Azadi Ka Amrit Mahotsav

NITI Aayog

STATE ENERGY & CLIMATE INDEX

ROUND-I

April 2022

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ROUND-I

(Based on 2019-20 data)

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Disclaimer

This report is based on secondary data sources and information received from ministries. NITI Aayog does not guarantee the accuracy of the data or accept the responsibility for the consequences of using this data, as this index is based purely on information received from secondary sources.

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ABBREVIATIONS

A&N	Andaman & Nicobar
ACS	Average Cost of Supply
AEEE	Alliance for an Energy Efficient Economy
AMI	Advanced Metering Infrastructure
ARR	Average Revenue Realised
AT&C	Aggregate Technical and Commercial
BEE	Bureau of Energy Efficiency
CCPI	Climate Change Performance Index
CEA	Central Electricity Authority
CEEW	Council on Energy, Environment and Water
CEI	Clean Energy Initiatives
CERC	Central Electricity Regulatory Commission
CH4	Methane
CNG	Compressed Natural Gas
CO2	Carbon Dioxide
CO2eq	Carbon Dioxide Equivalent
COP	Conference of the Parties
CPP	Critical Peak Pricing
D&D	Daman & Diu
D&N	Dadra & Nagar Haveli
DBT	Direct Benefit Transfer
DDUGJY	Deendayal Upadhyaya Gram Jyoti Yojana
DISCOM	Distribution Company
DSM	Demand Side Management
EAPI	Energy Architecture Performance Index
EC Act	Energy Conservation Act
ECBC	Energy Conservation Building Code
EE	Energy Efficiency

EESL	Energy Efficiency Services Limited
ES	Environmental Sustainability
ESG	Environmental Social and Governance
ETI	Energy Transition Index
EU	European Union
EV	Electric Vehicle
EY	Ernst & Young
FAME	Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles
FY	Financial Year
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GoI	Government of India
GSDP	Gross State Domestic Product
HDI	Human Development Index
HEV	Hybrid Electric Vehicle
HLPF	High Level Political Forum
HSD	High Speed Diesel
ICAP	India Cooling Action Plan
IEA	International Energy Agency
IPDS	Integrated Power Development Scheme
IRES	Indian Residential Energy Survey
ISFR	India State of Forest Report
J&K	Jammu & Kashmir
KPI	Key Performance Indicator
LPG	Liquefied Petroleum Gas
LULUCF	Land use, Land-use Change and Forestry
MNRE	Ministry of New & Renewable Energy
MoEFCC	Ministry of Environment Forest and Climate Change
MoP	Ministry of Power
MoPNG	Ministry of Petroleum and Natural Gas
MoRTH	Ministry of Road Transport & Highways
MoU	Memorandum of Understanding
N2O	Nitrous Oxide
NDC	Nationally Determined Contribution
NHEM	National Hydrogen Energy Mission
NI	New Initiatives
NITI	National Institution for Transforming India

NMEEE	National Mission for Enhanced Energy Efficiency
OA	Open Access
PAHAL	Pratyaksh Hanstantrit Labh
PAT	Perform Achieve and Trade
PFC	Power Finance Corporation Ltd.
PM-KUSUM	Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan
PMUY	Pradhan Mantri Ujjwala Yojana
PNGRB	Petroleum and Natural Gas Regulatory Board
PPA	Power Purchase Agreement
PPAC	Petroleum Planning & Analysis Cell
RBI	Reserve Bank of India
RE	Renewable Energy
RECAI	Renewable Energy Country Attractiveness Index
RTP	Real Time Pricing
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SDG	Sustainable Development Goal
SECI	State Energy and Climate Index
SEEI	State Energy Efficiency Index
SERC	State Electricity Regulatory Commission
SME	Small and Medium Enterprises
SMNP	Smart Meter National Programme
T&D	Transmission & Distribution
TFC	Total Forest Cover
TFEC	Total Final Energy Consumption
TGA	Total Geographical Area
ToD	Time of Day
ToU	Time of Use
TPES	Total Primary Energy Supply
UDAY	Ujwal DISCOM Assurance Yojana
UJALA	Unnat Jyoti by Affordable LEDs for All
UT/UTs	Union Territory/ Union Territories
VNR	Voluntary National Review
WEC	World Energy Council
WEF	World Economic Forum
WETI	World Energy Trilemma Index

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Foreword

"Connecting with nature means to connect with ourselves. If we do so, we nurture a planet"- Hon'ble Prime Minister of India, Shri Narendra Modi.

