Capacity Building in Transport Sector**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Tamil Nadu, Odisha, Uttar Pradesh and Gujarat |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh and Telangana |
| **Group 3 (>5 - 15 MTOE)** | |
| **Group 4 (1-5 MTOE)** | Assam and Goa |
| **Group 5 (<1 MTOE)** | Tripura and Chandigarh |

## TRANSPORT SECTOR SPOTLIGHT

- **Karnataka** is targeting 100% electrification of public transport by 2030, During FY 2024–25, achieved 28.37 MU energy savings and reduced 14,448 MT of $CO_2$ emissions.
- **Maharashtra** has inducted 150+ e-buses under PMPML and over 4,900 e-buses, contributing to estimated savings of 1,109 GWh and 14,803 $tCO_2$ reduction annually.
- **Tamil Nadu's** large-scale deployment of 1,725 electric buses is expected to save 54.38 lakh litres of diesel annually and reduce about 1,45,730 metric tonnes of $CO_2$ emissions per year.
- **Andhra Pradesh's** induction of 1,151 e-buses is expected to save about 276.16 lakh litres of diesel annually, resulting in 6.94 GWh energy savings and 1,871 tonnes of $CO_2$ reduction.
- **Telangana** operates 735 e-buses achieving 60,856 tonnes of $CO_2$ reduction annually, with 275 additional e-buses planned, adding a further 14,426 tonnes of $CO_2$ reduction per year.
- **Kerala** promotes energy-efficient transport, leading to estimated annual savings of 1.2 million litres of fuel and 1,008 tonnes of $CO_2$ reduction.
- **Assam** is delivering annual savings of 3.8 million litres of diesel and avoiding about 9,800 tonnes of $CO_2$ emissions.
- **Chandigarh's** deployment of 80 electric buses, these measures have resulted in significant diesel savings of 3.72 million litres and over 9,800 tonnes of $CO_2$ emission reduction.
- **Tripura** is targeting 60,000 EVs in five years with 25% road tax incentive support. By FY 2024–25, 5,684 EVs were registered, achieving about 2,493 kWh energy savings and nearly 30% emission reduction.

# 3.5 AGRICULTURE

## OVERVIEW

India's agriculture sector, a cornerstone of the national economy, faces significant energy consumption for irrigation, processing, and storage, often relying on inefficient technologies, Improving **energy efficiency (EE)** through the implementation of **solar-powered pumps, energy-efficient motors, and micro-irrigation systems** is crucial for lowering operational costs, minimizing environmental impact, and ensuring reliable energy access for smallholder farmers.

The **PM-KUSUM scheme** is spearheading this transition; as of late 2024 and early 2025 data, over **10 lakh (1 million) solar pumps** have been installed or solarized, including approximately **8.53 lakh** standalone pumps against a target of **14 lakh**, and **80,845** solarized grid-connected pumps against a target of 35 lakh. The scheme aims to add a total solar capacity of **34,800 MW by March 2026**.

The **SEEI 2025** framework assesses EE initiatives in this sector using **four indicators** (two common for policy/adoption and two programme-specific for implementation). The maximum score is **Seven (7)**, detailed in **Table 3-43**, with state scores and comparative progress shown in **Figures 3-22 and 3-23**.

**The PM-KUSUM scheme is driving the energy transition in the agriculture sector, with over one million solar pumps installed or solarized as of late 2024.**

**Table 3-43: Agriculture sector indicators under SEEI 2025**

| S. No | Indicator | Max Score | Scoring Criteria |
|---|---|---|---|
| **Policy** | | | |
| 1 | Policy for encouraging EE and climate-friendly agriculture and allied sector practices in the state | 1.5 | |
| | State/UT has notified policy/ guidelines/ regulations/ scheme to incorporate EE/ EC measures in the development of the following:<br>Integrated cold storage infrastructure<br>Integrated water and energy savings<br>Farming machinery | 1.5 | Policy/Guidelines/Regulations/Schemes to incorporate EE/EC measures in Integrated cold storage infrastructure = 0.5, else=0<br>Policy/Guidelines/Regulations/Schemes to Integrated water and energy savings = 0.5, else = 0<br>Policy/Guidelines/Regulations/Schemes to incorporate EE/EC measures in Farming machinery = 0.5, else = 0 |
| **Adoption of EE measures** | | | |
| 2 | Adoption of EE/EC measures in agriculture | 0.5 | |
| | Percentage of energy efficient/ solar powered agriculture pumps out of total agricultural pumps in the State/ UT. | 0.5 | Data provided on %ge of Energy Efficient/ Solar Powered Agriculture Pumps out of Total Agriculture Pumps in State/ UT = 0.5, else = 0 |
| **State Programme** | | | |
| 3 | Programmes for energy efficiency in agriculture | 3.75 | |
| | Does the state have programmes for EE in agriculture in FY 2024-25? | | |
| | What is the objective of the program? (2 sentences) | 0.25 | Objective of the programme = 0.25; else = 0 |
| | What is the target set under the program? | | Target set under the programme = 0.25; else = 0 |
| | What is the timeline? | | Timeline = 0.25; else = 0 |
| | How much budget has been allocated & utilized to date | | Budget allocated= 0.25<br>Bidget utilized= 0.25 |
| | Who is running the program? (stakeholders & departments engaged in the program) | | Entities running the Programme = 0.25; else = 0 |
| | What is the progress to date? | | Progress to date = 0.25; else = 0 |
| | What are the energy savings? (deemed or measured) | | Energy savings (deemed or measured) = 1; else = 0 |
| | How much emissions were avoided? (based on energy savings) | | Avoided emissions = 1; else = 0 |
| 4 | Capacity Building Programmes in agriculture sector | 1.25 | |
| | Does the state have programmes for capacity building in agriculture sector in FY 2024-25? | | |
| | What is the objective of the programme? (2 sentences) | 0.25 | Objective of the programme = 0.25; else = 0 |
| | What is the target set under the program? | 0.5 | Target set under the programme = 0.5; else = 0 |
| | Who is running the program? | 0.25 | Entities running the Programme = 0.25; else = 0 |
| | What is the progress to date? | 0.25 | Progress to date = 0.25; else = 0 |

Figure 3 – 22 shows the TFEC group-wise scores for the agriculture sector in SEEI 2025.

**Figure 3-22: TFEC group-wise SEEI 2025 Agriculture Sector Score**

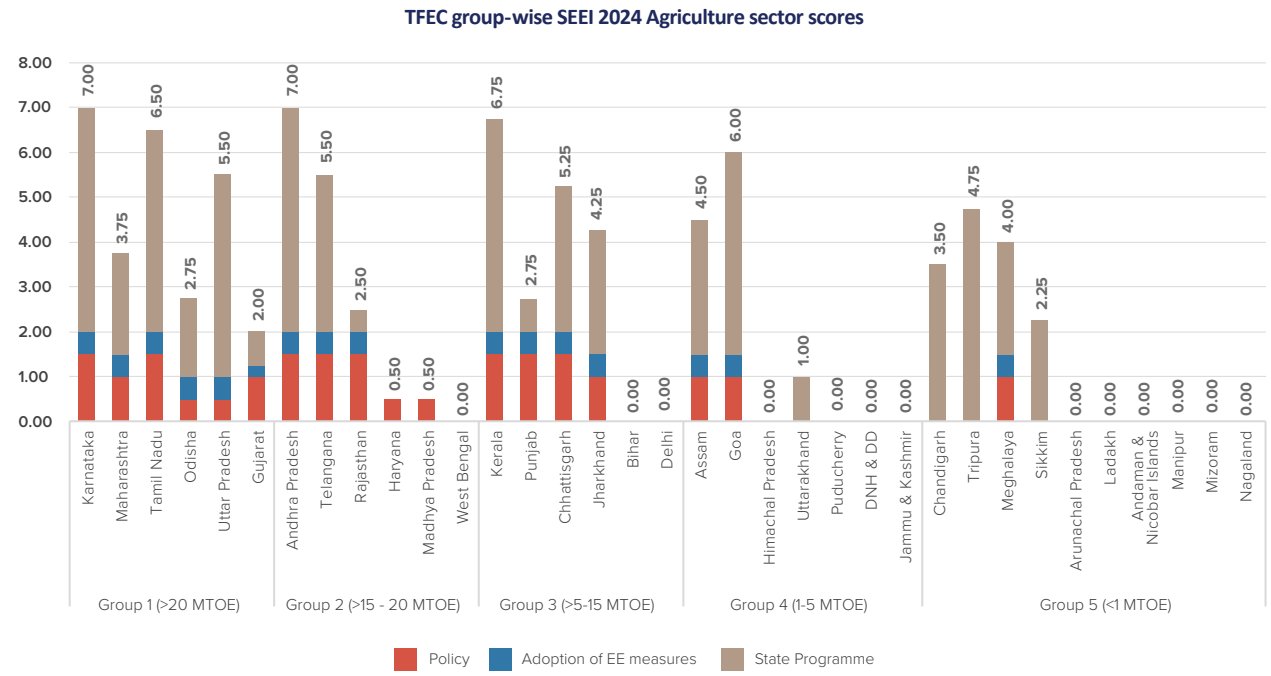
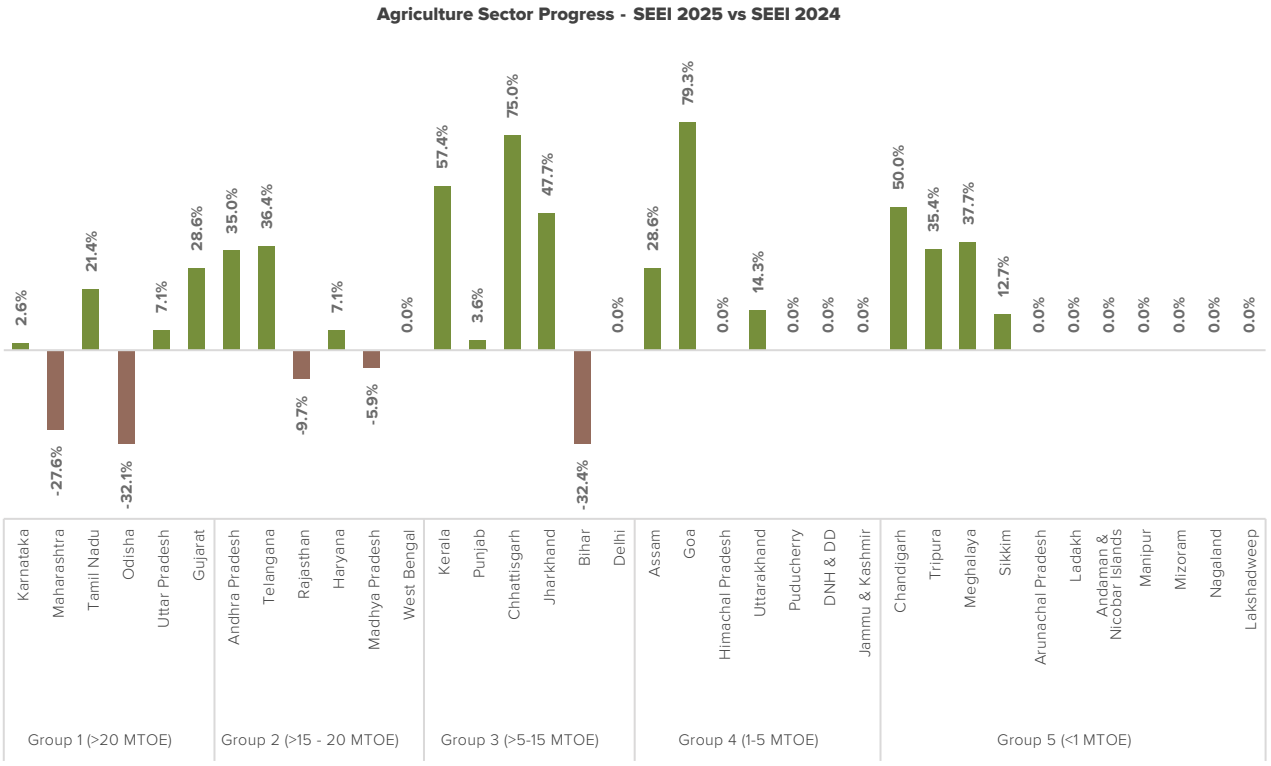



Figure 3 – 23 depicts the progress of the agriculture sector for each state in SEEI 2025 in comparison with SEEI 2024.

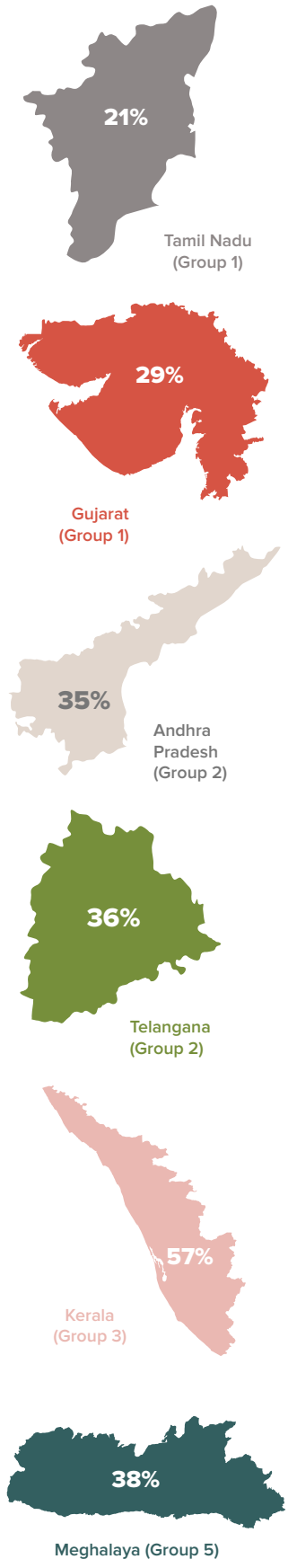
**Figure 3-23: TFEC group-wise agriculture sector state progress – SEEI 2025 vs SEEI 2024**



## SEEI 2025 AGRICULTURE SCORE HIGHLIGHTS

**Karnataka** lead **Group 1** by securing the full score of **7 out of 7** (a 3% gain), followed by **Tamil Nadu** with a score of **6.5**, gaining **22%** from SEEI 2024. In **Group 2**, **Andhra Pradesh** emerged as the top performer, also securing the full score of **7 out of 7** with a significant **35%** gain, followed by **Telangana** with a score of **5.5** and a remarkable **36%** gain. **Group 3** was led by **Kerala** with a score of **6.75** and a significant **57%** improvement, followed by **Chhattisgarh** with a score of **5.25** and a major **75%** improvement. In **Group 4**, **Goa** was the top performer with a score of **6** and an outstanding **79%** improvement, followed by **Assam** with a score of **4.5** and a **29%** improvement. Finally, **Group 5** was led by **Tripura** with a score of **4.75** and a remarkable **35%** increase, followed by **Chandigarh** with a score of **3.5** and a significant **50%** improvement. Notably, **Tamil Nadu, Gujarat, Andhra Pradesh, Telangana, Kerala, Jharkhand, Chhattisgarh, Assam, Goa, Chandigarh, Tripura and Meghalaya**—demonstrated exceptional progress, each improving their scores by **more than 20%** compared to the previous SEEI evaluation.

**Figure 3-24: States with more than 20% increase in Agriculture Sector scores in comparison to SEEI 2024.**




## COMMON INDICATORS

### Policy

A total of 17 States have reported implementing policies aimed at promoting energy efficiency (EE) and climate-friendly practices within the agriculture and allied sectors. These policies address crucial areas such as the development of integrated cold storage infrastructure, strategies for combined water and energy savings, and guidelines for the use of energy-efficient farming machinery. The specific details of the reporting States are listed in Table 3–44.

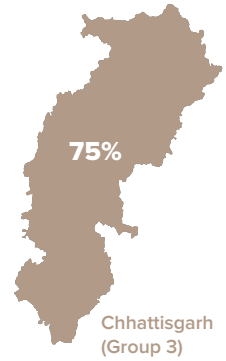
**Table 3-44: Reporting States on Policies for the promotion of Energy Efficiency and Climate Friendly practices in Agriculture and Allied sectors**

| | Integrated cold storage infrastructure | Integrated water and energy savings | incorporate EE/ EC measures in Farming machinery |
|---|---|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha, Uttar Pradesh, Gujarat | Karnataka, Maharashtra, Tamil Nadu, Gujarat | Karnataka, Tamil Nadu, Gujarat |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh, Telangana, Rajasthan, Madhya Pradesh | Andhra Pradesh, Telangana, Rajasthan | Andhra Pradesh, Telangana, Rajasthan |
| **Group 3 (>5 - 15 MTOE)** | Kerala, Punjab, Chhattisgarh | Kerala, Punjab, Jharkhand, Chhattisgarh | Kerala, Punjab, Jharkhand, Chhattisgarh |
| **Group 4 (1-5 MTOE)** | Assam, Goa | | Assam, Goa |
| **Group 5 (<1 MTOE)** | Meghalaya | Meghalaya | |

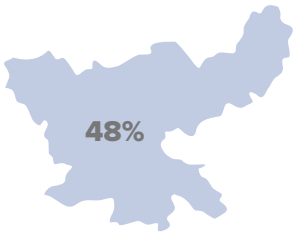
### Key Initiatives on Policy in Agriculture

**Karnataka** enforces its **Industrial Policy 2024** and **State Water Policy 2019** to mandate EE in cold storage, water-energy savings, and low-energy wastewater treatment. **Tamil Nadu** supports EE and climate-friendly agriculture through policies for **integrated cold storage**, solar-powered pumps, **efficient motors**, **micro-irrigation**, and subsidy-linked off-grid solar pumping. **Andhra Pradesh** leverages **MIDH** and **MNRE support** for cold storages

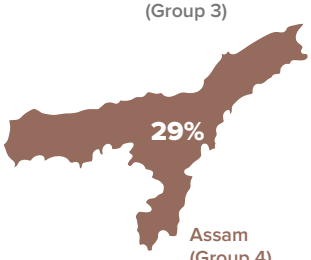
and solar pumps, alongside incentives for e-tractors, off-grid solar pumping, energy/water audits, and decarbonization subsidies for machinery to reduce diesel use and grid demand. **Telangana** promotes EE through MIDH-supported cold storage, the long-running **Telangana Micro Irrigation Project**, **subsidised farm mechanization**, and a State Climate Action Plan focused on efficient pump sets. **Rajasthan** provides **RIPS-2024 subsidies** for warehousing and the **Kam Lagat Yojana** for **affordable onion storage**, complemented by the **Krishi Yantra Scheme** for **subsidised EE farm machinery**. **Punjab** is advancing EE agriculture through proposals for efficient cold storage, the **"Pani Bachao, Paise Kamao"** scheme with mandatory 4-star pumps, and large-scale adoption of machinery under mechanization schemes, deploying over **1.55 lakh machines**. **Kerala** uses its SEEAP and KSAPCC to mandate EE across agriculture, fisheries, and cold chain via **solar cold storage**, **efficient refrigeration**, **BEE 5-star pump adoption**, and support for modern irrigation and mechanization. **Chhattisgarh** supports cold storage development under its **State Logistic Policy 2025** and mandates the use of **BEE star-rated EE pumps** for agricultural purposes, backed by its **State Water Resource Development Policy 2012**.



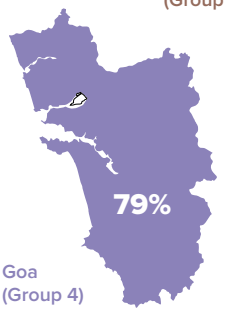
Chhattisgarh (Group 3)



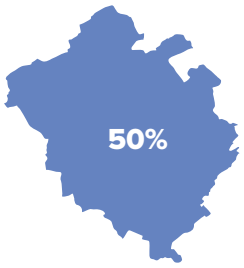
Jharkhand (Group 3)



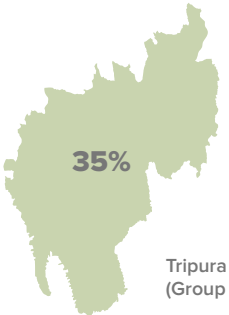
Assam (Group 4)



Goa (Group 4)



Chandigarh (Group 5)



Tripura (Group 5)

## Adoption of EE Measures

As per the findings of SEEI 2025, a total of **16 States** have reported on the adoption of energy efficiency (EE) measures related to **energy-efficient or solar-powered pumps** for agricultural use. The specific details regarding these reporting States are provided in Table 3–45**.**

**Table 3-45: Reporting States on the adoption of EE measures on Energy Efficient/Solar Powered Pumps**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha, Uttar Pradesh and Gujarat |
| **Group 2 (>15 - 20 MTOE)** | Andhra Pradesh, Telangana and Rajasthan |
| **Group 3 (>5 - 15 MTOE)** | Kerala, Punjab, Jharkhand and Chhattisgarh |
| **Group 4 (1-5 MTOE)** | Assam and Goa |
| **Group 5 (<1 MTOE)** | Meghalaya |

## Key Initiatives on Adoption of EE measures

**Karnataka** in **Group 1** has reported an adoption rate of **1.76%**, with 8,796 EE/solar pumps installed by KREDL out of approximately **5 lakh** agricultural pump sets. **Maharashtra** achieved **63.48%** adoption, installing **3.49 lakh** solar pumps in FY 2024–25 under PM-KUSUM against a **5.5 lakh** target, and adding **548 MWp** solar capacity via the **Mukhyamantri Saur Krushi Vahini Yojana**. **Tamil Nadu** achieved **10% adoption**, installing **5,021** EE pumps and **1,000** solar pumps during 2021–25. **Odisha** sanctioned **16,441** solar irrigation pumps, of which **5,713** have been installed.

