

STATE ENERGY EFFICIENCY INDEX 2023

Background

India's rapid economic growth, marked by an expanding middle class and swift urbanisation, has propelled it to become the third-largest energy consumer worldwide. From 2000 to 2020, the nation's total primary energy demand more than doubled, soaring from 417 million tons of oil equivalent (Mtoe) to 937 Mtoe. This surge underscores the critical need for a sustainable approach to energy consumption, aligning with India's ambitious goals for a low-carbon future. At the forefront of India's sustainable development commitment is its updated Nationally Determined Contributions (NDCs) to the United Nations Framework Convention on Climate Change (UNFCCC). This pivotal move reaffirms India's target of reducing total projected carbon emissions by one billion tonnes by 2030 and transitioning to a net-zero economy by 2070. The nation's leadership role, particularly highlighted by its G20 presidency in 2023, has further cemented its position as a key influencer in shaping global climate policies and consequent actions. India's Mission on Lifestyle for Environment (Mission LiFE), introduced by the Honourable Prime Minister, Shri Narendra Modi has gained global recognition, placing conscious consumption and energy efficiency as a central priority.

Energy efficiency (EE) is the cheapest, fastest and cleanest solution to complement renewable energy in addressing climate change and achieving energy security. This importance is echoed in the global commitment made at twenty-eighth Conference of the Parties (COP28) to double energy efficiency rates and triple deployment of renewable power capacity by 2030. EE is particularly pivotal for a country like India, where the diversity of its thirty-six (36) states and union territories (UTs) presents unique challenges and opportunities in terms of economic status, level of development, climate, and energy consumption. Collaborative efforts between central and state governments are crucial to ensure that resources for energy efficiency are allocated judiciously, policies across different levels of government are well-aligned, and progress in energy efficiency initiatives is regularly tracked and reported for timely and requisite course modification.

The State Energy Efficiency Index (SEEI) identifies and addresses gaps concerning state-level energy efficiency policies, programmes, and investments. The SEEI activity was initiated by Bureau of Energy Efficiency (BEE), in association with Alliance for an Energy Efficient Economy (AEEE), to evaluate the annual progress of EE implementation in the states. SEEI 2023 is the fifth edition of the index after the successful execution of State Energy Efficiency Preparedness Index 2018, SEEI 2019, SEEI 2020 and SEEI 2021-22.

Objectives of SEEI 2023

- Help drive EE policies and programme implementation at the state and local level.
- Highlight best practices and encourage healthy competition among states.
- Track progress in managing the states' and India's energy footprint.
- Institutionalise state-level data capture and monitoring of state EE activities by the State Designated Agencies (SDAs).

Framework

The indicator framework for SEEI 2023 has been expanded to include more specific and diverse metrics, aligning closely with India's evolving national energy efficiency priorities. Some new indicators added in SEEI 2023 include non-fossil fuel-based power procurement, EE in affordable housing, measures for electrification for end-use in industries and electric cooking in buildings, and actions for reducing the gap between average cost of supply (ACS) and average realisable revenue (ARR) of the utilities. The SEEI 2023 framework places a strong emphasis on programme-specific indicators which are designed to assess the outcomes of distinct energy efficiency initiatives undertaken by SDAs, state departments, independently or in collaboration with the BEE, industry associations, or in public-private partnerships. Examples of such targeted programmes include retrofit or greenfield projects, energy audits and implementation of recommendations, technology demonstration as well as training and capacity building programmes.

The SEEI 2023 assesses the performance of 36 states and UTs using 65 qualitative, quantitative, and outcome-based indicators measures. distributed across seven (7) demand sectors: buildings, industry, municipal services, transport, agriculture, electricity distribution companies (DISCOMs), and cross-sector initiatives. Figure 1 below shows the performance of states in SEEI 2023, with the most improved states, i.e. those that have increased their scores by 10 or more points from SEEI 2021-22, marked with a star.