Sustainability and forging a living partnership with nature is a part of Indian tradition. As India recovers from the impact of the COVID-19 pandemic and strives to build back better, it needs access to affordable and sustainable energy. To deliver this goal for a country like India, the third-largest emitter, third-largest crude oil importer and potentially the country with the largest energy growth over the next fifteen years, is a humongous and complex endeavour.

Therefore, going back to our roots and leveraging natural resources such as the sun, the wind, and human ingenuity is critical for India. India made its intentions clear by the historic announcement by the Prime Minister at the COP26 conference in Glasgow to achieve net-zero emissions by 2070.

The aspirations signalled by India at Glasgow cannot be delivered without converting this target into a people's movement. There is a need to assure our citizens a secure, reliable, affordable, and green energy ecosystem. For this, the role played by state governments can hardly be overstated. From the effective implementation of central policies to region-specific interventions, state governments will have to play an effective role in administering this energy transition.

There is a lot of scope for governance innovation and peer-to-peer learning amongst States as technology priorities keep moving forward and require to be assimilated. This is essential for meeting the country's ambitious energy goals. State Energy & Climate Index is a unique effort to encourage healthy competition among states on different dimensions of the energy and climate sector. The report also has the potential to highlight opportunities for enhanced cooperative federalism in critical areas.

The State Energy & Climate Index is the first step in creating a nationwide benchmark for the States. The state performance is evaluated on the basis of 27 key performing indicators (KPI) covered under 6 broad parameters namely, DISCOM's Performance; Access, Affordability, and Reliability; Clean Energy Initiatives; Energy Efficiency; Environmental Sustainability; and New Initiatives. While we expect the Index to evolve and get refined in the coming editions, care has been taken to work with all stakeholders and ensure fair computation of the scores. Based on the relative performance and scores, states have been categorized as front-runners, achievers, and aspirants. I congratulate the front-runners and I would like to encourage other states to aspire for higher scores in the coming years. NITI Aayog looks forward to working with States to further refine the Index and help them succeed in achieving the green energy transition.

Rajiv Kumar.

Rajiv Kumar

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MESSAGE

India is a country filled with natural resources. For instance, India accounts for almost ten percent of the world's coal reserves and it has the largest thorium reserves. But unfortunately, India imports almost 150 billion dollars worth of of energy every year and this number is likely to double in the next 15 years unless corrective action is taken. So, there is a need to secure India's energy future via effective centre's policies, the development of indigenous technologies, and impeccable implementation. While there is a lot of focus and research on the centre's role in delivering a secure and sustainable energy economy, the role of states has largely been not discussed. The State Energy & Climate Index-Round I is envisaged as a stepping stone in highlighting the role and performance of the state in the energy sector. It will help the country to become "*Atmanirbhar in the energy sector*" by encouraging healthy competition among states on different dimensions of the energy and climate sector.

After extensive discussion with the stakeholders, several key parameters have been identified to track and rank the state performance in the energy sector. Amongst these parameters, only the parameters whose data is reliably available have been taken in for this edition of the report. The exercise reveals that some of the important data is not available at the state level. Going forward, there is a need to develop a robust mechanism to capture data in this sector. I would like to encourage states to work with NITI Aayog in enabling a robust exchange of data to further evolve and refine the index in the subsequent edition.

Overall, the State Energy & Climate Index-Round I is based on 27 Key Performance Indicators (KPIs) covering 6 parameters 'DISCOM's performance' 'access, affordability & reliability of energy', 'clean energy initiatives', 'energy efficiency', 'environmental sustainability, and 'New initiatives.