In **Group 2**, **Andhra Pradesh** achieved **59.32% adoption** of EE/EC measures through large-scale DSM implementation, resulting in over **71,000** EE and solar pump sets installed. **Telangana** achieved **100% compliance** for new agricultural connections, mandating **5-star rated pumps, DSM measures, and metering**, complemented by **solar irrigation** under the **Indira Soura Giri Jala Vikasam Scheme**. **Rajasthan** reported **6.4% adoption**, with **96,731** out of **1,50,938** agricultural pumps upgraded.

**Punjab** promotes EE agriculture through the **"Pani Bachao Paise Kamao"** scheme, mandating minimum 4-star rated pumps and capacitors, resulting in the installation of **2.37 lakh EE pumps Jharkhand** installed **21,522 solar pumps**, representing **3%–5%** of agricultural pumps, primarily through PM-KUSUM and state schemes. **Assam** remains at an early stage, with only 45 solar pumps installed compared to 92,100 diesel pumps. **Goa** achieved an impressive **85% adoption of solar pumps** under PM-KUSUM, installing 170 out of 200 targeted pumps.

Table 3-46: **State-wise solarization status under Components B & C of PM-KUSUM scheme**

| State | %ge of Installed Pumps out of Sanctioned Pumps (Component B) | %ge of Installed Pumps out of Sanctioned Pumps (Component C – Individual Pump Solarisation) | %ge of Installed Pumps out of Sanctioned Pumps (Component C – Feeder Level Solarisation) |
|---|---|---|---|
| Andaman & Nicobar Islands | 0% | 0% | - |
| Andhra Pradesh | - | - | 0% |
| Arunachal Pradesh | 88% | - | - |
| Assam | 4% | - | - |
| Bihar | - | - | 0% |
| Chandigarh | - | - | - |
| Chhattisgarh | - | - | 0% |
| Dadra Nagar Haveli and Daman and Diu | - | - | - |
| Delhi | - | - | - |
| Goa | 17% | - | 6% |
| Gujarat | 68% | - | 46% |
| Haryana | 91% | - | 0% |
| Himachal Pradesh | 83% | - | - |
| Jammu & Kashmir | 72% | - | - |
| Jharkhand | 50% | - | - |
| Karnataka | 10% | - | 7% |
| Kerala | 100% | 27% | 49% |
| Ladakh | 7% | - | - |
| Lakshadweep | - | - | - |
| Madhya Pradesh | 12% | - | 9% |
| Maharashtra | 81% | - | 84% |
| Manipur | 33% | - | - |
| Meghalaya | 4% | - | - |
| Mizoram | 2% | - | - |
| Nagaland | 53% | - | - |
| Odisha | 62% | - | 0% |
| Puducherry | 0% | - | - |
| Punjab | 97% | 0% | - |
| Rajasthan | 80% | 100% | 29% |
| Sikkim | - | - | - |
| Tamil Nadu | 95% | 0% | - |
| Telangana | 0% | 0% | - |
| Tripura | 57% | 20% | - |
| Uttar Pradesh | 62% | 49% | 0% |
| Uttarakhand | 45% | - | - |
| West Bengal | - | 100% | - |

Note: "-"has been marked in the table, where the portal has no data available for the state: https://pmkusum.mnre.gov.in/#/landing#state-wise-details

## PROGRAMME SPECIFIC INDICATORS

The evaluation of programme-specific indicators in the agriculture sector for **SEEI 2025** maintains the approach established in SEEI 2024, focusing on two key metrics: (i) **Programmes for Energy Efficiency (EE) in the Agriculture Sector** and (ii) **Programme for Capacity Building in the Agriculture Sector**. The specific details regarding the reporting States that have implemented initiatives corresponding to these indicators are presented in Table 3–47.

**Table 3-47: Reporting States on Programme Specific Indicators**

| | Programmes for Energy Efficiency in the Agriculture Sector | Programme for Capacity Building in the Agriculture Sector |
|---|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha, Uttar Pradesh and Gujarat | Karnataka, Maharashtra, Tamil Nadu, Odisha and Uttar Pradesh |
| **Group 2 (>15-20 MTOE)** | Andhra Pradesh and Telangana, | Andhra Pradesh, Telangana and Rajasthan |
| **Group 3 (>5-15 MTOE)** | Kerala, Punjab, Jharkhand and Chhattisgarh | Kerala, Punjab and Jharkhand |
| **Group 4 (1-5 MTOE)** | Assam and Goa | Assam, Goa and Uttarakhand |
| **Group 5 (<1 MTOE)** | Chandigarh, Tripura, Sikkim and Meghalaya | Tripura, Sikkim and Meghalaya |

### Programmes for Energy Efficiency in the Agriculture Sector

**Karnataka** in **Group 1** is implementing **PM-KUSUM Components B & C** to convert 100% diesel pumps to solar, having sanctioned 46,441 solar IP sets (166.61 Megawatts) with a **₹940 Crore outlay**. As of FY 2024–25, **8,796 pumps** are commissioned, achieving **9,911 MU** of energy savings and avoiding **8,127 tonnes of $CO_2$** emission. **Tamil Nadu** is promoting efficient irrigation by installing 5,000 EE pump sets and conducting IoT-based irrigation automation demonstrations across 126 fields, benefiting 4,027 farmers, achieving **266 lakh kWh** energy savings and avoiding **19,010 tonnes of $CO_2$ emission**. **Uttar Pradesh** is tackling post-harvest losses through the **SANKALP Cold Storage Modernisation Programme**, which is upgrading facilities with EE technologies, with 150 audits in progress and a target of **120 GWh** annual savings and **85,200 tonnes of $CO_2$ emission** reduction.

**16 States have reported adoption of EE measures on Energy Efficient/ Solar Powered Pumps.**

In **Group 2**, **Andhra Pradesh** is implementing the AP Micro Irrigation Project across 1.17 lakh hectares, utilizing **₹358.14 Crore** and achieving **1,817 lakh kWh** energy savings and **1.32 lakh tonnes of $CO_2$ emission** reduction. **Telangana** mandates 5-star rated agricultural pumps for all new connections and promotes solarization under schemes like Indira **Soura Giri Jala Vikasam**, with its micro-irrigation programme benefiting 29,161 farmers and achieving 45% water and energy savings. **Kerala** in **Group 3** is implementing PM-KUSUM to solarise agricultural pumps and promote 5-star EE pump adoption with a **₹172 Crore budget**, solarising 9,348 pumps and achieving **33.5 GWh** annual energy savings and **24000 tonnes of $CO_2$ emission** reduction. **Chhattisgarh's Saur Sujla Yojana** aims to install 7,500 solar agricultural pumps in FY 2024–25, with 4,512 pumps installed for **₹114.62 Crore** utilized, delivering **214.14 lakh units** of annual energy savings and **19,273 tonnes of $CO_2$ emission** reduction.

In **Group 4**, **Goa** is promoting EE and solar-based irrigation under PM-KUSUM, commissioning 170 solar pumps and 13 EE pumps, achieving **1.36 GWh** energy savings

and **982 tonnes of $CO_2$ emission reduction**. While **Chandigarh** in **Group 5** has initiated EE programmes in FY 2024–25 to upgrade submersible pump sets in villages, targeting **42,000 kWh** of energy savings and **41.4 tonnes of $CO_2$ emission** reduction by June 2026. Finally, **Tripura's** AgDSM programme utilizes ₹4.55 lakh for farmer awareness, technical training, and IoT-based demonstrations, achieving **72,495 MWh** energy savings and **53,640 tonnes of $CO_2$ emission** reduction.

## Programmes for Capacity Building in the Agriculture Sector

**Karnataka** conducted **34 capacity-building programmes** (22 through DATCs and 12 through KVKs) in collaboration with KREDL and BEE to promote **energy and water conservation** and enhance the adoption of efficient agricultural practices across the state.

**Tamil Nadu** undertook extensive capacity-building for officials and farmers, focusing on **modern agriculture, hi-tech horticulture, value addition, marketing, and digital skills**, involving TNAU and the Agriculture Department. Additionally, **TNPDCL** conducted **4 farmer awareness programmes** specifically on **energy-saving methods** in agriculture.

**Uttar Pradesh** conducted **2 state-level and 4 cluster-level** capacity-building programmes in partnership with AEEE, UPNEDA, and the Horticulture Department to promote innovative cooling technologies and address skill gaps in the adoption of EE infrastructure and facility modernization.

**Andhra Pradesh**, through ATMA and SAMETI, conducted trainings benefiting **52,800 farmers** to enhance skills in **modern, climate-resilient agriculture** and strengthen linkages. APSECM also organized a workshop on **energy-efficient cold chain practices**, distributing best-practice manuals to stakeholders.

**Kerala's Energy Management Centre (EMC)** implemented state-wide capacity-building programmes across all 14 districts to train farmers and Krishi Vigyan Kendra's on **EE and climate-resilient farming technologies**, concluding with a state-level programme to review outcomes and promote wider adoption.

**Goa** conducted a State Energy Efficiency Action Plan (SEEAP) validation workshop and **PM-KUSUM awareness campaigns** in panchayats to promote solar pump adoption. This resulted in **200 applications** being approved and **170 solar pumps** commissioned, strengthening capacity for clean and efficient irrigation.

**Tripura's AgDSM programme** under SDA conducted **3 training-cum-demonstration programmes** to raise farmer awareness on **energy conservation** and showcase advanced energy-efficient agricultural technologies.

**17 States reported capacity building initiatives for EE in Agriculture Sector**

## AGRICULTURE SECTOR SPOTLIGHT

- **Karnataka** is implementing 100% diesel pumps to energy efficient solar pumps, 8,796 pumps are commissioned, delivering 9,911 MU energy savings and avoiding 8,127 $tCO_2$ emissions.
- **Tamil Nadu** is implementing a scheme for 5,000 energy-efficient pump, 4,027 farmers benefited, achieving 266 lakh kWh energy savings and avoiding 19,010 $tCO_2$ emissions.
- **Uttar Pradesh** upgrade ageing cold storages with energy efficient technologies, including audits of 4 cold storages and 150 facilities. The programme targets annual savings of 120 GWh and a reduction of 85,200 $tCO_2$ emissions.
- **Andhra Pradesh** is implementing the AP Micro Irrigation Project over 1.17 lakh hectares to enhance water and energy efficiency and improve crop productivity. The programme has achieved 1,817 lakh kWh energy savings and 1.32 lakh $tCO_2$ emissions reduction.
- **Kerala** is solarising agricultural pumps and promote 5-star energy-efficient pump adoption, Under the programme, 9,348 pumps have been solarised, achieving 33.5 GWh annual energy savings and 24 $ktCO_2$ emission reduction.
- **Chhattisgarh** is installed solar agricultural pumps for farmers, with a target of 7,500 pumps, 4,512 pumps have been installed, delivering 214.14 lakh units of annual energy savings and 19,273 $tCO_2$ emission reduction.
- **Goa** is promoting energy-efficient and solar-based irrigation, about 170 solar pumps and 13 energy-efficient pumps have been commissioned, achieving 1.36 GWh energy savings and 982 tonnes of $CO_2$ emission reduction.
- **Chandigarh** initiated energy efficiency programmes in agriculture sector. The programme targets 42,000 kWh energy savings and 41.4 tonnes of $CO_2$ reduction by June 2026.
- In **Tripura**, 3 training-cum-demonstration programmes were completed with full utilization of 4.55 lakh, achieving 72,495 MWh energy savings and 53,640 tonnes of $CO_2$ emission reduction. Further, a total of 14 nos. of cold storage have been installed with a capacity of 31,450 MT. The state has been implementing water conservation structures for better water percolation in sub-soil, and 300 power tillers have been distributed for farming mechanisation.

# 3.6 DISCOM

## OVERVIEW

**India's power distribution companies (DISCOMs) are critical for economic growth and the country's clean energy transition.** Yet many struggles with high AT&C losses, financial stress, and outdated infrastructure. Scaling up energy efficiency through smart meters, upgraded distribution transformers, and advanced digital monitoring can reduce losses, improve reliability, and strengthen revenues. **Efficient and financially sustainable DISCOMs are essential for integrating renewable energy, ensuring grid stability, and meeting India's energy security and climate goals.**

The SEEI 2025 framework assesses EE progress in the DISCOM sector through **7 indicators—5 Common Indicators** evaluating policy frameworks and EE measure adoption, and **2 Programme-Specific Indicators** measuring state-level implementation. The sector carries a **maximum of 15 points**, with **10 points for common indicators** and **5 points for programme-specific indicators**. Table 3-48 summarises these indicators, while Figure 3-25 presents state scores (based on Total Final Energy Consumption) and Figure 3-26 compares state progress between SEEI 2025 and SEEI 2024.

**Table 3-48: DISCOM Sector indicators under SEEI 2025**

| S. No | Indicator | Max Score | Scoring Criteria |
|---|---|---|---|
| **Policy** | | | |
| 1 | Demand side management (DSM) | 0.75 | |
| | Electricity regulatory commission of State/ UT has approved the DSM action plan submitted by DISCOMs (both government and private) in Aggregate Revenue Requirement (ARR) | 0.25 | DSM action plan approved by SERC/ JERC = 0.25; else= 0 |
| | DISCOMs (both govt and private) of the State/ UT have conducted load research study for consecutive 3 Year Cycle and executed their DSM action plan | 0.5 | Load Research conducted by DISCOMs for consecutive 3 Year Cycle = 0.25, else = 0<br><br>Implementation of DSM action plan by<br><br>DISCOMs= 0.25, else = 0 |
| 2 | Demand Response and Demand Flexibility | 1.25 | |
| | DISCOMs in the State/ UT have implemented ToD/ ToU tariff for the following consumers:<br><br>1. Commercial<br><br>2. Industrial | 0.5 | ToD/ ToU for Commercial Consumers = 0.25, else = 0<br><br>ToD/ ToU for Industrial Consumers = 0.25, else = 0 |
| | DISCOMs in the state have implemented ToD/ ToU tariff for the following consumers:<br><br>1. Domestic<br><br>2. EV Connections | 0.5 | ToD/ ToU for Domestic Consumers = 0.25, else = 0<br><br>ToD/ ToU for EV connection = 0.25, else = 0 |
| 2 | Demand Response and Demand Flexibility | 1.25 | |
| | Number of pilot projects implemented by the DISCOMs in the State/ UT on Automated Demand Response/ Behavioural Demand Response. | 0.25 | Data Provided = 0.25, else= 0 |
| 3 | Bureau of Energy Efficiency (Manner and Intervals for Conduct of Energy Audit (Accounting) in Electricity Distribution Companies) Regulations, 2021 | 2 | |
| | DISCOM(s) in the State/ UT has submitted all periodic (quarterly) energy accounting reports for FY 2024-25 to Bureau of Energy Efficiency. | 0.25 | DISCOM/DISCOMs have submitted periodic (quarterly) accounting reports = 0.25, else- 0 |
| | DISCOM(s) in the State/ UT has submitted annual energy audit report for FY 2024-25 to Bureau of Energy Efficiency. | 0.25 | DISCOM/DISCOMs have submitted the annual energy audit report- 0.25, else = 0 |
| | Indicate target and actual T&D losses in percentage of all DISCOMs in the State/ UT | 1.25 | <10%: 1; >=10% & <20%: 0.75; >=20% & <30%: 0.5; >=30% & <40%: 0.25; >=40%: 0<br><br>Improvement from last FY = 0.25 |
| | Steps undertaken by the DISCOMs (both private & govt) in the State/ UT in FY 2024-25 to reduce the T&D loss | 0.25 | Steps taken by DISCOMs to reduce the T&D loss = 0.25, else = 0 |
| **Adoption of EE measures** | | | |
| 4 | Revamped Distribution Sector Scheme (RDSS) | 2.5 | |
| | Steps taken by the DISCOMs (both private & govt) in the State/ UT in FY 2024-25 to reduce the ACS-ARR gap to zero. | 0.5 | Steps taken to reduce ACS-ARR gap = 0.5, else = 0 |

| S. No | Indicator | Max Score | Scoring Criteria |
|---|---|---|---|
| | ACS-ARR gap for the State/ UT in FY 2024-25 | 0.75 | <0: 0.75 >=0-<2: 0.5 >=2: 0.25 |
| | Steps undertaken by the DISCOMs (both private & govt) in the State/ UT in FY 2024-25 to reduce the AT&C loss | 0.5 | Steps taken to reduce AT&C loss gap = 0.5, else = 0 |
| | AT&C loss of DISCOMs (both private & govt) in the State/ UT. | 0.75 | Data provided by the State/UT = 0.75 |
| 5 | Metering status | 3.5 | |
| | Proportion of consumers with smart meters out of total consumers in the State/ UT. | 1 | 0% – 10%: 0.25; >= 10% -<20%: 0.5; >= 20% -<30%: 0.75; >= 30%: 1 |
| | Metering status | 3.5 | |
| | Method of smart meter data analysis by DISCOMs for consumer awareness, to enhance their operational efficiency etc. | 0.25 | Data Provided = 0.25, else= 0 |
| | System metering at Feeder and Distribution Transformer (DT) level completed in the State/ UT. | 0.25 | Yes = 0.25, else= 0 |
| | Proportion of communicable metering completed at the Feeder level in the State/ UT. | 0.75 | 0% -<30%: 0.25; >= 30% -<70%: 0.5; >= 70%: 0.75 |
| | Proportion of communicable metering completed at the Distribution Transformer (DT) level in the State/ UT. | 0.75 | 0% -<32%: 0.25; >= 32% -<64%: 0.5; >= 64%: 0.75 |
| | Proportion of agriculture feeders segregated in the State/ UT | 0.5 | 0% -<50%: 0.25; >= 50%: 0.5 |
| **State Programme** | | | |
| 6 | Programmes for Demand Side Management (DSM) | 4 | |
| | Does the state have programmes for Demand-side Management in FY 2024-25? | | |
| | What is the objective of the program? (2 sentences) | 0.25 | Objective of the programme = 0.25; else = 0 |
| | What is the target set under the program? | 0.25 | Target set under the programme = 0.25; else = 0 |
| | What is the timeline? | 0.25 | Timeline = 0.25; else = 0 |
| | How much budget has been allocated & utilized to date | 0.5 | Budget allocated= 0.25<br>Bidget utilized= 0.25 |
| | Who is running the program? (stakeholders & departments engaged in the program) | 0.25 | Entities running the Programme = 0.25; else = 0 |
| | What is the progress to date? | 0.5 | Progress to date = 0.5; else = 0 |
| | What are the energy savings? (deemed or measured) | 1 | Energy savings (deemed or measured) = 1; else = 0 |
| | How much emissions were avoided? (based on energy savings) | 1 | Avoided emissions = 1; else = 0 |
| 7 | Capacity Building Programmes in DISCOMs | 1 | |
| | Does the state have programmes for capacity building in DISCOM sector in FY 2024-25? | | |
| | What is the objective of the programme? (2 sentences) | 0.25 | Objective of the programme = 0.25; else = 0 |
| | What is the target set under the program? | 0.25 | Target set under the programme = 0.25; else = 0 |
| | Who is running the program? | 0.25 | Entities running the Programme = 0.25; else = 0 |
| | What is the progress to date? | 0.25 | Progress to date = 0.25; else = 0 |

Figure 3 – 25 shows the TFEC group-wise scores for the DISCOM sector in SEEI 2025.