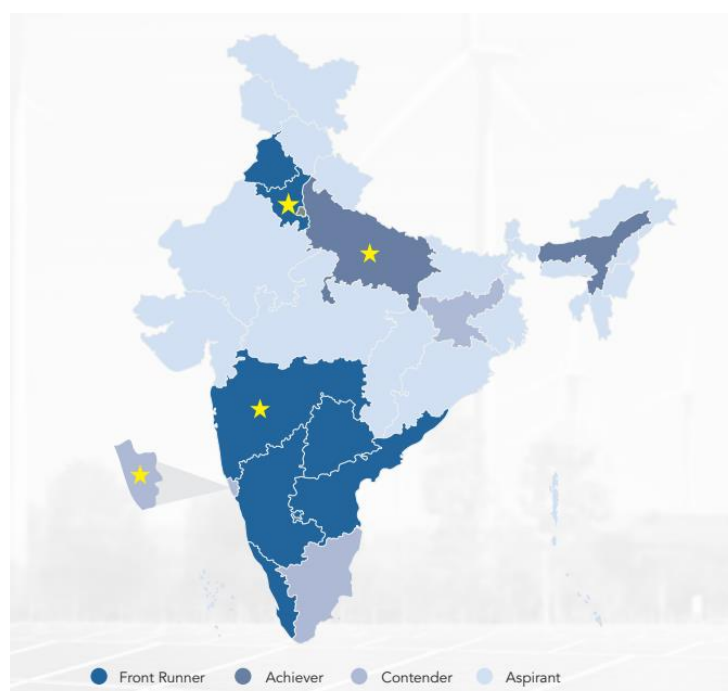


Figure 1: Performance of states and UTs under SEEI 2023

The indicator framework for SEEI 2023 across the sectors are shown in Figure 2 and Table 1 below:

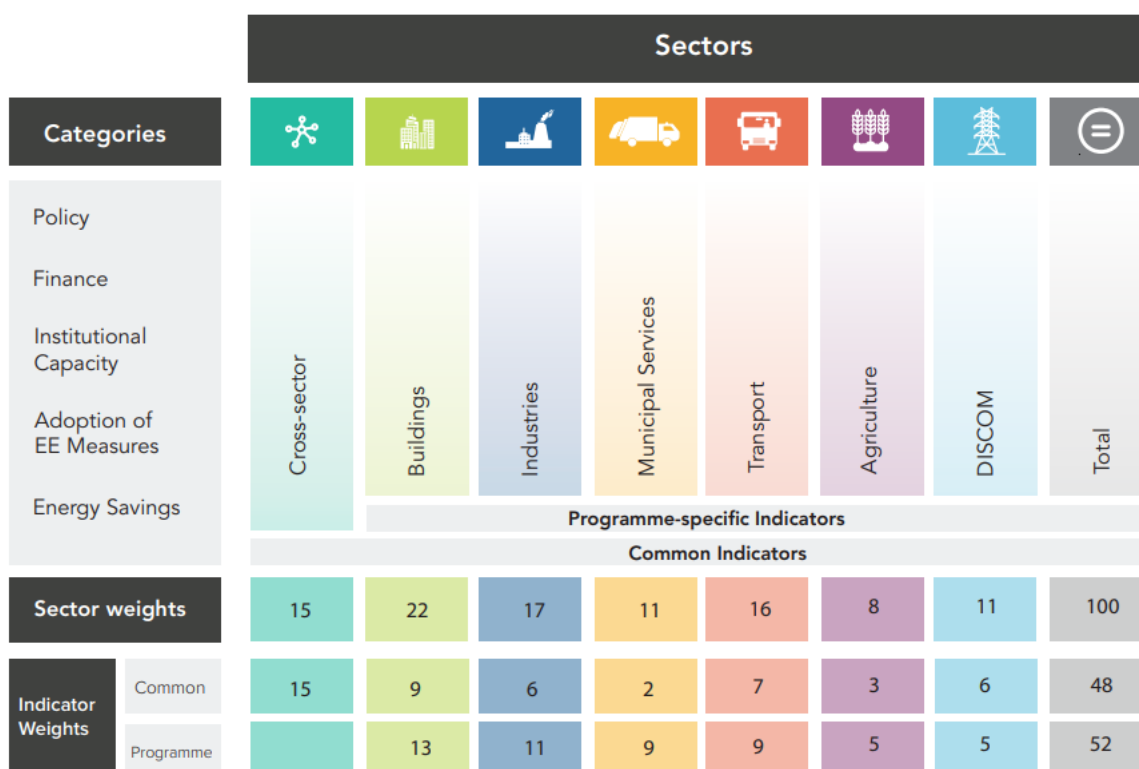


Figure 2: Framework for SEEI 2023

Table 1: Sector-wise split of common and programme-specific indicators

Sector	Common indicators	Programme-specific indicators	Total
Cross-Sector	14	0	14
Buildings	10	4	14
Industries	5	3	8
Municipal Services	2	3	5
Transport	8	3	11
Agriculture	4	2	6
DISCOM	5	2	7
Overall	48	17	65