I strongly believe that indigenous technology development to leverage resources available in the country and converting these resources into green fuels that can power the economy is paramount for securing India's energy future. To deliver on this ambition the role of states is critical as each state has a different portfolio of natural resources and state authorities would be in the best position to enable the best creation of value from these energy resources. This will require effective coordination and synergy with central programs and also pro-active communication with the people of the states. I encourage all the states to leverage the report and engage in peer-to-peer learning to radically improve the energy ecosystem in the state which will be automatically reflected in the rankings.

(Dr. V.K. SARASWAT)

New Delhi
23.02.2022

स्वच्छ भारत
एक कदम स्वच्छता की ओर

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Foreword

At the COP-26 conference, the Honourable Prime Minister of India presented the agenda for the country to combat climate change. He announced that by 2030, the country would strive to achieve 500 GW of installed electricity capacity from non-fossil fuel sources, reduce the total projected carbon emission by additional one billion tonnes, reduce the carbon intensity of the economy by less than 45% and lastly, the country would achieve net-zero emissions by 2070.

The central government has taken major steps to reform the energy sector and usher in a climate-friendly energy transition that will deliver energy security, affordability, and sustainability. The steps include proposing the Electricity (Amendment) Bill, 2020, PM-KUSUM scheme, proposing amendments to Energy Conservation Act (2001), Production-linked incentive schemes, Pradhan Mantri Ujjwala Yojana, and so on.

While all these initiatives are aimed at transforming the Indian energy sector, states will have to play a critical role in this historic transformation. Therefore, to deliver one of its mandates of promoting cooperative federalism, NITI Aayog started to work on a world-class State Energy & Climate Index (SECI). NITI Aayog has undertaken extensive research and went through a consultative process to construct a fair, transparent, and progressive index. While there is a lot of room for improvement and refinement but this edition of SECI will function as a starting point for an effective benchmarking of state's performances in the energy sector for the benefit of the Indian citizens, policy analysts, and investors. This would encourage the state's initiatives towards green economy and attract investments in the renewable sector.

I congratulate the top States & Union Territories for their exemplary performance in the states and I am confident that other states will leverage this index to bridge the gap with their best counterparts across categories.

(Amitabh Kant)

Place- New Delhi
Dated- 07/03/2022

EXECUTIVE SUMMARY

India is a resource-rich and diverse country. Many of its states are comparable to countries in the European Union in terms of area, population, and diversity of resources. Thus, a one-size-fits-all approach will not be appropriate as each state and Union Territory (UT) differ in terms of culture, geography, and use of energy resources. It is imperative for each state and UT to have its own policy to harness its potential and capability.

Apart from policy formulation, it is also important to track the progress of the implementation of these policies. The State Energy and Climate Index (SECI) is the first index that aims to track the efforts made by states and UTs in the climate and energy sector. It is hoped that an in-depth analysis of individual states will help in enhancing the service delivery on various parameters of energy. These parameters have been devised keeping in mind India's goals for climate change and clean energy transition.

The report consists of three thematic parts. The first part (chapters 1–3) explains the background, objective and present energy scenario in India. Different global and national indices are described, as well as a comparison of the Indian economy with a few other countries is done to give an insight into how these economies perform in the energy and climate sectors. A review of all existing indices reveals that there is no comprehensive index to evaluate the performance of the states in the energy sector. A comprehensive State Energy & Climate Index should ideally cover affordability, accessibility, efficiency, DISCOM's performance and climate friendliness of all forms of energy. This formed the motivation for formulating the State Energy & Climate Index. This index is envisaged to be at par with the international indices covering the entire energy value-chain.