**Figure 3-25: TFEC group-wise DISCOM sector state scores**

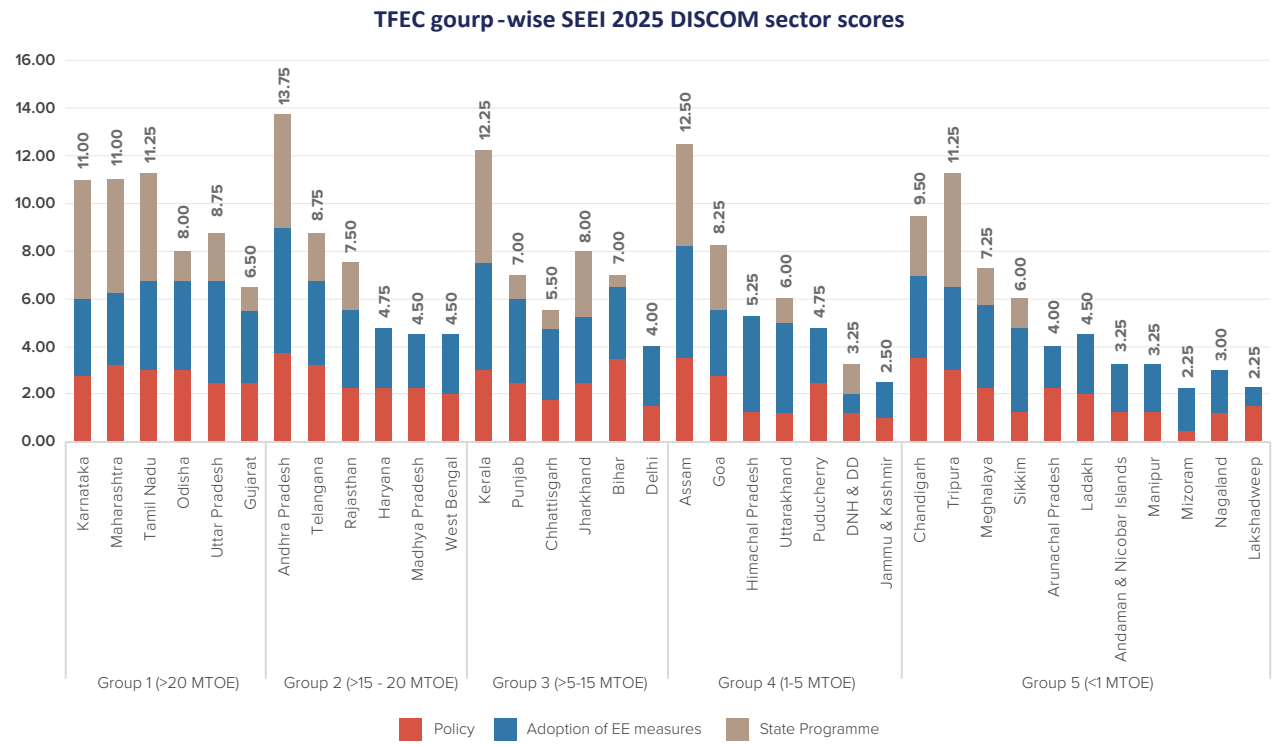
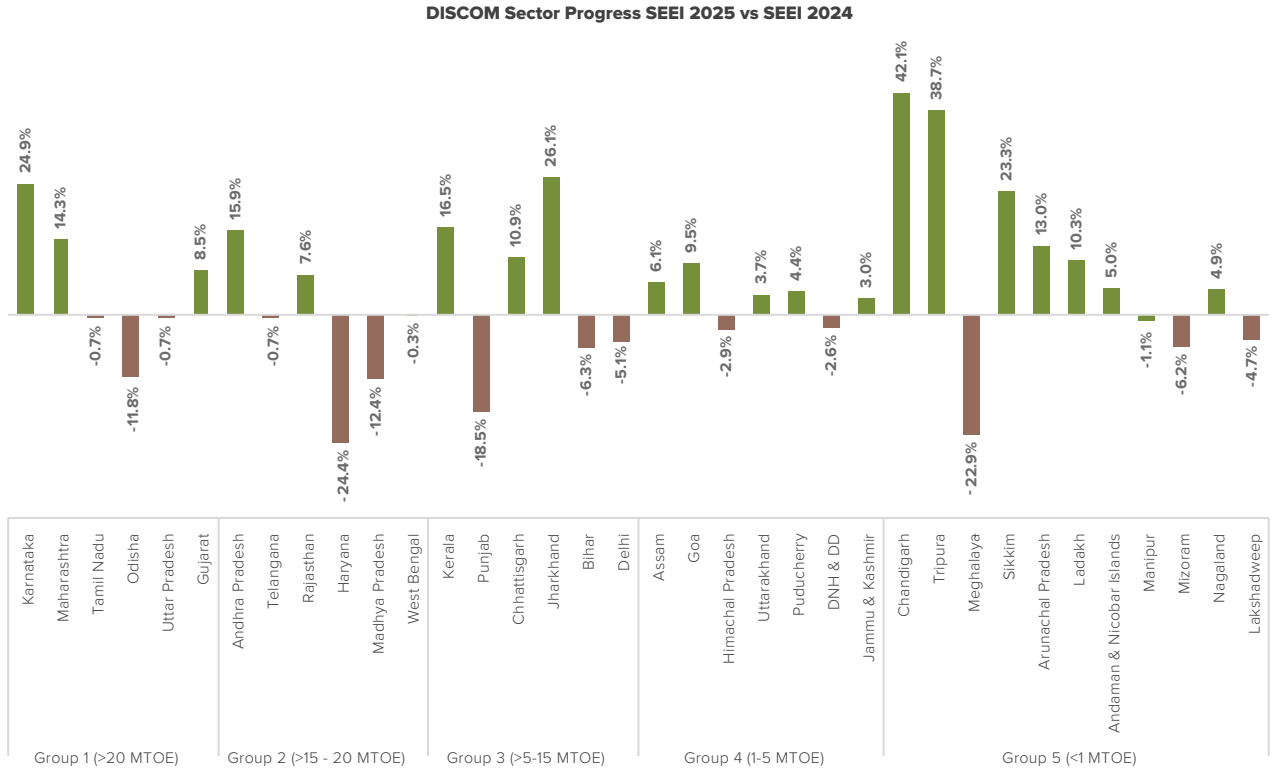



Figure 3 – 26 depicts the progress of the DISCOM sector for each state in SEEI 2025 in comparison with SEEI 2024.

**Figure 3-26: TFEC group-wise DISCOM sector state progress – SEEI 2025 vs SEEI 2024**



## SEEI 2025 DISCOM SECTOR SCORE HIGHLIGHTS

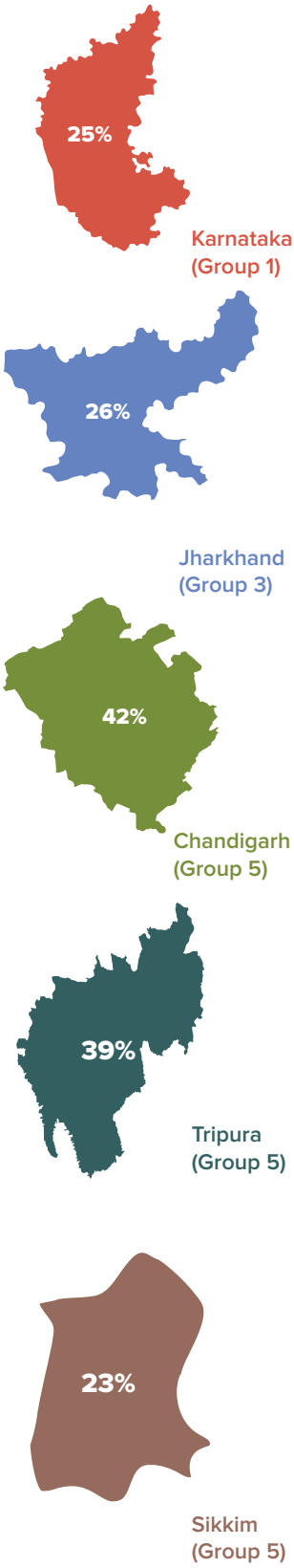
**Andhra Pradesh** achieved the highest overall score in the DISCOM Sector across all groups, scoring **13.75**, followed by **Assam (12.5)** and **Kerala (12.25)**.

In **Group 1**, **Tamil Nadu** was the top performer with a score of **11.25** despite a 1% decline from SEEI 2024. **Karnataka** and **Maharashtra** secured joint second place, both scoring **11.0** and showing gains of **25%** and **14%**, respectively. **Group 2** was led by **Andhra Pradesh** with a score of **13.75** (a **~16%** improvement), followed by **Telangana** with a score of **8.75** (a **1%** decline).

In **Group 3**, **Kerala** emerged as the top performer with **12.25** (a **16.5%** gain), followed by **Jharkhand** with a score of **8** (a significant **26%** improvement). **Group 4** was led by **Assam** with a score of **12.5** (a **6%** gain), followed by **Goa** with **8.25** (a **10%** improvement). Finally, in **Group 5**, **Tripura** emerged as the top performer with **11.25**, followed by **Chandigarh** with **9.5**. Both demonstrated remarkable progress with score improvements of **39%** and **42%**, respectively.

Notably, five States— **Karnataka, Jharkhand, Chandigarh, Tripura** and **Sikkim** showed significant advancements, each improving their scores by over 20% compared to the previous evaluation. Figure 3-27 shows the Most improved States in the DISCOM Sector.

**Figure 3-27: States with more than 20% increase in DISCOM Sector scores in comparison to SEEI 2024.**




## COMMON INDICATORS

### Policy

There is significant policy progress in the DISCOM sector, with a total of **12 States** reporting policy-level initiatives focused on **Demand-Side Management (DSM), demand response, flexibility, and energy auditing**, with notable achievements from **Maharashtra, Telangana, Andhra Pradesh, Bihar, Assam, and Chandigarh**.

The regulatory framework is strengthening, as **DSM action plans** have been approved by State Electricity Regulatory Commissions (SERCs) as part of the Aggregate Revenue Requirement (ARR) in **13 States**. Furthermore, **14 States** have conducted **load research studies** for three consecutive years, and an equal number have successfully implemented DSM action plans.

Actions promoting **demand response and flexibility** have been reported by **31 States**, with **Maharashtra, Andhra Pradesh, Madhya Pradesh, Kerala, Jharkhand, Bihar, and Goa** demonstrating the most progressive efforts.

Regarding tariffs, **all 29 States** have implemented **Time-of-Day (ToD) or Time-of-Use (ToU) tariffs** for industrial consumers, and **24 States** have done so for commercial consumers. Importantly, **20 States** have extended these tariffs to domestic consumers, and **18 States** apply them to Electric Vehicle (EV) connections. Additionally, **12 States** have initiated or implemented pilot projects focused on **automated or behavioural demand response programmes**. The state-wise details of ToD/ToU tariff implementation are presented in Table 3–49.

Table 3-49: **States with implementation of ToD/ToU tariff**

| State | Domestic | Commercial | Industrial | EV Connection |
|---|---|---|---|---|
| Andaman & Nicobar | No | No | No | No |
| Andhra Pradesh | Yes | Yes | No | No |
| Arunachal Pradesh | Yes | Yes | No | No |
| Assam | Yes | Yes | Yes | Yes |
| Bihar | Yes | Yes | Yes | Yes |
| Chandigarh | No, HT Optional | Yes | Yes | No |
| Chhattisgarh | Yes | Yes | Yes | Yes |
| Dadra & Nagar Haveli and Daman & Diu | Yes (Optional) | Yes Optional | Yes (Optional) | No |
| Delhi | No | Yes, 10kW or Above /11kVA | Yes, 10kW or Above /11kVA | No |
| Goa | Mandatory (HT & EHT); Optional (LT) | Mandatory (HT & EHT); Optional (LT) | Mandatory (HT & EHT); Optional (LT) | Optional |
| Gujarat | Yes | Yes | No | Yes |
| Haryana | Yes (HT) | Yes (HT) | No | Yes |
| Himachal Pradesh | No | No | No | No |
| Jammu & Kashmir | No | No | Yes, Only HT | No |
| Jharkhand | Yes (HT only) | Yes (HT only) | Yes (HT only) | Yes |
| Karnataka | Yes (HT) | Yes (LT Optional; HT compulsory) | No | Yes |
| Kerala | Yes | Yes | Yes | Yes |
| Ladakh | No | No | Yes, Only HT | No |
| Lakshadweep | Mandatory (HT & EHT); Optional (LT) | Mandatory (HT & EHT); Optional (LT) | Mandatory (HT & EHT); Optional (LT) | Optional |
| Madhya Pradesh | Yes | Yes | Yes | Yes |
| Maharashtra | Yes | Yes | Yes | Yes |
| Manipur | No | No | No | No |
| Meghalaya | No | Yes | No | No |
| Mizoram | No | No | No | No |
| Nagaland | Yes | Yes | Yes | No |
| Odisha | Yes | Yes | No | No |
| Puducherry | Mandatory (HT & EHT); Optional (LT) | Mandatory (HT & EHT); Optional (LT) | Mandatory (HT & EHT); Optional (LT) | Optional |
| Punjab | Yes (>100 KVA) | Yes | No | Yes |
| Rajasthan | No | Yes (above 10 KW) | Yes (above 10 KW) | Yes (above 10 KW) |
| Sikkim | No | Yes (HT) | No | No |
| Tamil Nadu | Yes | Yes | Yes | Yes |
| Telangana | Yes (HT) | Yes (HT) | No | Yes (HT) |
| Tripura | No | Yes | Yes | No |
| Uttar Pradesh | Yes | Yes | No | No |
| Uttarakhand | No | No | Yes | No |
| West Bengal | Yes Optional | Yes (LT Optional) | Yes | Yes |

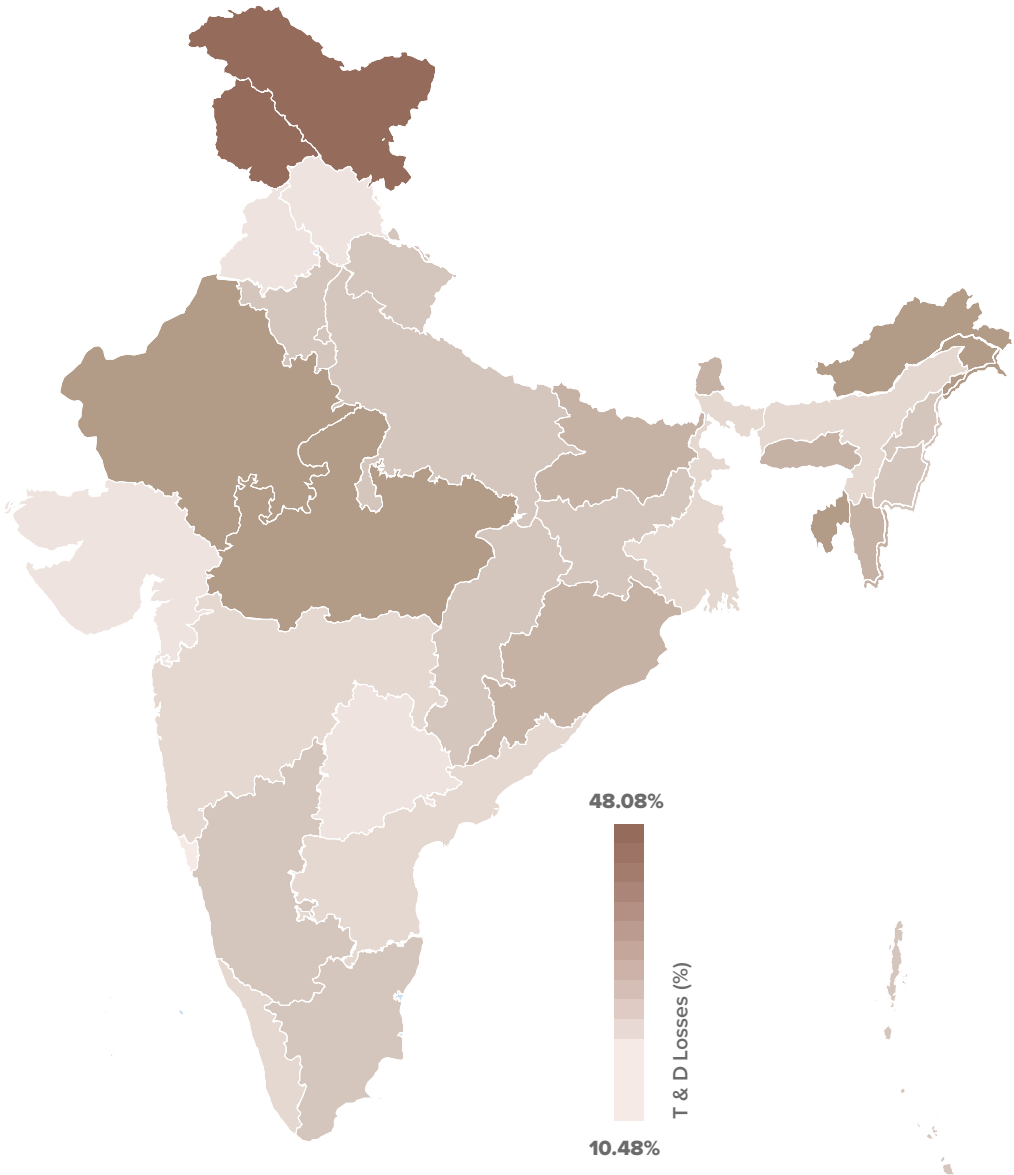
Under the **Bureau of Energy Efficiency (BEE)'s Conduct of Energy Audit Regulations 2021**, DISCOMs are mandated to submit **quarterly energy accounting reports** and

an **independent annual energy audit**. For FY 2024–25, DISCOMs from all **36** States submitted their quarterly energy accounting reports,. Additionally, four other DISCOMs submitted reports for only one quarter. DISCOMs from 35 States submitted their annual energy audit reports to BEE, though only the prescribed proforma, rather than the complete audit reports, were submitted by the Electricity Department, Goa, and six other DISCOMs from other States. This mandatory reporting is crucial for promoting transparency and accountability, thereby facilitating improved resource monitoring and management within DISCOMs.

India has seen a reduction in **Transmission and Distribution (T&D) Losses**, which decreased by **3.05 percentage points** from 20.73% in FY 2021-22 to **17.68% in FY 2022-23**. Similarly, **Aggregate Technical and Commercial (AT&C) Losses** have reduced significantly, dropping from 23.70% in FY 2015-16 to **15.37% in FY 2023**.

**Goa** is the most efficient state in the country with **10.48 % T&D loss**, closely followed by **Dadra & Nagar Haveli and Daman & Diu at 10.75 %**. Nationally, 25 States report T&D losses below 20%, 8 States are in the range of 20% to 30%, and T&D loss exceeds 30% in 2 States.

**Figure 3-28: T&D Losses of States and UT's (FY 2023-24)**




Source: All India Electricity Statistics - General Review 2025 (Table 6.4)

## Adoption of EE Measures

The **SEEI 2025** framework specifically evaluated the adoption of energy efficiency (EE) measures across States and union territories (UTs) in the **DISCOM sector**. This evaluation was primarily gauged by assessing the progress made by these entities under two key initiatives: The **Revamped Distribution Sector Scheme (RDSS)** and the overall status of **Smart Metering** deployment.

## Revamped Distribution Sector Scheme (RDSS)

The Revamped Distribution Sector Scheme (RDSS), launched by the Central Government in July 2021, aims to enhance the quality and reliability of power supply while ensuring the financial sustainability and operational efficiency of the power distribution sector. The scheme is designed to achieve two key objectives:

- Reduction in AT&C Losses: Aims to lower Aggregate Technical and Commercial (AT&C) losses to a pan-India level of 12-15%.
- Eliminating the ACS-ARR Gap: Seeks to achieve a zero gap between the Average Cost of Supply (ACS) and Average Revenue Realised (ARR) by 2024-25.