Key outcomes

In SEEI 2023, the states and UTs are categorised as ‘Front runner’ (≥ 60), ‘Achiever’ (50-59.75), ‘Contender’ (30-49.75), and ‘Aspirant’ (< 30) based on their total scores. Furthermore, to enable peer-to-peer comparison of performance, all the states and UTs are classified into four groups based on their total final energy consumption (TFEC): Group 1 (> 15 million tonnes of oil equivalent (MTOE)), Group 2 (5-15 MTOE), Group 3 (1-5 MTOE), and Group 4 (< 1 MTOE).

The top-performing states in each group are Karnataka (Group 1), Andhra Pradesh (Group 2), Assam (Group 3), and Chandigarh (Group 4). Compared to five (5) states in SEEI 2021-22, there are seven (7) states - Andhra Pradesh, Haryana, Karnataka, Kerala, Maharashtra, Punjab and Telangana in the ‘Front runner’ category in SEEI

2023. Two (2) states, Assam and Uttar Pradesh are in the 'Achiever' category, and three (3) states—Goa, Jharkhand, and Tamil Nadu—are in the 'Contender' category.

With an overall score of 86.5 out of 100, Karnataka is the top-performing state in SEEI 2023. With the only active "Energy Conservation and Energy Efficiency Policy," the state has implemented significant measures in the buildings, industries, transport, municipal services, and agriculture sectors. In buildings, the state has adopted the Karnataka Energy Conservation Building Code (KECBC), and promoted energy-efficient appliances in commercial buildings, along with significant adoption of energy-efficient practices in new constructions, with 154 GRIHA-rated green buildings, 290 IGBC-rated green buildings, and 306 Leadership in Energy and Environmental Design (LEED)-rated green building projects. Industries benefit from focused initiatives like mandatory energy audits and capacity-building. Transport sector advancements include policies for electric vehicles (EVs) and trainings on fuel efficiency. Municipal services witnessed the implementation of energy-efficient street lighting and water pumping stations. In agriculture, the state has mandated the use of energy-efficient pump sets conforming to BEE standards in irrigation. Across sectors, the state has set ambitious targets for energy consumption reduction and has actively collaborated with renowned institutes like IISc Bangalore, IIM Bangalore, IIT Dharwad, and Central Power Research Institute (CPRI) to garner expert proposals and implement energy-efficient measures.

The second-highest performer, Andhra Pradesh, with a score of 83.25 out of 100, has adopted a multi-faceted approach to energy efficiency involving policy formulation, financial incentives, capacity-building, and collaborative initiatives across various sectors. In buildings, the state has mandated Energy Conservation Building Code (ECBC) 2017 and Eco Niwas Samhita (ENS) 2021, with significant adoption across urban local bodies and emphasis on energy-efficient appliances in government buildings. The industrial sector has integrated energy efficiency into policies, notably with mandatory energy audits for industries and Micro, Small, and Medium Enterprises (MSMEs), supported by the SDA. In transport, the Electric Mobility Policy (2018-23) promotes sustainable transportation, with an equal focus on EV adoption and charging infrastructure. Municipal services initiatives include energy-efficient street lighting and water pumping and supply systems, coupled with capacity-building programmes. The power distribution sector has made rapid progress in smart implementation and steady reduction in transmission and distribution (T&D) losses. In agriculture, the state emphasises integrated water and energy savings, promoting energy-efficient practices and equipment.

In SEEI 2023, fifteen (15) states have improved their scores compared to SEEI 2021-22. Notably, four (4) states—Goa, Uttar Pradesh, Maharashtra and Haryana—have demonstrated significant progress, improving by over 10 points relative to SEEI 2021-22. Notably, the most improved states in this assessment are Maharashtra and Haryana, witnessing significant score increases of 18.5 and 17 points, respectively, resulting in an overall score of 72 each. The observed improvements in Maharashtra and Haryana can be attributed to enhanced data submission for common indicators and the programme-specific indicators. Conversely, the most substantial decline in score in SEEI 2023 has been observed in Rajasthan, with a decrease of 46.5 points, primarily attributed to lack of reported data.