The second part (chapters 4-5) lays out the explanation of parameters and indicators used in the study, the methodology used to construct the index, followed by key findings at the state level and further analysis of each parameter. The index consists of 6 parameters namely, DISCOM's Performance; Access, Affordability and Reliability; Clean Energy Initiatives; Energy Efficiency; Environmental Sustainability; and New Initiatives. The parameters are further divided into 27 indicators. Based on the composite SECI score, the states and UTs are categorized into three groups: Front Runners, Achievers, and Aspirants.

The scores and ranks are presented as per larger states, smaller states, and UTs. Gujarat, Kerala and Punjab are the top three performers among larger states. Goa has emerged as the top-performing state in the 'Smaller States' category, followed by Tripura and Manipur. And lastly, among UTs, Chandigarh, Delhi, and D&D/D&N are performing well.

The third and final part (Chapter 6-7) provides learnings and the way forward in the form of recommendations for policymakers with national and state governments. Several learnings emerged during the preparation of the report and it is hoped that the learnings will help policymakers to improve performance in the energy sector. Annexure 1 provides a comprehensive snapshot of state-wise profile of scores achieved under each parameter and indicator. Additional annexure provides information on indicator-wise scores of states. Additional annexures provide detailed information related to indicators definition, weights, null values, state-wise raw data etc.

1 BACKGROUND

INTRODUCTION

India, the third-largest energy consumer and the third-largest oil importer is working aggressively to provide affordable energy, ensuring energy access to all and ensuring high efficiencies in the operations. The intent to provide energy security to its 1.3 billion people will have far-reaching impact on India's energy portfolio as its embraces clean energy pathways. India has strengthened its position in the market not only as a popular consumer but also as a transforming nation with some outstanding far-reaching agendas like increasing non-fossil fuel based installed electricity capacity of the country by 2030 to 500 GW, reducing the emission intensity of its GDP by about 45 percent from 2005 levels by 2030. India has a flourishing diversity with 28 states and 8 Union territories that cover a range of geographical complexities. The per capita energy consumption of India is one-third of the world average. More efforts are required to raise this per capita energy consumption for the inclusive development of the country. However, it will not be pragmatic to apply the same policy in every state and cascade the same agenda of energy transformation across various states. It requires in-depth analysis and strategic decision-making to come up with an appropriate energy transformation strategy for each state depending on the geographical complexities of the state.

The energy sector contributes to about 75% of the total greenhouse gas emissions of the country. The paradigm shift in the clean energy transition has a twin-fold objective: i) ensure affordable and reliable energy to all and ii) reduce its dependence on fossil-based energy by accelerating the clean energy transition. Though the government has made significant reforms in the energy sector, a lot needs to be done to achieve these objectives. This requires a robust roadmap and active involvement of the states.

The government has given thrust to improve downstream delivery with an aim to improve transmission, distribution infrastructure and financial position of distribution companies; access to clean cooking fuel through efficient and affordable fuel and ensure 24*7 supply of electricity. All these efforts require differential planning and execution. Under cooperative and competitive federalism, ranking the state's initiatives can play an important role to improve performance. Rankings will be useful for policy-makers and the state authorities in identifying the leaders and the laggards in the energy sector and finetune the policies by benchmarking against the best.

Taking a cue from experts and partner institutions, NITI Aayog has developed the State Energy & Climate Index (SECI) which measures the state's efforts for improving the energy sector. The index has been designed to assess and identify the scope for improving the performance of states and to help them efficiently manage their energy resources. This will provide the states and concerned central ministries/departments with a ready reckoner of valuable information which in turn would empower them to formulate and implement suitable policies. The index has a preliminary set of 27 Key Performance Indicators (KPIs) covering 6 parameters *'DISCOM's performance', 'access, affordability & reliability of energy', 'clean energy initiatives', 'energy efficiency', 'environmental sustainability' and 'new initiatives'*.

Objectives

The objectives of the index are:

- **Ranking the States** based on their efforts towards improving energy access, energy consumption, energy efficiency, and safeguarding environment;
- Helping drive the agenda of **affordable, accessible, efficient and clean energy transition** at the State level;
- Encouraging healthy competition among the states on different dimensions of energy and climate.