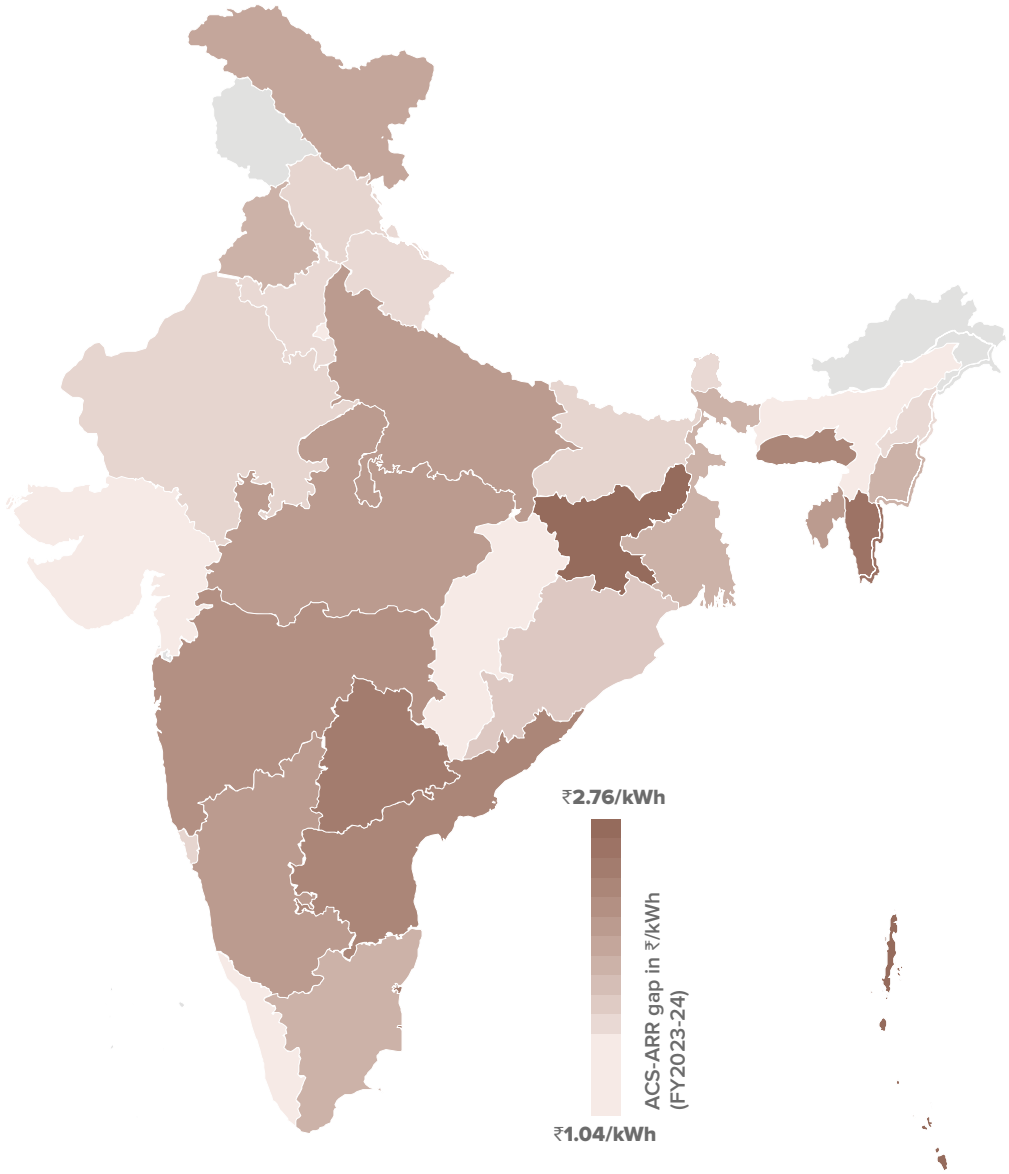
As reported under SEEI 2025, in **Group 1**, in **Karnataka,** DISCOMs are enhancing financial discipline and reducing AT&C losses through enhanced vigilance against theft, **defective meter replacement, improved billing/collection efficiency, feeder/DT metering, segregation** and **reconductoring of high-loss feeders, system strengthening**, and the rollout of smart meters for government installations under RDSS. **Maharashtra's MSEDCL**, under RDSS, is pursuing a zero Annual Cost of Supply to Average Revenue Realized (ACS–ARR) gap and pan-India AT&C loss levels 12%–15% by FY 2024–25. Measures **include smart metering, feeder separation, Aerial Bunched Cable (ABC) cabling**, infrastructure upgrades, and intensified theft-reduction drives. In **Tamil Nadu**, **TNPDCL** is reducing the ACS–ARR gap through infrastructure strengthening, smart/prepaid metering, data analytics, Multi-Year Tariff (MYT)-based revision, and cost-reduction measures. In FY 2024–25, the gap fell by **64%** to ₹**0.04/unit**, with audited AT&C losses at **10.73%**.

Under **Group 2,** DISCOMs in **Andhra Pradesh** (APSPDCL, APCPDCL, and APEPDCL) implemented RDSS through aggressive arrear recovery, cost control, tariff rationalization, feeder bifurcation/segregation, preventive maintenance, digital collections, and infrastructure strengthening. This achieved **ACS–ARR gaps near zero** and **AT&C losses around 7.5%–8%** in FY 2024–25. **Kerala's** KSEBL, under **Group 3** is implementing RDSS through **SCADA-based grid modernization**, loss-prone feeder strengthening, smart energy accounting, anti-theft drives, and renewable integration, achieving an **AT&C loss of 8.28%** in FY 2024–25 with an ACS–ARR gap of ₹**0.36 kWh**.

In **Group 4, Assam's** APDCL is implementing RDSS through replacing Low Tension (LT) bare conductors with **AB cables**, feeder bifurcation/segregation, conductor strengthening, and High Voltage Distribution System (HVDS). This achieved an **ACS–ARR gap of ₹0.17/kWh** and **AT&C losses of 15.73%.** Under **Group 5,** in **Tripura**, TSECL is implementing RDSS through smart/prepaid metering, replacement of bare conductors with covered/Underground (UG) cables, Ring Main Unit (RMU) and fault locator systems, energy-efficient transformers, and feeder/DT metering. The **ACS–ARR gap for FY 2024–25 stands at ₹1.43 / kWh** with **AT&C losses at about 24%.**

A Map representation of the ACS-ARR gap of States is given in Figure 3 – 29.

**Figure 3-29: ACS – ARR gap of States and UTs**

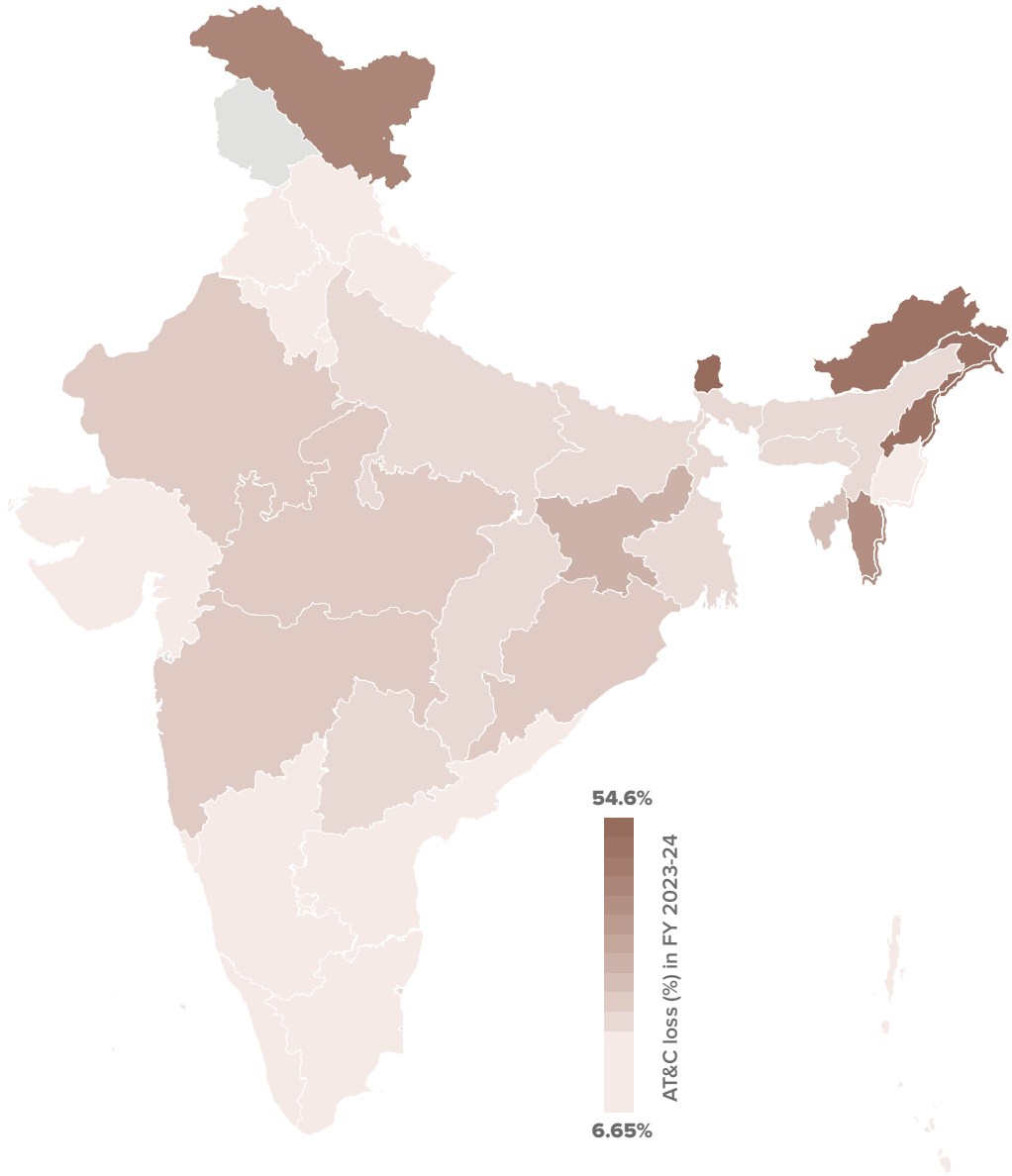



Source: RDSS Portal, MoP – GoI: https://rdss.powermin.gov.in/dashboard

Note: Data not available for Jammu & Kashmir, Dadra & Nagar Haveli and Daman & Diu, Lakshadweep and Arunachal Pradesh

A map representation of AT & C loss of States and UTs is given in Figure 3 - 30.

**Figure 3-30: AT & C loss of States and UTs**




Source: RDSS Portal, MoP – GoI: https://rdss.powermin.gov.in/dashboard

Note: Data not available for Jammu & Kashmir, Chandigarh, Dadra & Nagar Haveli and Daman & Diu, Lakshadweep and Arunachal Pradesh

## Metering Status

Under **Group 1**, **Karnataka** has achieved 100% metering status in the CESC–Mysuru jurisdiction, with KPTCL overseeing state-wide feeder metering. BESCOM provides real-time consumption tracking to consumers, and DT metering coverage is expanding, with over 1.88 lakh transformers already in service. **Maharashtra** has installed **63.90 lakh smart meters** (27%) of the sanctioned 2.36 crore. The state has achieved **100% feeder metering**, and **33% DT metering**, with all **11,001** agricultural feeders covered. In **Tamil Nadu**, the T-Nagar smart metering project has equipped **1.30 lakh consumers** and **1,220 DTs** with communicable smart meters. Furthermore, **130 feeders are AMR-enabled** and integrated with the **National Feeder Monitoring Scheme (NFMS)**, and agricultural feeder segregation is currently underway.

**Andhra Pradesh** in **Group 2** has undertaken large-scale smart metering deployment for consumers, feeders, and DTs across all three DISCOMs. Feeder communication reliability

is high, exceeding **92% in APCPDCL** and **96% in APSPDCL**, while agricultural feeder segregation under RDSS is progressing steadily. Under **Group 3**, **Kerala** has achieved **100% communicable feeder and DT metering**, with **96% consumer metering** completed and full metering of agricultural consumers. The state is targeting full completion of AMI-based energy accounting by March 2026.

**Assam** in **Group 4**, has progressed in smart metering implementation at **68%**, with **47.31 lakh meters** installed out of **69.21 lakh sanctioned.** The state has completed **100% communicable feeder and DT metering** and is utilizing advanced AI/ML-based analytics for theft detection, demand forecasting, and asset health monitoring. Under **Group 5**, in **Tripura**, under RDSS, about **38,007 smart meters** have been installed so far. Feeder metering has achieved **100% coverage**, while DT metering stands at around **6.86%.**

Table 3–50 provides the State/UT-wise details on the completion status of feeder level metering.

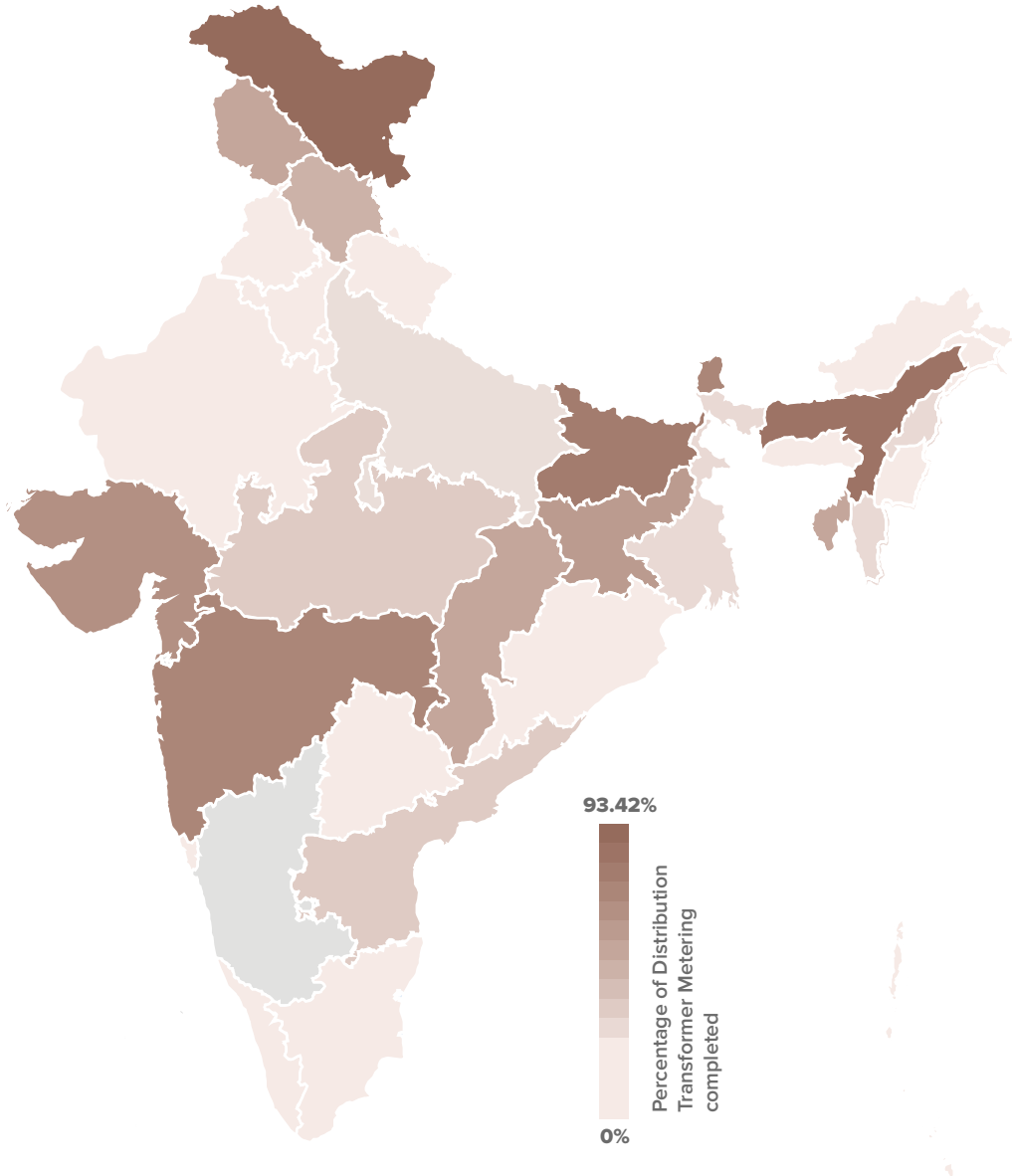
**Table 3-50: State-wise Feeder Metering completion status**

| States | Percentage of Smart Metering completed | Percentage Feeder Metering completed | Percentage DT Metering completed |
|---|---|---|---|
| Andaman & Nicobar Islands | 47.36% | 0.00% | 0.00% |
| Andhra Pradesh | 32.02% | 29.64% | 8.92% |
| Arunachal Pradesh | 11.24% | 38.23% | 2.56% |
| Assam | 66.86% | 103.31% | 74.32% |
| Bihar | 45.09% | 87.99% | 67.61% |
| Chandigarh | | | |
| Chhattisgarh | 43.81% | 86.64% | 23.47% |
| Dadra & Nagar Haveli and Daman & Diu | | | |
| Delhi | 100.00% | 0.00% | 0.00% |
| Goa | 0.00% | 0.00% | 0.00% |
| Gujarat | 15.61% | 0.00% | 33.22% |
| Haryana | 84.75% | 0.00% | 0.00% |
| Himachal Pradesh | 22.70% | 32.80% | 22.12% |
| Jammu & Kashmir | 41.57% | 54.52% | 19.79% |
| Jharkhand | 45.90% | 57.34% | 32.27% |
| Karnataka | | | |
| Kerala | 0.01% | 15.77% | 0.00% |
| Ladakh | 94.32% | 146.30% | 93.42% |
| Lakshadweep | | | |
| Madhya Pradesh | 20.77% | 63.80% | 15.94% |
| Maharashtra | 25.53% | 101.78% | 40.12% |
| Manipur | 11.54% | 56.58% | 0.32% |
| Meghalaya | 0.00% | 0.00% | 0.00% |
| Mizoram | 3.37% | 64.32% | 11.65% |
| Nagaland | 5.46% | 17.35% | 6.95% |
| Odisha | 100.00% | 0.00% | 0.00% |
| Puducherry | 0.00% | 0.00% | 0.00% |
| Punjab | 15.16% | 0.00% | 0.00% |
| Rajasthan | 8.50% | 93.32% | 0.16% |
| Sikkim | 48.45% | 74.41% | 45.25% |

| States | Percentage of Smart Metering completed | Percentage Feeder Metering completed | Percentage DT Metering completed |
|---|---|---|---|
| Tamil Nadu | 0.43% | 23.60% | 0.26% |
| Telangana | 100.00% | 0.00% | 0.00% |
| Tripura | 22.32% | 100.00% | 21.36% |
| Uttar Pradesh | 16.74% | 118.75% | 10.23% |
| Uttarakhand | 17.96% | 93.08% | 7.26% |
| West Bengal | 2.50% | 47.34% | 6.95% |

Further, a map representation of the State-wise Distribution Metering completion status is given in Figure 3 – 31.

**Figure 3-31: State-wise DT Metering completion status**

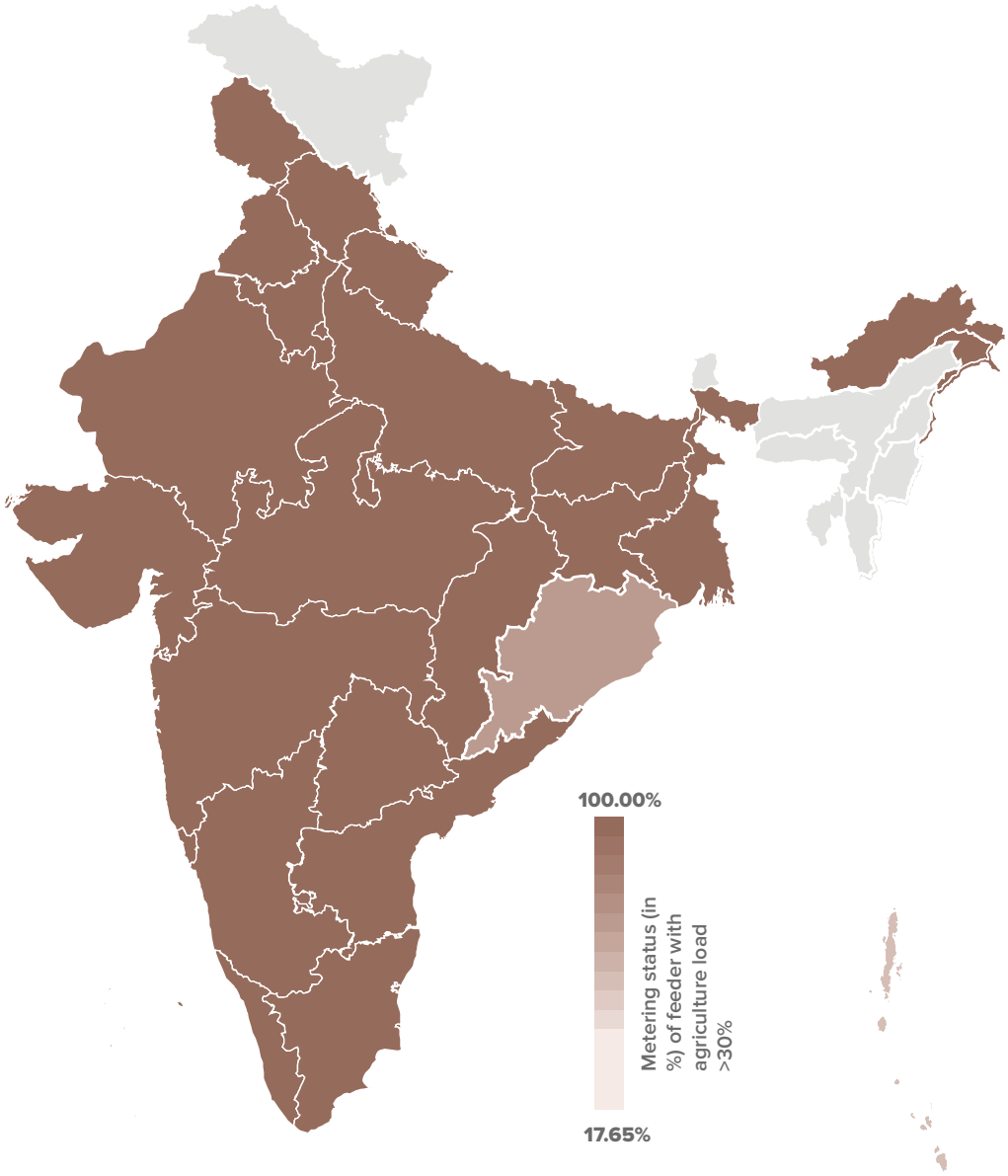



Source: https://www.nsgm.gov.in/en/sm-stats-all; https://energy.prayaspune.org/power-perspectives/metering-the-progress

Note: Data not available for Dadra & Nagar Haveli and Daman & Diu, Karnataka and Lakshadweep

Map representation of State-wise metering status of feeders with agriculture load >30% is given in Figure 3 – 32.