Since DISCOMS are the important link in the entire energy value chain, their performance has been assigned with higher weightage (40%) in the overall index. The aspects of financial viability and performance of DISCOMS have been taken into consideration to encourage competition among states. Other parameters such as 'access, affordability & reliability of energy', 'clean energy initiatives', 'energy efficiency', 'environmental sustainability' and 'new initiatives' have been assigned weights of 15%, 15%, 6%, 12% and 12% respectively. The State Energy & Climate Index will track the performance of the states in the energy and climate sector. The findings will help the states to take timely remedial measures for better management, thereby, meeting expectations of the citizens. The overall objective of the index is to develop healthy competition among the states to perform better and provide quality energy services to users in their states.

2 REVIEW OF THE GLOBAL & NATIONAL INDICES

2.1. GLOBAL INDICES

A. World Energy Trilemma Index (WETI)

Since 2010, the World Energy Council has been preparing the World Energy Trilemma Index[1] which annually measures the energy system performances of 127 countries across the following dimensions:

- Energy Security: This measures the capacity of nations to provide a sufficient and reliable supply of energy to meet their current and future energy demand.
- Energy Equity: This measures each nation's ability to ensure universal accessibility, affordability and reliability of energy for domestic as well as commercial use.
- Environmental Sustainability: This captures indicators that measure the efficiency of the nation's energy system to mitigate and avoid potential harm to the environment and climate change impact.
- Country Context Dimension: This captures elements such as macroeconomics, governance and institutional conditions that enable economies to develop and implement their energy policy effectively.

The overall Index ranking of each country is calculated based on 32 indicators, falling under 11 categories across the above-mentioned dimensions. Energy Security, Energy Equity and Environmental Sustainability are given equal weightage of 30 percent each and the Country Context dimension has 10 percent weightage. As per the WETI-2021 report, just 9 out of 127 countries performed well, across all three energy trilemma dimensions and achieved AAA grades.