**Figure 3-32: State-wise metering status of feeder with agriculture load >30%**




Source: Report on Status of Metering in the Country – June 24: CEA, MoP - GoI

## PROGRAMME SPECIFIC INDICATORS

The evaluation of programme-specific indicators in the DISCOM sector for **SEEI 2025** maintains the approach established in SEEI 2024, focusing on two key metrics: **Demand Side Management (DSM) programmes** and **Capacity Building programmes in the DISCOM sector**. Table 3–51 provides the list of reporting States that are implementing energy efficiency and capacity-building programmes corresponding to these two specific indicators in the DISCOM sector.

Table 3-51: **Reporting States on Programme Specific Indicators**

| | Programmes for Energy Efficiency in Demand Side Management | Programme for Capacity Building in the DISCOM Sector |
|---|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Tamil Nadu, Odisha and Uttar Pradesh | Karnataka, Maharashtra, Tamil Nadu, Uttar Pradesh and Gujarat |
| **Group 2 (>15-20 MTOE)** | Andhra Pradesh, Telangana and Rajasthan | Andhra Pradesh, Telangana and Rajasthan |
| **Group 3 (>5-15 MTOE)** | Kerala, Punjab, Jharkhand and Chhattisgarh | Kerala and Jharkhand |
| **Group 4 (1-5 MTOE)** | Assam and Goa | Assam, Goa, Uttarakhand and Dadra & Nagar Haveli and Daman & Diu |
| **Group 5 (<1 MTOE)** | Tripura, Chandigarh and Meghalaya | Tripura, Chandigarh, Sikkim and Meghalaya |

## Programmes for Demand Side Management

The SEEI 2025 report highlights the significant role of **Demand Side Management (DSM)** initiatives across **17 States**, which include implementing various measures and promoting the adoption of energy-efficient appliances such as BLDC fans, agricultural pump sets, and LED lamps.

**17**
**States reported state-level DSM programmes**

In **Group 1**, **Karnataka** is implementing DSM through **Solar Rooftop Photovoltaic (SRTPV), KUSUM-B solar pumps, mandatory Solar Water Heaters (SWHs)**, and a **BLDC fan programme**. In FY 2024–25, 1,479 SRTPV systems, 80 KUSUM-B pumps, and 38,395 SWHs were installed, achieving **72.61 million units** of energy savings and **55,730 tonnes of $CO_2$ emission reduction**. In **Maharashtra**, MSEDCL's DSM initiatives include the installation of 173 Automatic Power Factor Correction (APFC) capacitor banks (FY 2024–25), rooftop solar at MSEDCL buildings, and EV charging stations. With ₹**133.18 lakh spent**, these efforts delivered **8.98 MU** of energy savings and **3,460 tonnes of $CO_2$ emission** reduction. In **Tamil Nadu**, DSM efforts focus on Transmission and Distribution (T&D) loss reduction, renewable energy integration, and consumer energy efficiency awareness, with investments of ₹**14,668 crore** yielding **2,934 MU** of energy savings from a combination of T&D loss reduction, renewable energy, and DSM measures.

In **Group 2**, **Andhra Pradesh** DSM initiatives include BLDC fan replacement in DISCOM offices, rooftop solar under PM Surya Ghar, solarization of agriculture feeders, promotion of rooftop PV, 5-star transformers, and network strengthening. This delivered **34.723 MUs** of savings with a load reduction of about **0.22 MW**. **23.97 MUs** were injected into the Grid through Solar Rooftops, contributing to **27,972 tonnes of $CO_2$ emission** reductions.

**Kerala** under **Group 3**, under its successful "Filament Free Kerala" programme distributed about 1.15 crore LED bulbs against a 1 crore target, delivering **412 GWh** annual energy savings and **2.95 lakh tonnes of $CO_2$ emission** reduction. In **Group 4**, **Assam's** DSM programme targets a 10% demand reduction through the large-scale adoption of BLDC fans, energy-efficient ACs, and motors via EESL, with expected savings of **153.91 MUs** and **87.11 MW** over two years. In **Tripura** under **Group 5**, 3 AgDSM measures have been approved with the objective of reducing peak demand by 10%. These measures cover 10% of subdivisions and consumers and include industrial energy audits and pilot home energy management systems.

## Programmes for Capacity Building in the DISCOM Sector

The SEEI 2025 report highlights significant capacity-building initiatives across **18 States** in the DISCOM sector, focusing on enhancing technical skills, financial management, and energy efficiency (EE) implementation.

Under **Group 1**, In **Karnataka**, under the Revamped Distribution Sector Scheme (**RDSS**) and Demand-Side Management (**DSM**), **BESCOM** is conducting regular technical and regulatory training through its HRD and allied institutes. A major programme in January 2025 trained **140 Assistant Engineers and 100 vendors** (totalling 6,702 man-days) to strengthen system efficiency, reduce Transmission and Distribution (T&D) losses, and support zero-loss objectives. In **Maharashtra**, a DSM capacity-building workshop was conducted at Pune for DISCOM officials under the BEE's programme. The goal was to promote the implementation of at least **50% of identified DSM measures**. In **Tamil Nadu**, TNPDCL's HRD wing conducted over **1,069 training programmes** in FY 2024–25, covering **46,400 trainees** and 36,300 man-days across safety, generation, transmission, and distribution disciplines.

**18**
**States reported capacity-building initiatives for EE in DISCOMS**

In **Group 2, i**n **Andhra Pradesh**, under BEE-led Capacity Building programmes, thousands of engineers and staff across APSPDCL, APCPDCL, and APEPDCL are being trained annually to strengthen technical, financial, and **DSM implementation capabilities**. **Kerala's** KSEBL under **Group 3** conducts regular training, with around **12 programmes** and capacity building of about **500 officials** during the reporting period.

In **Group 4**, **Assam's** APDCL, with BEE support, launched state-wide **DSM capacity-building programmes** in April and June 2025 to train officials and stakeholders on demand reduction and energy efficiency implementation. Under **Group 5, TSECL and SDA Tripura** are implementing **DSM-linked capacity-building activities** as per the approved Detailed Project Report (DPR) to support the targeted 10% peak load and energy savings across selected subdivisions and consumer groups.

## DISCOM SECTOR SPOTLIGHT

- **Karnataka** is implementing DSM, solar pumps, mandatory Solar Water and a BLDC fan, achieving 72.61 MU energy savings and 55,730 $tCO_2$ emission reduction
- In **Maharashtra**, installation of 173 APFC capacitor banks, rooftop solar and EV charging stations, with ₹133.18 lakh spent, delivering 8.98 MU energy savings and 3,460 $tCO_2$ emission reduction.
- In **Tamil Nadu**, DSM focuses on T&D loss reduction, renewable energy integration and consumer EE awareness, with investments of ₹14,668 crore yielding 2,934 MU energy savings (from T&D loss reduction, RE and DSM measures).
- **Andhra Pradesh** DSM initiatives include BLDC fan replacement, rooftop solar, solarisation of agriculture feeders, promotion of rooftop PV, 5-star transformers and network strengthening, delivering 34.723 MU savings with Load reduction of about 0.22 MW, 23.97 MU was injected into the Grid through Solar Roof tops and 27,972 $tCO_2$ emission reductions.
- In **Kerala**, about 1.15 crore LED bulbs were distributed against a 1 crore target, delivering 412 GWh annual energy savings and 2.95 lakh $tCO_2$ emission reduction.
- **Assam's** DSM programme targets a 10% demand reduction through large-scale adoption of BLDC fans, energy-efficient ACs and motors via EESL, with expected savings of 153.91 MU and 87.11 MW over two years.
- In **Tripura**, 3 AgDSM measures have been approved with the objective of reducing peak demand by 10%, covering 10% of subdivisions and consumers, including industrial energy audits and pilot home energy management systems.

# 3.7 CROSS SECTOR

## OVERVIEW

The cross-sector category in SEEI 2025 evaluates overarching energy efficiency policies and initiatives that extend beyond individual sectors, comprising **16 common indicators** with a maximum achievable score of **16 points**. These indicators cover diverse and critical areas, including the development of **State Energy Efficiency Action Plans (SEEAPs)** and **State Action Plans on Climate Change (SAPCCs)**, the existence of EE and energy conservation policies, and efforts in **Research and Development (R&D)** in EE. Governance is assessed through indicators like the **State budget** allocation for the designated agency as per Section 15A of the Energy Conservation Act (amended) 2022, the establishment and utilization of the **State Energy Conservation Fund (SECF)**, and the presence of **State-Level Steering Committees for Energy Transition**. The evaluation also includes performance metrics such as state-level **energy conservation awards**, **energy intensity**, and the **share of clean energy in electricity consumption**.

Table 3–52 provides a comprehensive summary of these cross-sector indicators. Figure 3–33 illustrates the States' scores in this category, grouped based on their Total Final Energy Consumption (TFEC), and Figure 3–34 showcases the comparative progress of States in SEEI 2025 versus SEEI 2024.

**Table 3-52: Cross Sector indicators under SEEI 2025**

| S. No | Indicator | Max Score | Scoring Criteria |
|---|---|---|---|
| **Policy** | | | |
| 1 | State Action Plan on Energy Efficiency/ Climate Change | 1.5 | |
| | Steps/ Projects/ Programmes initiated to implement the SEEAP in the state/UT. | 0.5 | Data Provided = 0.5; else= 0 |
| | State has allocated budget for implementation of SEEAP in FY 2024-25 | 0.5 | Yes=0.5; else=0 |
| | List of EE/EC measures included and implemented by State under its State Action Plan on Climate Change. | 0.5 | Data Provided = 0.5; else= 0 |
| 2 | Energy Efficiency (EE) & Energy Conservation (EC) Policy | 1.5 | |
| | State has notified EE & EC policy. | 1 | Notified = 1; Draft=0.5; else= 0 |
| | Implemented Programmes /Projects in the State/ UT under the notified EE & EC policy. | 0.5 | Implemented Projects/ Programmes = 0.5, else = 0 |
| 3 | Promotion of Innovation and R&D in Energy Efficiency | 0.25 | |
| | State has notified Policy/ Financial Instrument or Implemented Programs on Innovation and R&D in Energy Efficiency. | 0.25 | Data Provided = 0.25; else= 0 |
| **Finance** | | | |
| 4 | State budget of designated agency as per 15A of EC Act (amended) 2022 | 1 | |
| | SDA has prepared and submitted the detailed FY 2025–26 budget form to the State Government for inclusion in the annual state budget. | 0.5 | Budget prepared and submitted to state govt (₹ Crores) = 0.5; else= 0 |
| | State Government has approved and included the SDA's FY 2025–26 budget in the annual budget under relevant heads—buildings, industry, municipal, transport, agriculture, and DISCOM. | 0.5 | Budget approved and included in Annual State Budget (₹ Crores) = 0.5; else = 0 |
| 5 | Fund utilization | 1 | |
| | Percentage of utilization of the funds allocated by the BEE for the annual action plans since inception. | 0.75 | <25%=0; 25-50%=0.25; 50-75%=0.5; >75%=0.75 |
| | Percentage of utilization of the funds provided by the state government to the SDA for FY 2024-25. | 0.25 | Data Provided = 0.25; else= 0 |
| 6 | Establishment and utilization of State Energy Conservation Fund (SECF) | 1 | |
| | State has sourced additional funds for SECF, including non-matching state funds, multilateral/ bilateral aid, Cess /Tax allocations, etc. | 0.5 | Yes= 0.5; else= 0 |
| | Mode of SECF Utilization by State for energy efficiency adoption in FY 2024-25. (E.g., for admin costs, grants, RIF, risk guarantee etc.) | 0.5 | RIF/VGF/Credit guarantee/ ESCO etc= 0.5; else=0 |
| **Institutional Capacity** | | | |
| 7 | Formation of State-Level Steering Committee for Energy Transition | 0.5 | |
| | Number of meetings conducted by the State-Level Committee on Energy Transition till FY 2024-25 | 0.25 | Data Provided = 0.25; else= 0 |

| S. No | Indicator | Max Score | Scoring Criteria |
|---|---|---|---|
| | Steps undertaken by the State/ UT towards Energy Transition in FY 2024-25. | 0.25 | Steps undertaken = 0.25; else = 0 |
| **Institutional Capacity** | | | |
| 8 | Enforcement activities undertaken in the State under section 13A, 14 and 15 of the EC Act | 1.5 | |
| | Inspecting Officer has prepared an Annual Inspection Plan with yearly targets on compliance inspections covering EE labelling of appliances and equipment's, energy consumption of Designated Consumers, and Buildings covered under ECBC/ ECSBC/ ENS. | 0.75 | Data Provided = 0.75; else= 0 |
| | Percentage of targeted actions completed by Inspecting Officer, as per its Annual Inspection Plan. | 0.75 | Targets Achieved up to 30% = 0.25 Marks; 31-60% = 0.5 Marks; >60% = 0.75 Marks, else = 0 |
| 9 | Timely submission of monthly progress report to BEE | 0.5 | |
| | Date of submission of monthly progress report by SDA to BEE. | 0.5 | 1st - 5th of the next month = 0.5; 5th - 10th = 0.25; after 10th = 0 |
| 10 | Check Testing – Standard & labelling | 0.5 | |
| | Sampling Target achieved by the State/ UT under Check Testing of appliances and equipment covered under the S&L Programme. | 0.5 | 25% to 50% = 0.25; > 50% = 0.5 |
| 11 | Collaboration with SDA | 1 | |
| | Details on collaboration between the SDA and the state govt departments on energy efficiency action/ climate action/ net zero action plans in different sectors. | 0.5 | Data Provided = 0.5; else= 0 |
| | Details on collaboration of the SDA with the private sector/ industry association/ CSO/ academic institutions/ ESCOs to promote energy efficiency in different sectors. | 0.5 | Data Provided = 0.5; else= 0 |
| **Adoption of EE measures** | | | |
| 12 | Collection of end-use energy data | 1 | |
| | Details on periodic collection of energy consumption data at the SDA. (give example: use of mandatory audit data, other examples of existing practices other than the BEE's mandate) | 0.5 | Data Provided = 0.5; else= 0 |
| | Details on utilization of end-use energy data by the SDA to advance energy efficiency in the state. (give example) | 0.5 | Data Provided = 0.5; else= 0 |
| **Adoption of EE measures** | | | |
| 13 | State Energy Conservation Awards | 0.25 | |
| | SDA or other state organisations administer State level energy conservation awards to recognise outstanding performers in any one or more sectors – buildings categories such as Offices, Hotels, Hospitals or Industrial categories such as MSMEs etc. or any other sector. | 0.25 | Yes=0.25, else=0 |
| | Provide the details of such awards (if any) | | |

| S. No | Indicator | Max Score | Scoring Criteria |
|---|---|---|---|
| 14 | Promotion of ESCO Model | 1.5 | |
| | Number of EE/ EC projects conducted in the State/ UT through the Energy Service Company (ESCO) model in last 5 years (With or without SDA involvement) | 1 | 1-2 EE Projects = 0.25;<br>>2 - 5 EE Projects = 0.5<br>> 5 EE Projects = 1, else = 0 |
| | Number of training program on Measurement & Verification (M & V) conducted by State/UT. | 0.5 | Data Provided = 0.5; else= 0 |
| **Energy Saving** | | | |
| 15 | Energy Intensity | 2 | |
| | Energy Intensity (TFEC in TOE per unit NSDP) of the State/ UT. | 2 | States score for each TFEC group = Range (Max-Min) for each TFEC Group divided into 3 segments for scoring (lower third - 1.5, middle third - 1, highest third - 0.5); 1.5 points for state scores = Min to (Min + (Max-Min)/3) in each TFEC group; 1 point for state scores = (Min + (Max-Min)/3) to (Min + 2 (Max-Min)/3) in each TFEC group; 0.5 points for state scores =Min + ( 2(Max-Min)/3) to Max in each TFEC group. 2)<br>Improvement from last year = 0.5 |
| 16 | Clean energy mix in electricity consumption | 1 | |
| | Percentage of the total electricity consumption sourced from clean energy sources in the state. (Please provide breakup i.e. solar, wind, biomass, hydro, Nuclear etc.) | 1 | Data provided = 1; else = 0 |

Figure 3 – 33 shows the TFEC group-wise scores for the Cross-sector in SEEI 2025.

**Figure 3-33: TFEC group-wise cross-sector state scores**

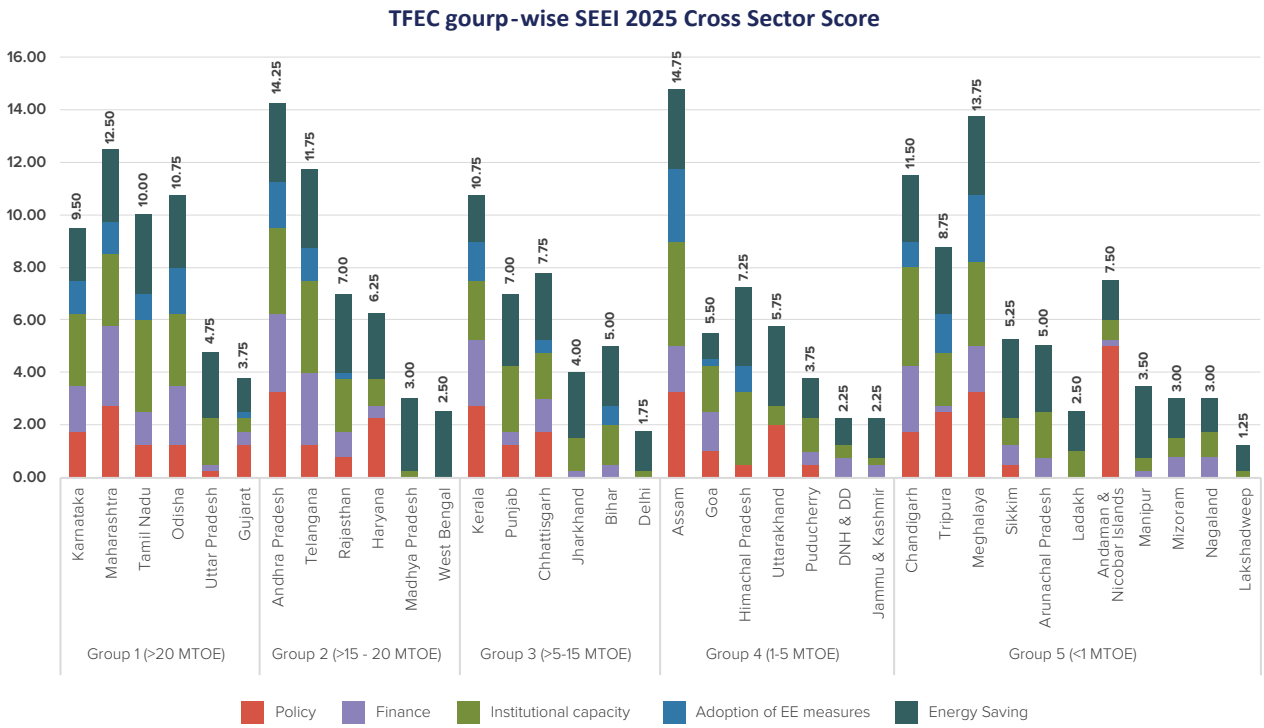
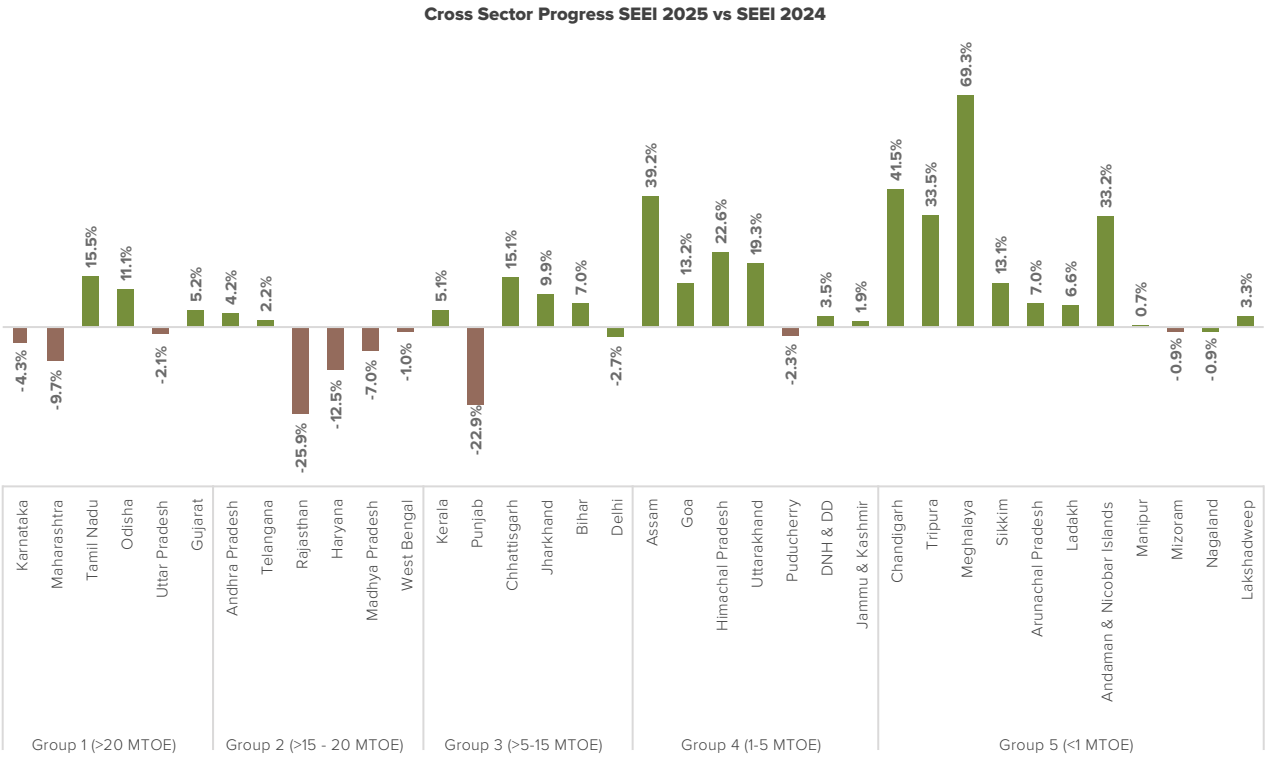



Figure 3 – 34 depicts the progress of the cross-sector for each state in SEEI 2025 in comparison with SEEI 2024.