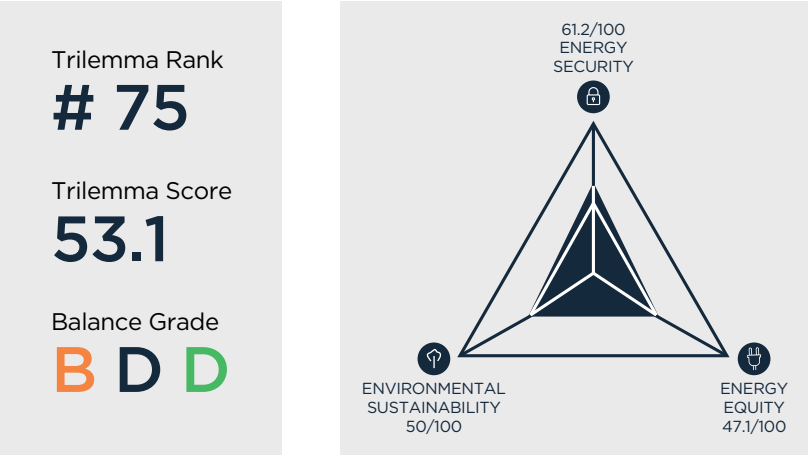

Fig 2.1: *India's Position (Trilemma Rank, score and balance)*

Source: *World Energy Trilemma Index, 2021*

1 World Energy Trilemma Index, 2021. https://www.worldenergy.org/publications/entry/world-energy-trilemma-index-2021

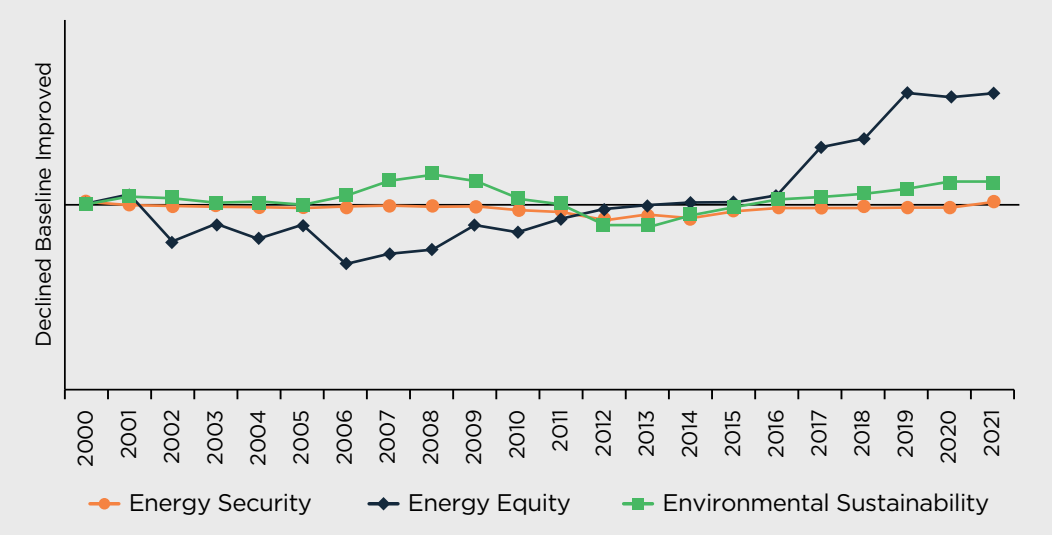

Fig 2.2: *Historical Trilemma trend lines tracking India's performance in each dimension*

Source: *World Energy Trilemma Index, 2021*

India's Position

As shown in Fig. 2.1, India is ranked 75th in the World Energy Trilemma Index (WETI) 2021. The overall trilemma score is 53.1 and the scores of energy security, energy equity and environmental sustainability are 61.2, 47.1 and 50 respectively. Trend lines in Fig 2.2 indicate that since 2000, India has been continuously striving to achieve energy equity by having better electricity accessibility and clean cooking facilities. However, the scores are low for sustainability and energy security, with little improvement.

B. World Energy Transition Index

The Energy Transition Index (ETI)[2] is one of the initiatives taken by the World Economic Forum (WEF) to track global energy transition. The index disseminates information on the nation's energy systems and promotes the adoption of policies, decisions and collaboration to secure affordable, sustainable and inclusive energy systems in the future. The ETI 2021 is a continuation of the Energy Architecture Performance Index (EAPI) published by (WEF) from 2013 to 2017.

The ETI framework has two parts: System Performance and Energy Transition. The current energy system performance assesses the nation's energy system based on three key parameters: i) the ability to support economic growth and development, ii) universal access to a secure and reliable energy supply and iii) environmental sustainability across the energy value chain. Further, the energy transition includes indicators related to political commitment, regulatory structure, consumer awareness, incentives to promote investments and innovation, stable business environment, adoption of new technologies and other factors.

2 Fostering Effective Energy Transition 2021 edition, World Economic Forum. https://www.weforum.org/reports/fostering-effective-energy-transition-2021#:~:text=As%20countries%20continue%20their%20progress,Effective%20Energy%20Transition%202021%20report.

The ETI is a composite score of 40 indicators and is calculated for 115 countries that constitute 93% of the world's total energy supply. The composite ETI score is calculated as the average of the System Performance Index and Transition Readiness Index. ETI 2021 scores also provide an insight into how the global energy transition has evolved since 2015.

India's position

As shown in Fig. 2.3, the overall ETI score of India is 52.8 with system performance score and transition readiness score being 58.2 and 47.3 respectively. Sweden leads the list of 115 countries and India ranks at 87th position among 115 countries in the ETI. India (87), has made strong improvements over the past decade, despite coal continuing to play a significant role in its energy mix.