**Figure 3-34: TFEC group-wise Cross Sector state progress – SEEI 2025 vs SEEI 2024**



## SEEI 2025 CROSS SECTOR SCORE HIGHLIGHTS

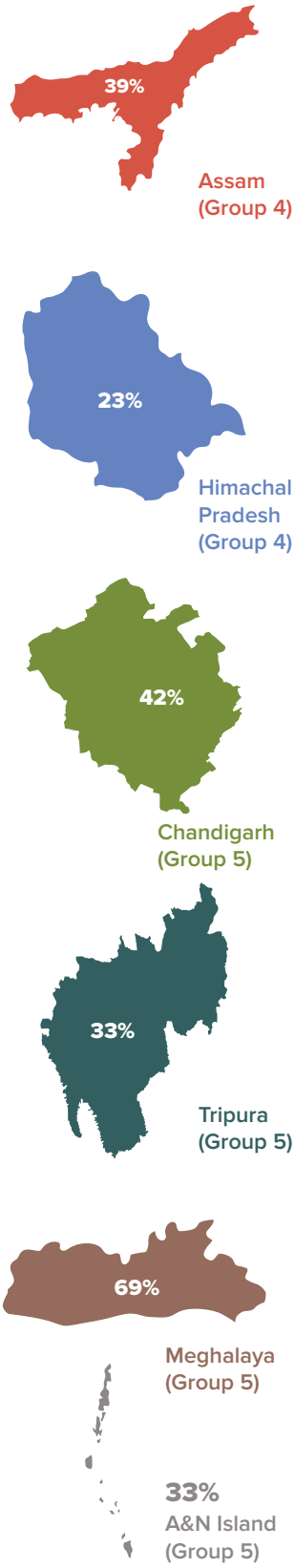
**Assam** achieved the highest overall score in the Cross-Sector category across all groups, scoring **14.75**, followed by **Andhra Pradesh (14.25)** and **Meghalaya (13.75)**.

In **Group 1**, **Maharashtra** was the top performer with a score of **12.50** despite a 10% decline from SEEI 2024 performance. **Odisha** secured second place with a score of **10.75**, showing a **11%** gain. **Group 2** was led by **Andhra Pradesh** with a score of **14.25** (a **4%** improvement), followed by **Telangana** with a score of **11.75** (a **2%** gain). In **Group 3**, **Kerala** emerged as the top performer with **10.75** (a **5%** gain), followed by **Chhattisgarh** with a score of **7.75** (a **15%** improvement).

**Group 4** was led by **Assam** with **14.75** (a significant **39%** improvement), followed by **Himachal Pradesh** with **7.25** (a **23%** improvement). In **Group 5**, **Meghalaya** emerged as the top performer with **13.75**, followed by **Chandigarh** with **11.5**. Both demonstrated remarkable progress with score improvements of **69%** and **42%**, respectively.

Notably, six States—**Meghalaya, Assam, Himachal Pradesh, Chandigarh, Tripura, and Andaman & Nicobar Island**—showed significant advancements, each improving their scores by **over 20%** compared to the previous evaluation.

**Figure 3-35: States with more than 20% increase in Cross Sector scores in comparison to SEEI 2024.**




## COMMON INDICATORS

### Policy

The **State Energy Efficiency Action Plan (SEEAP)** has been finalized and approved in all **36 States**. In the SEEI 2025 assessment, only **18 States** reported on their SEEAP implementation status. Of these reporting entities, **7 States** have allocated budgets for SEEAP implementation in FY 2024–25.

Table 3–53 provides the detailed status of reporting States concerning their State Energy Efficiency Action Plans, their implementation progress, and the corresponding Budget Allocation for SEEAP.

**Table 3-53: Reporting States on State Energy Efficiency Action Plans, their approval & implementation steps, and Budget Allocation for SEEAP**

| | |
|---|---|
| Group 1 (>20 MTOE) | Maharashtra, Gujarat, Odisha and Tamil Nadu₹ |
| Group 2 (>15-20 MTOE) | Andhra Pradesh₹, Telangana and Haryana |
| Group 3 (>5-15 MTOE) | Kerala₹, Punjab and Chhattisgarh₹ |
| Group 4 (1-5 MTOE) | Assam₹, Himachal Pradesh, Uttarakhand and Puducherry, |
| Group 5 (<1 MTOE) | Tripura, Chandigarh₹, Sikkim and Meghalaya₹ |

Note: The States with "₹" have reported budget allocation for the implementation of their SEEAP.

A total of **14 States** have reported incorporating and implementing energy efficiency (EE) and energy conservation (EC) measures within their **State Action Plans on Climate Change (SAPCC)**. This integration demonstrates the States' commitment to tackling climate change through strategic energy initiatives.

Table 3–54 provides the details of the reporting States on implementing EE/EC measures under their State Action Plans on Climate Change.

**Table 3-54: Reporting States on implementing EE/EC measures under their State Action Plans on Climate Change**

| | |
|---|---|
| Group 1 (>20 MTOE) | Maharashtra, Tamil Nadu, Odisha and Gujarat |
| Group 2 (>15-20 MTOE) | Andhra Pradesh, Telangana, Rajasthan and Haryana |
| Group 3 (>5-15 MTOE) | Kerala, Punjab and Chhattisgarh |
| Group 4 (1-5 MTOE) | Assam, Goa and Uttarakhand |
| Group 5 (<1 MTOE) | Tripura, Chandigarh, Meghalaya and Andaman & Nicobar Islands |

Policies on Energy Efficiency (EE) or Energy Conservation (EC) or both have been officially notified by **10** States. Detailed information on the States reporting such policies is provided in Table 3–55.

**Table 3-55: Reporting States on Energy Efficiency/ Energy Conservation Policy**

| | |
|---|---|
| Group 1 (>20 MTOE) | **Karnataka** and **Maharashtra** |
| Group 2 (>15-20 MTOE) | **Andhra Pradesh** and Haryana |
| Group 3 (>5-15 MTOE) | Kerala |
| Group 4 (1-5 MTOE) | **Assam**, **Goa** and Uttarakhand |
| Group 5 (<1 MTOE) | **Tripura** and **Meghalaya** |

Note: The States marked in bold reported in the table above, have also reported initiating steps/projects/projects in line with the Energy Efficiency or Energy Conservation Policies

Promotion of innovation and research & development (R&D) in energy efficiency has been reported by 16 States. These States are listed in Table 3–56.

**Table 3-56: Reporting States on the promotion of Innovation and R & D in Energy Efficiency**

| | |
|---|---|
| Group 1 (>20 MTOE) | Karnataka, Maharashtra, Tamil Nadu, Odisha, Uttar Pradesh and Gujarat |
| Group 2 (>15-20 MTOE) | Andhra Pradesh, Telangana, Rajasthan and Haryana |
| Group 3 (>5-15 MTOE) | Kerala, Punjab and Chhattisgarh |
| Group 4 (1-5 MTOE) | Assam |
| Group 5 (<1 MTOE) | Chandigarh and Meghalaya |

## KEY INITIATIVES IN CROSS-SECTOR POLICY

In **Maharashtra**, the Draft State Energy Conservation (EC) Policy is under government consideration, proposing a budget of ₹**88.55 Crore/ year** for EE initiatives. The state also launched its **Green Hydrogen Policy in 2023**.

**Odisha's** Energy Efficiency & Climate Change Policy focuses on transitioning to electric vehicles, conducting energy audits, promoting ethanol blending, and replacing inefficient appliances with star-rated ones. The state is utilizing demonstration projects funded by SDA Odisha and collaborating with IIT Bhubaneswar for EE innovation, including motion sensor assessments.

**Karnataka's** introduced EE & EC Policy 2022-27 aims to conserve **744 million kWh**, with **60%** of this commitment achieved by FY 2025. The state has signed MoUs for knowledge support and is coordinating with various departments for policy implementation and stakeholder training.

**Tamil Nadu's** State Energy Efficiency Action Plan (SEEAP) has been approved by the **Chief Secretary/Government of Tamil Nadu**, with steps underway to allocate a budget for its implementation across sectors. The **TNSAPCC 2.0** prioritizes energy efficiency and solar missions, focusing on the building, transport, and waste management sectors to achieve **carbon neutrality by 2070**.

**Andhra Pradesh** has introduced multiple key policies, including the **Pumped Storage Power Promotion Policy (2022)**, the **Green Hydrogen & Green Ammonia Policy (2023)**, the **Dedicated Energy Efficiency and Energy Conservation Policy (2023-2028)**, EV Mobility Policy 4.0, and a Circular Economy Policy. The state is driving industrial decarbonization, electric vehicles, and green building incentives, aiming for **10 lakh EVs by 2030**, **100% electrification of APSRTC buses by 2029**, and providing decarbonization subsidies under various industrial and MSME policies.



**7**
**States have allocated budgets to implement their State Energy Efficiency Action Plans.**

**Telangana** notified the **Clean & Green Energy Policy**, promoting large-scale renewable energy (RE), hybrid systems, Battery Energy Storage Systems (BESS), EV charging, and green hydrogen, along with mandates for star-rated appliances and pumps. The state implemented its EV Policy with single-window clearance and tax exemptions for EVs up to 2026. EE & EC measures, such as the **ECBC mandate, SEEAP, mandatory star-labelled appliances**, and integration of EE in industrial/MSME policies, strengthen the cross-sector sustainability framework.

**Kerala** has mandated **energy audits for all HT/EHT consumers**, integrated EE measures in buildings, industries, transport, and agriculture, and operationalized its SEEAP with building codes, cool roofs, efficient pumps, and institutional cooking electrification. The state promotes RE expansion, DSM, T&D loss reduction, EV adoption, and MSME energy-efficiency through subsidy schemes and cluster interventions.

**Chhattisgarh** implemented an **Innovation & Entrepreneurship Development Policy** to foster technological growth, which supports EE-related innovations.

**Assam** supports SEEAP implementation by allowing **SECF interest earnings to be utilized** and has aligned climate-health initiatives for Green and Climate-Resilient Health Facilities. The state promotes EE & EC through awareness campaigns, demonstration projects, capacity-building workshops, cold-chain efficiency, and EE in government schools and hospitals. The SDA of Assam launched an **AI-based digital assistant** to help electricity consumers select appropriately sized appliances and reduce electricity bills through data-driven recommendations. Innovation is further encouraged through the ASTE Council's Innovation & Technology Generation scheme and the development of an AI-based chatbot.

**Chandigarh** has implemented its **State Action Plan on Climate Change**, mandated the procurement of minimum star-rated appliances, and signed an MoU with Punjab Engineering College to advance EE measures. Large-scale EE deployment is underway through UJALA, net-zero targets for government buildings, and planned **green certification for newly constructed public buildings**. The draft State EE/EC Policy has been prepared and submitted for approval, and the EV Policy supports R&D and innovation in clean mobility.

**10** **States have dedicated policies on Energy Efficiency or Energy Conservation.**

**Meghalaya** has identified Buildings, Transport, and Industry as **priority SEEAP sectors**. State-funded initiatives include EV awareness selfie points, building EE banners, and district-wide code adoption (ECBC/ECSBC) in progress. The state has notified the **State Energy Conservation Fund (SECF)**, advanced ECBC/ECSBC adoption, initiated Super ECBC Building planning, and integrated EE priorities within the State Climate Action Plan. Regulatory frameworks—including the Energy Conservation Regulation 2017, EV Policy 2021, DSM Rules, and Power Policy 2024—collectively promote EE, RE, and sustainable mobility.

## Finance

As per **Section 15A of the amended Energy Conservation Act, 2022**, a total of **12 States** have prepared and submitted detailed budget proposals to their respective State Governments for the State Designated Agencies (SDAs) for inclusion in the annual State Budget for FY 2025–26.

Of these, **9 State Governments** have already approved and incorporated the SDA budgets in the annual budget under relevant sectors such as buildings, industry, municipal, transport, agriculture, and DISCOMs for FY 2025–26.

The details of these reporting States are presented in Table 3–57.

**Table 3-57: Reporting States on prepared and submitted the detailed budget for inclusion in the annual state budget and approval for the same**

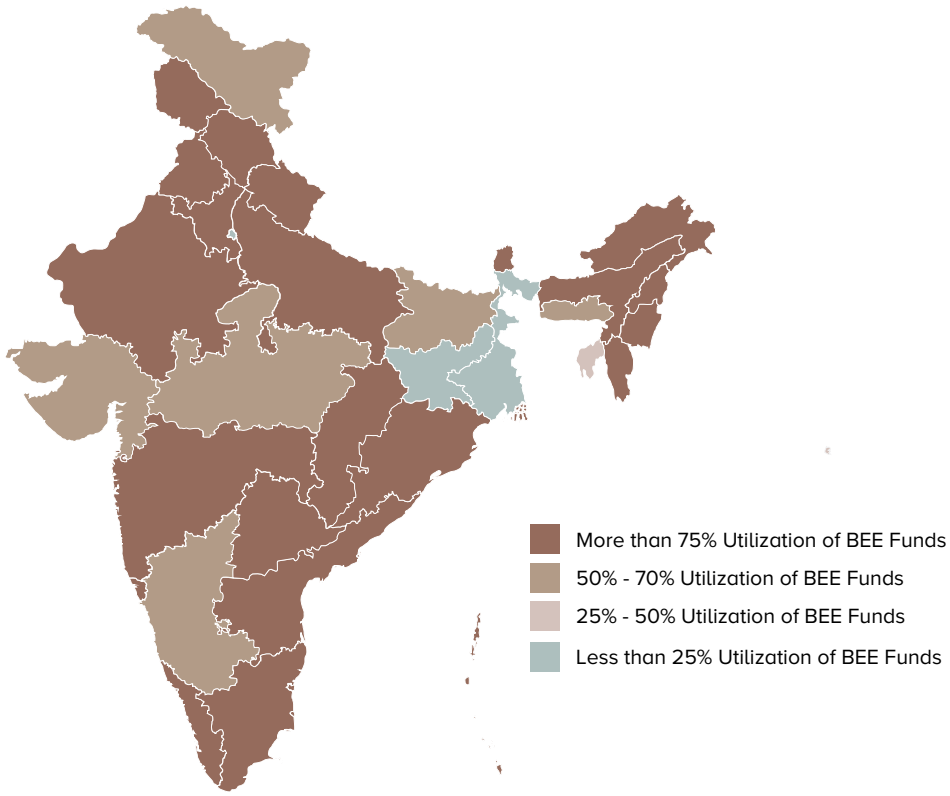
| | |
|---|---|
| Group 1 (>20 MTOE) | **Karnataka, Maharashtra** and **Odisha** |
| Group 2 (>15-20 MTOE) | **Andhra Pradesh** and **Telangana** |
| Group 3 (>5-15 MTOE) | **Kerala** and **Chhattisgarh** |
| Group 4 (1-5 MTOE) | Assam and Goa |
| Group 5 (<1 MTOE) | **Chandigarh**, **Meghalaya** and Arunachal Pradesh |

Note: The states marked in bold above have approved and included the SDA's FY 2025–26 budget in the annual budget under relevant heads-buildings, industry, municipal, transport, agriculture and DISCOM

Under the SEEI 2025, the analysis of fund utilisation by the State Designated Agencies provided by Bureau of Energy Efficiency, highlights **11** States utilising more than **75% of the funds allocated by BEE**. **9 States** have reported utilising more than **50% - 75% of the funds allocated by BEE**. While **16 States** have utilised less than **25% of the funds allocated by BEE**.

A map representation of the insights has been provided below in Figure 3 – 36.

**Figure 3-36: State-wise BEE Fund Utilisation Status (FY 2024-25)**




All States have successfully notified the establishment of the **State Energy Conservation Fund (SECF)**. Beyond the basic establishment, **7** States have reported sourcing **additional funds** for the SECF, which includes non-matching state funds, multilateral/bilateral aid, and Cess/Tax allocations. Furthermore, **eight States** have reported the mode of **SECF utilization** for supporting energy efficiency adoption in FY 2024-25.

Detailed information regarding the notification, funding, and utilization of the SECF is provided in Table 3–58.

**Table 3-58: Reporting States on Mode of utilisation of SECF and sourcing of additional source of funds**

| | State has sourced additional funds for SECF, including non-matching state funds, multilateral/bilateral aid, Cess / Tax allocations, etc. | Mode of SECF Utilization by State for energy efficiency adoption in FY 2024-25. (E.g., for admin costs, grants, RIF, risk guarantee etc.) |
|---|---|---|
| Group 1 (>20 MTOE) | Maharashtra | Maharashtra, Tamil Nadu and Odisha |
| Group 2 (>15-20 MTOE) | Andhra Pradesh, Telangana and Rajasthan | Andhra Pradesh, Telangana and Rajasthan |
| Group 3 (>5-15 MTOE) | Bihar | Kerala |
| Group 4 (1-5 MTOE) | | Assam |
| Group 5 (<1 MTOE) | Chandigarh and Ladakh | |

## Key Initiatives on Finance in Cross-Sector

**Maharashtra** has submitted detailed budget plans for FY 2025–26, with ₹**139.93 crore** approved by the state government. It achieved **100% utilization** of BEE-allocated funds in FY 2024–25 and **78.8% utilization of state funds for NRSE** energy conservation in FY 2025–26. **Odisha** secured approval of ₹**127.17** crore for FY 2025–26 for energy

efficiency and conservation projects; in FY 2024–25, it utilized **₹452.98 lakh of ₹462.60 lakh** allocated by BEE and **₹11.40 crore of ₹13.62** crore from the state government. **Karnataka** approved **₹2,000 lakh** for EE and EC activities in FY 2025–26, with **₹133 lakh** earmarked. It utilized **₹2,396.60 lakh (90.73%)** of ₹2,641.59 lakh allocated by BEE and **4.5% of ₹270 lakh** earmarked by the state in FY 2024–25. **Tamil Nadu** utilized **₹684.53 lakh (95.93%)** of ₹710.93 lakh of BEE-allocated funds under the FY 2024–25 annual action plan.

**Andhra Pradesh** utilized **99.24%** of the ₹26.74 crore **BEE allocation** and **fully utilized its ₹2 crore state budget** for EE activities. **SECF funds** have been allocated for energy efficiency measures in **APTRANSCO** substations, with **PMC charges for RIF works** under implementation. **Telangana** fully approved and integrated SDA budgets for FY 2024–25 and FY 2025–26, achieving 100% utilization of both **BEE-allocated funds** totalling **₹14.55 crore** and **state contributions**, reflecting strong financial execution. **Kerala** allocated its FY 2025–26 SDA budget across buildings, industry, municipal, agriculture, transport, and DISCOM sectors, achieving **100% utilization of BEE funds (₹157.91 lakh)** and **state funds (₹400 lakh)**. The state has further strengthened its SECF with additional resources to support EE programmes.

**Assam** submitted and secured approval for budgets for FY 2025 and FY 2025–26 across all major sectors. **BEE fund utilization reached 89.55% of ₹797.14 lakh sanctioned**, while the SECF holds ₹1.15 crore, with interest directed for SEEAP implementation on a grant basis. **Chandigarh's** SDA budget for FY 2025–26 has been approved with allocations across all major sectors; BEE funds were fully utilized, while **47% of state funds** sanctioned in mid-2025 have been utilized to date. SECF account creation is under approval and will be operationalized upon finance department clearance. **Meghalaya** provided Grant-in-Aid under Head 2045 for FY 2024–25 to FY 2026–27 to implement SEEAP activities, achieving over **95% utilization of BEE funds** and over **80% of state funds**. The state has notified its SECF, proposing major allocations including **₹20.20 crore** for inverter LED lamps for BPL households, **₹5 crore for Super ECBC buildings**, and **₹25 lakh** for **RIF support** across industry, DISCOM, transport, municipal, and building sectors.



**7**

**States have reported mobilizing additional funds for the SECF, including non-matching state funds,**

## Institutional Capacity

State-Level Steering Committees for Energy Transition have been established in **31 States**. Out of these, **30 States** have actively conducted meetings to guide their transition efforts, and **16 States** have reported taking additional, specific steps to further advance energy transition initiatives. The detailed information regarding the establishment, meeting activity, and additional steps taken by the States is presented in Table 3–59.

**Table 3-59: Reporting States Conducted meeting on the formation of State level Steering Committee on Energy Transition**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | **Karnataka, Maharashtra, Tamil Nadu, Odisha, Uttar Pradesh,** Gujarat |
| **Group 2 (>15-20 MTOE)** | **Andhra Pradesh, Telangana,** Rajasthan, Haryana, Madhya Pradesh |
| **Group 3 (>5-15 MTOE)** | **Kerala, Punjab**, **Chhattisgarh**, Bihar |
| **Group 4 (1-5 MTOE)** | **Assam**, Goa, **Himachal Pradesh**, Uttarakhand, **Puducherry**, Jammu & Kashmir |
| **Group 5 (<1 MTOE)** | **Tripura, Chandigarh, Sikkim**, Mizoram, Meghalaya, Andaman and Nicobar Islands, Arunachal Pradesh, Manipur, Nagaland |

Note: The States marked in bold have also reported steps taken towards energy transition

A total of **12 States** have reported the formulation of enforcement activities under **Sections 13A, 14, and 15 of the Energy Conservation (EC) Act**. In these States, Inspecting Officers are actively preparing **Annual Inspection Plans** with defined yearly targets for compliance inspections. These inspections are comprehensive, covering the **Energy Efficiency (EE) labelling** of appliances and equipment, the monitoring of energy consumption of **Designated Consumers (DCs)**, and compliance for buildings under the **ECBC (Energy Conservation Building Code), ECSBC (Energy Conservation Existing Building Code), and ENS (Energy Notification Standard)**. Performance against these Annual Inspection Plans has been reported by **8 States**, detailing the percentage of targeted inspection actions successfully completed by the respective Inspecting Officers.

The specific details of these enforcement activities are presented in Table 3–60.

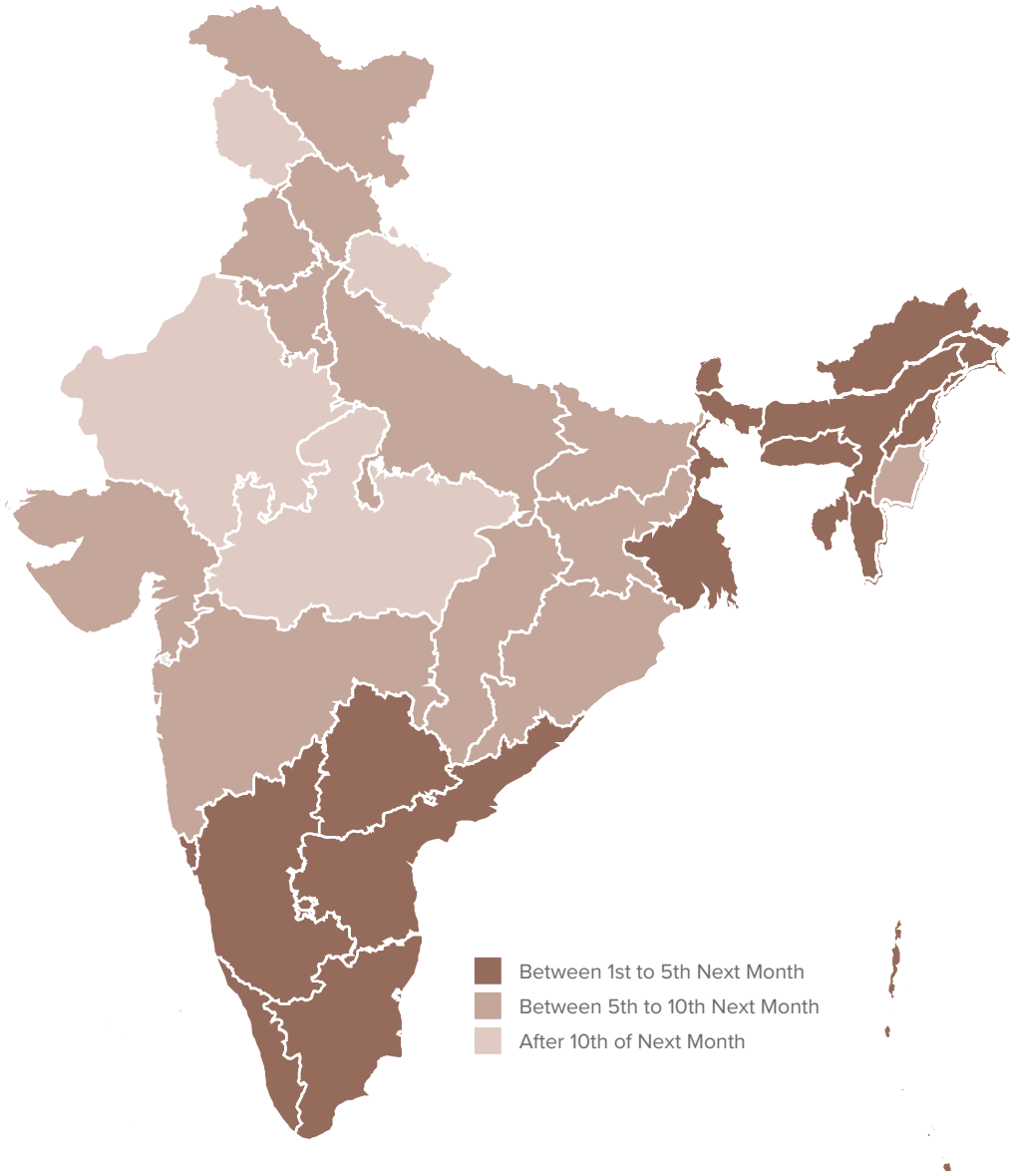
**Table 3-60: Reporting States on preparation of Annual Action Plans for Enforcement activities undertaken in the State under section 13A, 14 and 15 of the EC Act**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | Maharashtra, **Tamil Nadu**, Odisha, **Karnataka** |
| **Group 2 (>15-20 MTOE)** | **Andhra Pradesh, Telangana, Rajasthan** |
| **Group 3 (>5-15 MTOE)** | Punjab |
| **Group 4 (1-5 MTOE)** | **Assam**, Himachal Pradesh |
| **Group 5 (<1 MTOE)** | **Chandigarh, Meghalaya** |

Note: The States marked in bold have also reported %ge of targeted action completed in line with the Annual Action Plans on Enforcement of EC Act

The State Designated Agencies (SDAs) are responsible for regularly submitting their monthly progress reports to the Bureau of Energy Efficiency (BEE). Out of **30 States** that reported on their submission timeliness, **15 States** submitted their reports **on time**, which is defined as being within the 1st to 5th of the following month. The remaining **15 States** submitted their reports between the 5th and 10th, while the last **six States** either submitted their reports after the 10th or did not report their submission status at all. A map representation illustrating this reporting timeliness is provided below in Figure 3–37.

**Figure 3-37: State-wise Monthly Progress reporting to BEE**




The achievement of sampling targets under the **Check Testing of appliances and equipment** covered under the **Standard & Labelling (S&L) Programme** has been reviewed across States and Union Territories. Based on the reported data, **7 States** have achieved **more than 50%** of their sampling targets, while **9 States** have achieved **between 25% and 50%** of their targets. The remaining States have either achieved **below 25%** of their targets or reported **no sampling** activity. The detailed breakdown of these achievements is presented in Table 3–61.

**Table 3-61: Reporting States Sampling Target achievement by state**

| | |
|---|---|
| **Group 1 (>20 MTOE)** | **Karnataka**, Maharashtra, Odisha |
| **Group 2 (>15-20 MTOE)** | **Andhra Pradesh** |
| **Group 3 (>5-15 MTOE)** | Kerala, Bihar |
| **Group 4 (1-5 MTOE)** | **Assam, Goa, Uttarakhand**, Himachal Pradesh, Puducherry and Dadra & Nagar Haveli and Daman & Diu (DD) |
| **Group 5 (<1 MTOE)** | **Chandigarh, Arunachal Pradesh**, Manipur and Nagaland |

Note: The States marked in bold have reported more than 50% Sampling Target achievement. Other States have reported 25% - 50% Sampling Target achievement.

Collaboration between **State Designated Agencies (SDAs)** and various state government departments on energy efficiency, climate, and net-zero action plans has been reported by **20 States**. Additionally, SDAs in **17 States** have established external partnerships with a broad range of entities to advance energy efficiency initiatives, including private sector entities, industry associations, civil society organisations, academic institutions, and Energy Service Companies (ESCOs). The specific details of the reporting States concerning these collaborations are provided in Table 3–62.

**17 states have partnered with private sector entities to advance energy efficiency initiatives**

**Table 3-62: Reporting States on collaboration between State Designated Agencies and stakeholder state departments**

| | |
|---|---|
| Group 1 (>20 MTOE) | **Karnataka, Maharashtra, Tamil Nadu, Odisha, Uttar Pradesh** |
| Group 2 (>15-20 MTOE) | **Andhra Pradesh, Telangana, Rajasthan** |
| Group 3 (>5-15 MTOE) | **Kerala, Punjab, Jharkhand, Chhattisgarh**, Bihar |
| Group 4 (1-5 MTOE) | **Assam,** Goa, **Himachal Pradesh,** |
| Group 5 (<1 MTOE) | **Tripura, Chandigarh, Meghalaya**, Arunachal Pradesh |

Note: The States marked in bold have also reported collaboration between the with the Private Sector/ Industry Associations/ CSOs/ Academic Institutions/ ESCOs.

## Key Initiatives on Institutional Capacity in Cross-Sector

**Maharashtra** held one State-Level Steering Committee (SLSC) meeting to blueprint the energy transition, aligned with India's COP-26 goals. Enforcement included verification of over **960 Star Labels** and **completed 25 appliance check-tests**, meeting the sampling target.

**Odisha** convened its SLSC for Energy Transition, outlining an action plan for conservation and transition. Enforcement achieved full market surveillance and conducted **61 check-tests** of appliances under the EC Act.

In **Karnataka**, the SLSC was formed to monitor EE & EC policy implementation, achieving **60% of committed measures** by FY 2024-25. Enforcement involved **600+ appliance market surveillances** and collaboration to integrate the ECBC Code into building approvals.

**Tamil Nadu's** SLSC met to discuss SEEAP implementation and EE measures. An **11% achievement** of the **2,141-appliance** market surveillance plan was reported, supported by a new mobile app for monitoring.

**Andhra Pradesh's** SLSC mandated the adoption of **IE3 motors, EVs, energy audits, and ECSBC** in building bye-laws, fostering institutional capacity for energy transition. The state collaborates extensively with various departments, industries, and education bodies to promote EE, decarbonization, and renewable energy adoption.

**Telangana** constituted its SLSC and held its first meeting, aligning policies like EV adoption and solarization of government buildings. **75% of enforcement inspections** were completed, and **27 products were check-tested** under S&L. Strong collaboration exists between the SDA and state departments, industry associations, CSOs, ESCOs, and academic institutions for EE and net-zero planning.

**Kerala** launched the **Energy Transition Roadmap 2040** and the **Kerala Power Policy 2024**, setting ambitious targets for **100% renewable electricity** and advancing BESS and green hydrogen pilots. Key departments (EMC, KSEBL, PWD, Transport) collaborate on EE across all sectors, from smart metering and EV mobility to building code enforcement, supported by capacity-building programmes for innovation and grid modernization.

**Assam** has formed its SLSC, held one Energy Transition meeting, and submitted the implementation plan. Enforcement of the EC Act is strong, reporting **100% ECBC compliance** (2019–20), **90% S&L compliance** (2025–26), and 90% check-testing completion. The SDA collaborates with CII, IIT Guwahati, and EESL, contributing to the SAPCC and sectoral EE actions.

In **Chandigarh**, two SLSC meetings have been held, with departments complying with transition directives. Enforcement progress achieved **42%** toward the annual **1,615-appliance market** surveillance target. Collaboration is established with the Department of Environment, Transport, and PEC to strengthen EE and climate-action programmes.

**Meghalaya** established a high-level **State Council on Climate Change & Sustainable Development** led by the Chief Minister, alongside an active SLSC guiding SEEAP, ECBC, and SECF processes. Over **80% enforcement progress** has been achieved under the EC Act, including market surveillance and check testing. The SDA collaborates extensively with multiple departments (Health, Tourism, PWD, Agriculture) to support EE implementation and capacity building.

## Adoption of EE Measures

A total of **14 States** have reported details on the periodic collection of **energy consumption data** by Inspecting Officers at their respective State Designated Agencies (SDAs). This data collection supports the enforcement and monitoring of energy efficiency policies.

In addition, **10 States** have outlined how their SDAs are utilizing this **end-use energy data** to actively advance energy efficiency initiatives within the State.

Further details on both the collection and utilization of this data are presented in Table 3–63.

**Table 3-63: Reporting States Collection and utilization of End-Use energy data**

| | Details on periodic collection of energy consumption data at the SDA. | Details of utilization of end-use energy data by the SDA to advance energy efficiency in the state |
|---|---|---|
| **Group 1 (>20 MTOE)** | Karnataka, Maharashtra, Odisha | Karnataka, Maharashtra, Odisha |
| **Group 2 (>15-20 MTOE)** | Andhra Pradesh, Telangana, Haryana | Telangana, Haryana |
| **Group 3 (>5-15 MTOE)** | Kerala, Chhattisgarh, Bihar | Kerala |
| **Group 4 (1-5 MTOE)** | Assam, Himachal Pradesh | Assam, Himachal Pradesh |
| **Group 5 (<1 MTOE)** | Tripura, Chandigarh, Meghalaya | Tripura, Meghalaya |

**12 States** have instituted **State Energy Conservation Awards** to formally recognize and incentivize efforts in energy efficiency and conservation. The specific details of the reporting States that have established these awards are provided in Table 3–64.

**Table 3-64: Reporting States on State Energy Conservation Awards**

| | |
|---|---|
| Group 1 (>20 MTOE) | Karnataka, Maharashtra, Tamil Nadu, Odisha, Gujarat |
| Group 2 (>15-20 MTOE) | Andhra Pradesh, Rajasthan |
| Group 3 (>5-15 MTOE) | Kerala, Chhattisgarh |
| Group 4 (1-5 MTOE) | Assam, Goa |
| Group 5 (<1 MTOE) | Chandigarh |

Initiatives to promote the **Energy Service Company (ESCO) model** have been undertaken in **9 States**, focusing on the implementation of energy efficiency (EE) and energy conservation (EC) projects. Additionally, **3 States** have conducted training programs on **Measurement and Verification (M&V)** to further support these ESCO initiatives and ensure the accurate assessment of energy savings.

The specific details of the reporting States concerning these initiatives are provided in Table 3–65.

**Table 3-65: Reporting States on the promotion of ESCO models and Measurement and Verification**

| | |
|---|---|
| Group 1 (>20 MTOE) | **Tamil Nadu**, Odisha |
| Group 2 (>15-20 MTOE) | Andhra Pradesh, Telangana |
| Group 3 (>5-15 MTOE) | Kerala |
| Group 4 (1-5 MTOE) | **Assam** |
| Group 5 (<1 MTOE) | Tripura, Chandigarh, **Meghalaya** |

Note: The States marked in bold have also reported conducting training programs on Measurement and Verification (M&V).



**9 States have reported promotion of ESCO model for implementation of EE programmes.**

## Key Initiatives on Adoption of EE Measures in Cross-Sector

In **Maharashtra**, EE projects have been successfully implemented across MSMEs, the Municipal Sector, and agricultural feeders, supported by workshops and energy savings tracking, with the ESCO model promoted through training for industry personnel. **Odisha** SDA collects consumption data to identify high-consuming sectors and designs EE programmes, including the PAT scheme, while promoting the ESCO model through collaboration with EESL for efficient appliances and clean cooking initiatives. **Karnataka** mandates energy consumption disclosure for five major sectors, with KREDL consolidating annual data; the state promotes the ESCO model through training on EV charging stations and workshops. In **Tamil Nadu**, end-use data is collected to progress EE projects, and the TWAD Board implemented an ESCO-model project, with TNSDA conducting training to promote the model state-wide.

**Andhra Pradesh,** collects end-use data to identify high consumers for the PAT cycle and has successfully implemented ESCO projects across sectors, including LED streetlights and government building retrofits. **Telangana** conducts state-wide energy data collection and walk-through audits, implementing efficiency programmes to replace inefficient appliances; the ESCO model is promoted through EESL interventions and state-wide LED streetlighting, while the PAT cell conducted **three Measurement and Verification (M&V) training programmes** to support enhanced industrial efficiency. In **Kerala**, mandatory energy audits and sectoral programmes generate comprehensive end-use energy data used for policy design, benchmarking, and DSM planning; the state advances EE via MuDSM, public building retrofits, smart-metering, and MSME cluster audits, with the

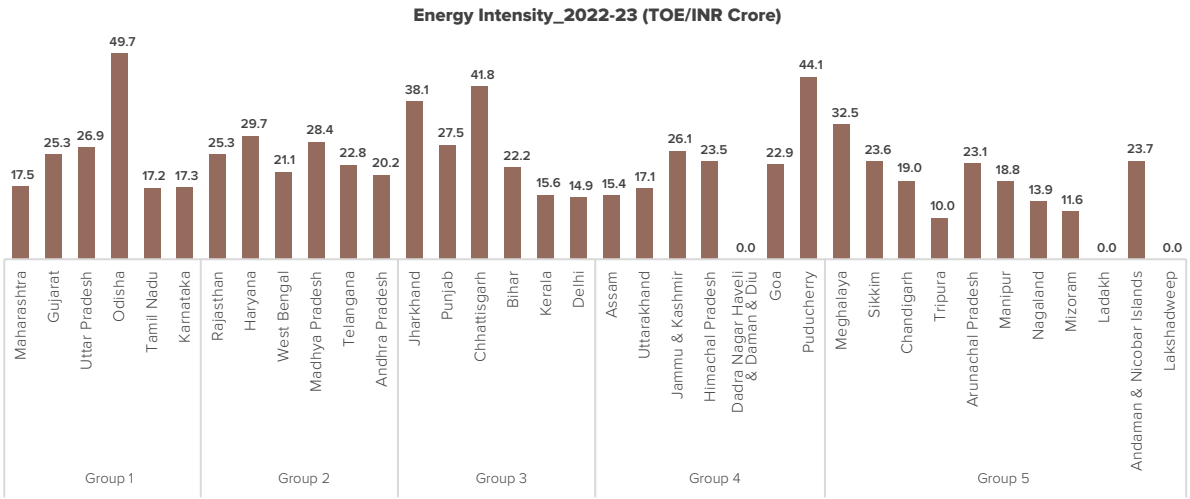
**ESCO-mode implementation** of the Thiruvananthapuram LED Street Lighting project showcasing scalable municipal EE models with over 50% savings.

**Assam** collects comprehensive end-use energy data through APDCL links and DC submissions to support policy updates and amend building byelaws; the state has initiated the promotion of ESCO models and continued data assessments. **Chandigarh**, collects end-use energy data from substations and key public buildings guides targeted EE interventions, and an **ESCO-based EE project** has been implemented for street-lighting upgrades under the Municipal Corporation. Whereas, **Meghalaya** regularly collects end-use energy data to expand PAT inclusion and design EE interventions, with **11 major industries** having implemented EE/EC projects through the **ESCO model**, strengthening private-sector participation.

## Energy Savings

Energy intensity is defined as the total final energy consumption normalised per unit of economic value. It is calculated as the TFEC in ToE per unit of GSDP for a state. Sixteen States have
achieved the lowest levels of energy intensity (measured as TFEC in tons of oil equivalent per unit of GSDP), showing remarkable improvement compared to the previous year. Figure 3 – 39 depicts each state's energy intensity, grouping States based on their TFEC.

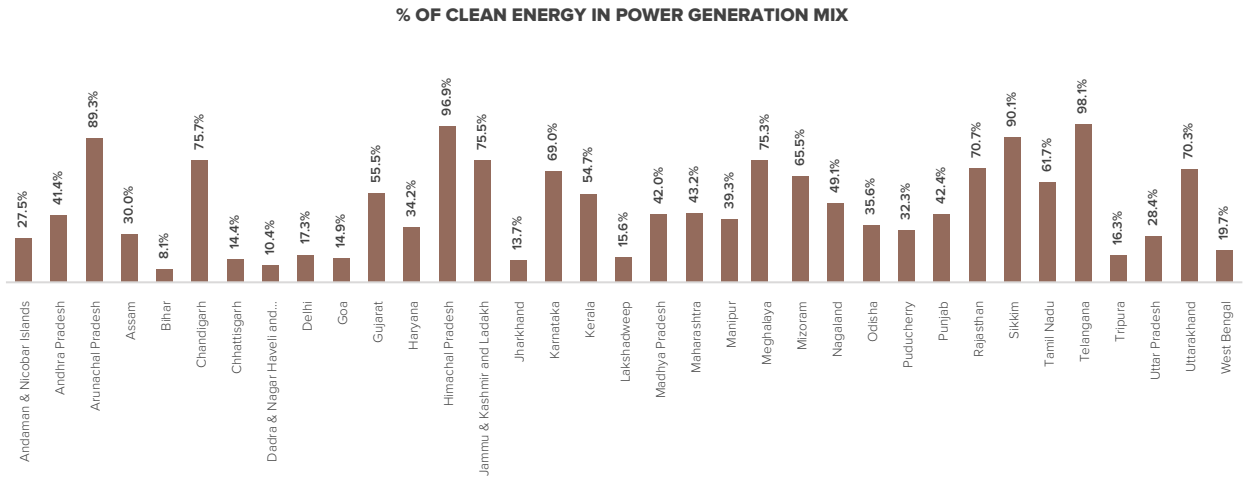
**Figure 3-38: State/UT wise Energy Intensity**




Note: MoSPI, Energy Statistics India 2025, CEA General Review 2024, MoPNG's Petroleum and Natural Gas Statistics 2023-24 (oil, compressed natural gas (CNG)), and the Coal Directory 2022-23 (coal), Reserve Bank of India (RBI) Handbook of Statistics on Indian States 2023-24 (GSDP). GSDP (FY 2022-23) is unavailable for Dadra & Nagar Haveli and Daman & Diu, Ladakh, and Lakshadweep.

**Odisha** from **Group 1** reported the highest energy intensity at **49.7 TOE/₹ crore**, while **Tripura** in **Group 5** reported the lowest at **10 TOE/₹ crore**. States such as **Chhattisgarh, Jharkhand, Meghalaya, Sikkim**, and **Puducherry** also exhibit relatively high energy intensity levels. This intensity, however, is significantly influenced by the economic structure of the States, particularly the relative shares of the commercial, industrial, and domestic sectors in the Gross State Domestic Product (GSDP). In terms of clean energy, approximately **69% of Karnataka's** energy consumption and around **43%** of **Maharashtra's** energy consumption is sourced from non-conventional energy sources. A comprehensive overview of the clean energy mix in the generation is presented in Figure 3–40 below.

**Figure 3-39: %ge of Clean Energy in Power Generation Mix of States**




States with a high dependence on **hydropower generation** located in hilly terrains exhibit a significant clean energy mix. This group includes **Himachal Pradesh, Jammu & Kashmir and Ladakh, Uttarakhand, Meghalaya, Arunachal Pradesh, Sikkim, Manipur, Mizoram, and Nagaland**.

Furthermore, several other States have a substantial clean energy mix primarily driven by **solar and/or wind power generation**. These States include **Maharashtra, Karnataka, Telangana, Tamil Nadu, Odisha, Rajasthan, Haryana, Madhya Pradesh, Gujarat, Andhra Pradesh, Kerala, Punjab, Assam, and Puducherry**.

## CROSS SECTOR SPOTLIGHT

- **Karnataka**, under its notified EE & EC Policy 2022–2027, targets 744 million kWh of energy savings, with 60% already achieved by FY 2024–25. The State has demonstrated strong BEE fund utilization (90.73%) and is actively promoting the ESCO ecosystem through EVCS initiatives and multi-sector stakeholder capacity-building programs.
- **Maharashtra** has notified its Green Hydrogen Policy (2023) and is considering notification of the Draft State Energy Conservation Policy, with a proposed allocation of ₹88.55 crore/year. The State has achieved 100% BEE fund utilization and 78.8% NRSE fund utilization, completed 960+ star-label verifications, and implemented EE projects across MSMEs, municipal, and agriculture sectors, including ESCO-based interventions with verified post-implementation savings.
- **Andhra Pradesh** has Pumped Storage Power Promotion Policy -2022, Green Hydrogen & Green Ammonia Policy – 2023, and Energy Efficiency and Energy Conservation Policy 2023-2028.
- **Odisha's** Energy Efficiency & Climate Change Policy prioritizes EV adoption, energy audits, ethanol blending, and star-rated appliances, supported by an innovation partnership with IIT Bhubaneswar. A ₹127.17 crore budget has been approved for FY 2025–26, with strong utilization of both BEE and state funds. The SLSC oversees full market surveillance, with 61 appliances check-tested. End-use data informs PAT, demonstration projects, ESCO adoption, and clean cooking initiatives.
- **Tamil Nadu's** TNSAPCC 2.0 prioritizes energy efficiency and solar missions to advance carbon neutrality by 2070. The state reports high BEE fund utilization (96%), with an operational SLSC and mobile-based market surveillance underway. End-use energy data is driving ESCO-based water utility projects and EE retrofits in public-sector facilities
- **Andhra Pradesh** has adopted multiple progressive policies—Pumped Storage (2022), Green Hydrogen & Ammonia (2023), EE & EC Policy 2023–28, EV Mobility 4.0, and a Circular Economy Policy. The State targets 10 lakh EVs by 2030 and full APSRTC bus electrification by 2029. It reports near-100% utilization of both BEE and state funds. The SLSC mandates IE3 motors, ECSBC compliance, EV adoption, and energy audits. ESCO projects are being implemented across buildings, substations, LED streetlighting, and EV charging infrastructure.
- **Telangana's** Clean & Green Energy Policy drives RE, BESS, and green hydrogen adoption. The state achieved full utilization of both BEE and state budgets. The State-Level Steering Committee (SLSC) is active, with 75% enforcement progress and 27 products check-tested under S&L. State-wide energy data collection supports efficiency programs (SPEED, appliance replacement). The ESCO model is strongly utilized for building and street lighting projects, bolstered by PAT deepening efforts.
- **Kerala** launched the Energy Transition Roadmap 2040 and the Kerala Power Policy 2024, targeting 100% renewable electricity and grid modernization. The state achieved 100% utilization of both BEE and state funds and strengthened the SECF. Implementation features mandatory energy audits across sectors and widespread ESCO deployment (notably municipal LED street lighting with over 50% savings). This is supported by strong multi-departmental coordination for DSM, EVs, smart metering, and electric cooking.

# 4 RECOMMENDATIONS

The State Energy Efficiency Index (SEEI) 2025 marks another year of widespread participation, securing comprehensive data and engagement from all 36 State Designated Agencies (SDAs)—encompassing 28 States and 8 Union Territories. This latest assessment reflects a significant, albeit nuanced, uplift in overall state performance and data integrity, signalling palpable progress across the national efficiency landscape. A key highlight is the impressive growth in top-tier performers, with the number of 'Front Runner' States rising sharply from five in SEEI 2024 to nine in the current cycle. This advancement underscores the increasing rigor of outcome-based indicators and the necessity for States to sustain focus on robust policy enforcement, transparent data management, and operational implementation. Furthermore, the simultaneous rise in 'Contender' States suggests positive momentum, as numerous jurisdictions elevate their standing from the 'Aspirant' bracket. This upward movement is primarily driven by enhanced institutional capacity and the broader adoption of core national programs, including the Energy Conservation Building Code (ECBC), the Perform, Achieve and Trade (PAT) scheme, and comprehensive State Energy Efficiency Action Plans (SEEAPs).

Notwithstanding these substantial gains, critical vulnerabilities persist, notably in the municipal and agriculture sectors, where fragmented data availability and weak inter-departmental coordination remain structural impediments. Moving forward, sustained progress hinges on aggressively strengthening institutional capacity, forging robust cross-sectoral collaboration, and leveraging advanced digital platforms for real-time performance tracking. Derived from the insights of the SEEI 2025 findings, the following set of refined recommendations provides a cohesive framework.

This framework is designed to accelerate sub-national action by deepening on-ground implementation, optimizing governance structures, and ensuring state efforts are fully aligned with national and global climate priorities under the COP30 implementation agenda. By prioritizing integrated data systems, outcome-based planning, innovative financing, and collaborative governance, States are positioned to transform energy efficiency into a foundational pillar of their long-term development strategies.

## INSTITUTIONALIZING GRANULAR ENERGY DATA AND REPORTING

To achieve effective and sustainable energy efficiency, States must urgently institutionalize comprehensive energy data management and utilization across all sectors. While data collection is mandated, only 14 States periodically report collection of end-use energy consumption data, and only 10 States utilize this data to proactively design and advance energy efficiency programs. States must move beyond mere compliance reporting to mandating the collection and internal utilization of granular end-use energy data in high-consuming sectors (Industry, Buildings, Transport). This data should be leveraged to create localized, high-impact policy interventions, such as setting precise energy benchmarks for commercial and public buildings. To ensure real-time monitoring and accountability, State Designated Agencies (SDAs) must achieve a 100% on-time submission rate (1$^{st}$ to 5$^{th}$ of the next month) for monthly progress reports to the Bureau of Energy Efficiency (BEE), given that only half of reporting States currently meet this benchmark. Finally, States

should invest in technology to integrate mandatory audit data and end-use consumption information into digital dashboards, promoting advanced analytics (including AI and IoT) to optimize energy use and predict future demand patterns, thereby building the internal capability to make data-driven decisions.

## ACCELERATING AND FUNDING STATE ACTION PLANS (SEEAPS)

The successful implementation of State Energy Efficiency Action Plans (SEEAPs) requires a definitive shift from merely formulating plans to securing consistent, multi-year funding and quantifiable execution. The SEEI 2025 highlights a persistent gap, with only 18 States reporting on SEEAP implementation and only seven States allocating a dedicated budget for its execution in FY 2024–25. Therefore, State Finance Departments must be mandated to approve and include the SDA's detailed, sector-wise budget proposal (as per Section 15A of the EC Act) in the annual state budget for FY 2025–26 onwards, ensuring financial certainty for program scale-up. Furthermore, States must strengthen the policy linkage between their SEEAPs and their State Action Plans on Climate Change (SAPCC), ensuring this synergy translates into clear, measurable, and time-bound goals for energy savings and emissions reduction, thereby guaranteeing that EE measures directly support Net Zero and NDC targets. States should also define a clear implementation roadmap with phase-wise activities, particularly for scaling proven successes like EE in municipal services and the widespread penetration of the Energy Conservation Building Code (ECBC).

## INTEGRATING EFFICIENCY AND CLIMATE GOALS VIA INTER-DEPARTMENTAL SYNERGY

Achieving a sustainable energy transition requires deep, synergistic efforts across government departments, leveraging the State Level Steering Committee (SLSC) for strategic policy harmonization. While 31 States have established SLSCs and 30 have held meetings, the results of this collaboration need to be operationally visible in the key sectors. To this end, the SLSC must prioritize harmonizing enforcement activity across key departments; for instance, the Urban Development Department (UDD) must align municipal building approval processes directly with ECBC adoption and green building standards. States should promote joint advisory issuance and the adoption of shared standards, such as mandating the use of BEE star-labelled appliances across all government/public buildings, commercial buildings, and affordable housing schemes by all relevant agencies (e.g., PWD, Housing Boards).Finally, the SLSC should be actively used to integrate Energy Efficiency (EE) measures with renewable energy (RE) initiatives, specifically targeting the electrification of end-use applications (e.g., industrial heating, e-cooking) and promoting RE integration in commercial and industrial processes.

## STRATEGIC UTILIZATION OF STATE CONSERVATION FUNDS (SECF) FOR DE-RISKING

The State Energy Conservation Fund (SECF) is a potent tool for scaling energy efficiency initiatives but requires strategic utilization beyond administrative costs. All States have notified the fund, but only seven States have reported sourcing additional funds, and only eight States reported strategic utilization in FY 2024-25. States must actively explore sourcing additional, non-matching funds for the SECF, including leveraging cess/tax allocations, multilateral/bilateral aid, or specific fees on high-carbon activities. Furthermore, States must transition the utilization mode towards high-impact mechanisms

such as establishing a Revolving Investment Fund (RIF), providing Partial Risk Guarantees (PRGs), or offering Viability Gap Funding (VGF) to attract private sector capital for large EE projects. Lastly, a public, transparent monitoring system must be put in place to track fund utilization against defined energy savings and job creation outcomes, reinforcing the fund's effectiveness and encouraging broader participation from financial institutions.

## SCALING THE ENERGY SERVICE COMPANY (ESCO) MODEL AND MEASUREMENT & VERIFICATION

The Energy Service Company (ESCO) model is critical for overcoming the high upfront cost barrier, particularly for MSMEs. However, only nine States have reported implementing ESCO projects in the last five years. To overcome this, States must work with financial institutions and industry bodies to develop standardized, market-accepted Pay-for-Performance contracts and project templates. States should focus efforts on aggregating smaller, standardized projects (especially for MSME clusters) to create larger, more attractive debt ticket sizes for lenders. Furthermore, States must urgently scale up training programs on transparent Measurement & Verification (M&V) protocols for financial institutions (FIs), Energy Auditors, and ESCO personnel. This is essential for reducing information asymmetry, building confidence in projected energy savings, and unlocking private-sector financing. Finally, specific, performance-based incentives or subsidies (e.g., tax credits or enhanced loan support) should be provided for companies, particularly MSMEs, that adopt the ESCO route for implementing energy efficiency and decarbonization projects, mirroring successful international models.

## CAPTURING VALUE FROM CARBON MARKETS AND SUSTAINABLE PROCUREMENT

Aligning state-level initiatives with the national Carbon Credit Trading Scheme (CCTS) is crucial for introducing the necessary price signal to drive deep decarbonization across industrial and power sectors. State governments must lead by example by mandating sustainable procurement standards (similar to international standards like ISO 20400) for all public purchases of equipment (motors, pumps, lighting) and construction services. Large public-sector entities, such as State Road Transport Corporations (SRTCs) and Distribution Companies (DISCOMs), should initiate internal carbon pricing mechanisms (e.g., US$30–50 per ton of $CO_2$ to factor long-term climate costs into all major investment decisions, accelerating the shift to EVs and high-efficiency infrastructure.[5] Furthermore, targeted technical assistance and training should be provided to SMEs and municipalities on the CCTS framework. This will enable them to structure, register, and verify energy efficiency projects as carbon assets, maximizing the financial benefits from the domestic carbon market.

# ANNEXURES

## METHODOLOGY FOR CALCULATING TOTAL FINAL ENERGY CONSUMPTION (TFEC) OF INDIAN STATES (FY 2022-23)

### OBJECTIVE

Total Final Energy Consumption (TFEC) reflects the total energy used by end-use sectors within each state and union territory and serves as the basis for peer grouping in the State Energy Efficiency Index (SEEI) 2025. Expressed in thousand tonnes of oil equivalent (ktoe), TFEC encompasses major commercial fuels—coal, lignite, petroleum products, natural gas (CNG), and electricity. While traditional biomass is recognised as an important energy source, it has been excluded due to the absence of reliable state-level data. The applicable conversion factors have been sourced from the Energy Statistics India 2025 report published by MoSPI, Government of India.

### DATA SOURCES AND FUELS INCLUDED

| Fuel Type | Sources of Information |
|---|---|
| Coal & Lignite | Coal Directory of India 2022-23 (Table 4.24) - State Wise Despatch/Off-take data<br>CEA General Review 2024 – Coal consumption for power generation |
| Petroleum Products | MoPNG Statistics 2023–24 – State-wise consumption of Petroleuåm products (Chapter 5)<br>CEA General Review 2024 – Petroleum consumption for power generation |
| Natural Gas (CNG) | MoPNG Statistics 2023–24 – Sales data; excludes PNG/LNG due to data gaps (Table III.26) |
| Electricity | CEA General Review 2024 – Consumption and T&D losses |

### COMPUTATIONS AND ADJUSTMENTS

- **Unit Conversion:** All source data reported in physical units—such as metric tonnes, kilolitres, cubic metres, and gigawatt-hours—are converted into energy units of thousand tonnes of oil equivalent (ktoe) using standardised conversion factors.

| Fuel Type | Unit Conversion |
|---|---|
| Coal | 1 Metric Tonne of Coal = 0.396 TOE (based on an energy content of 16.94 PJ per million tonnes). |
| Lignite | 1 Metric Tonne of Lignite = 0.223 TOE (9.546 PJ per million tonnes). |
| Petroleum Products | |
| LPG | 1 Metric Tonne of LPG = 1.13 TOE |
| Motor Spirit (Gasoline) | 1 Metric Tonne of Motor Spirit = 1.07 TOE |
| Kerosene | 1 Metric Tonne of Kerosene = 1.045 TOE |
| Diesel (HSD) | 1 Metric Tonne of Diesel (HSD) = 1.035 TOE |
| Furnace Oil | 1 Metric Tonne of Furnace Oil = 0.985 TOE |

| Fuel Type | Unit Conversion |
|---|---|
| LSHS (Low Sulphur heavy Stock) | 1 Metric Tonne of LSHS (Low Sulphur Heavy Stock) = 0.985 TOE |
| Petroleum Coke | 1 Metric Tonne of Petroleum Coke = 0.764 TOE |
| Natural Gas (CNG) | 1 Billion Cubic Meters (BCM) of Natural Gas = 0.9 MTOE (million TOE)<br>1 Metric Tonne of Natural Gas = 1.18 TOE[1] |
| Electricity | 1 GWh of Electricity = 0.0841 ktoe |

- **Avoiding Double Counting:** Fuels used for electricity generation are deducted from the primary fuel totals (such as coal and diesel) to avoid double counting with electricity consumption.

**Subtracting Power Sector Coal and Lignite use:**

- State-wise coal off-take and coal used in power generation—both utility and captive—are obtained from the Coal Directory and converted to ktoe (using 1 tonne = 0.396 TOE). Consumption by the power sector is then subtracted to prevent double counting, resulting in coal TFEC attributable to non-power sectors.
- **Coal TFEC = (Total off-take – Power Generation Usage of Coal) x 1000 x 0.396**
  The same method applies to lignite consumption (TFEC), using a conversion factor of **0.223 TOE/ tonne.**

**Subtracting Power Sector Oil Use:**

- State-wise diesel (HSD/LDO) and fuel oil (FO/LSHS) consumption in power generation is obtained from CEA and converted to ktoe using standard density and energy content values (e.g., diesel: ~0.83 ton/kL and 1.035 TOE/ton). Power sector consumption of diesel (HSD/LDO) and fuel oil (FO/LSHS) is then deducted from total consumption to avoid double counting.
- **Electricity Consumption:** State-wise electricity consumption is calculated as the sum of electrical energy sold and transmission and distribution losses, providing a complete representation of total demand.
- **Total Electricity (GWh) = Electrical Energy Sold + T&D Losses**
  This is converted to ktoe using the factor **1 GWh = 0.0841 ktoe**, representing the state's final electricity use.
- **Natural Gas:** Only CNG used in the transport sector is included in TFEC, converted using 1.18 TOE/ton or 0.9 ktoe/MMSCM under standard conditions. PNG, LNG, and natural gas used in the power sector are excluded due to the absence of disaggregated state-level data, which may result in underestimation for gas-intensive States. Consequently, TFEC from natural gas reflects CNG consumption only.
- **Non-Energy Use Exclusion – Petroleum Products:** Petroleum products that are not used as fuels—such as bitumen, lubricants, and waxes—are excluded from TFEC, as they do not contribute to energy consumption.

1 Assuming standard methane density and heating value). An assumption of standard conditions at 1 atm and 15.56°C is used for gas volume to mass conversion

## ASSUMPTIONS AND LIMITATIONS

- **Traditional Fuels Excluded:** Biomass use not quantified due to lack of recent disaggregated data.
- **State Splits and Mergers:** Adjustments made for Jammu & Kashmir/ Ladakh split and Dadra & Nagar Haveli and Daman and Diu merger.
- **Missing Data:** Missing values treated as zero where appropriate.
- **Natural Gas Coverage:** Industrial gas consumption (PNG/LNG) is underestimated due to data gaps.

## LIMITATIONS AND CAVEATS

While this methodology offers a broad and structured measure of final energy use, several limitations and caveats must be acknowledged:

- **Traditional Biomass** excluded due to lack of state-level data, leading to underestimation of TFEC in biomass-reliant States. The index focuses on commercial energy use.
- **Natural Gas Limitation**: TFEC calculations exclude PNG and industrial LNG due to the absence of disaggregated state-level data, resulting in underestimation for gas-intensive States. Only the State level CNG Sales data has been considered.
- **Captive Power Generation Caveat:** Coal and diesel used in identified captive power plants are deducted to prevent double counting. However, unreported use of other fuels—such as natural gas and biomass—for industrial captive generation may lead to minor inaccuracies.

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