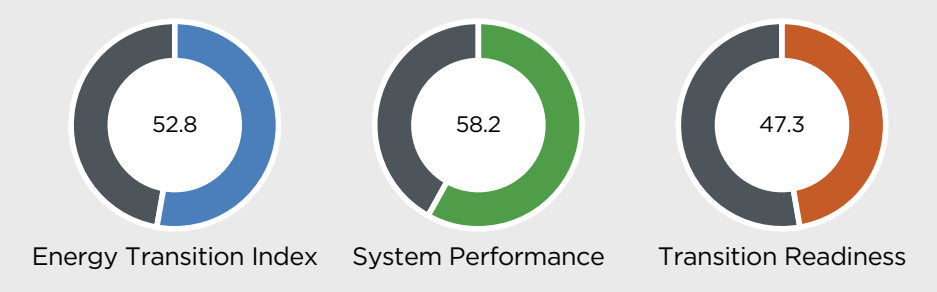

Fig 2.3: *ETI Scorecard, India 2021*

Source: *Fostering Effective Energy Transition 2021 edition, World Economic Forum*

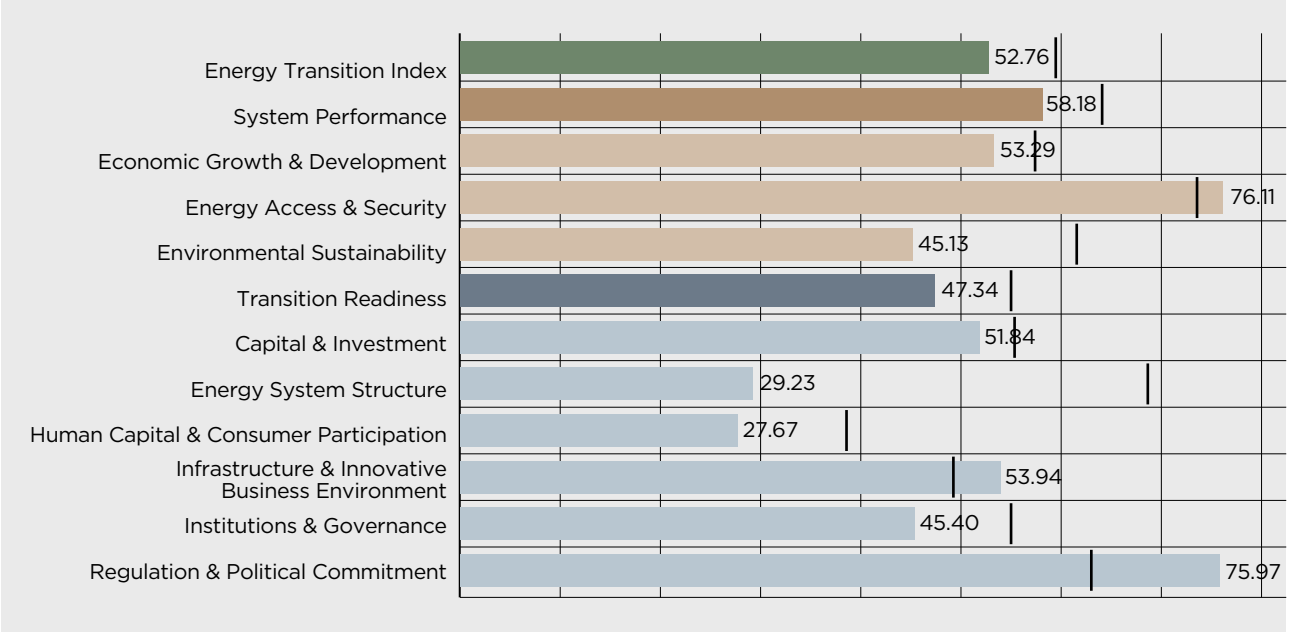

Fig 2.4: *India's ETI, Sub-indices and Dimension scores (vs. World Average)*

Source: *Fostering Effective Energy Transition 2021 edition, World Economic Forum*

Other countries in the top 5 are Norway (2nd), Denmark (3rd), Switzerland (4) and Austria (5). Fig. 2.4 compares India's ETI score, its sub-indices and dimension scores against the world average. India continues to progress in energy transition and has achieved better scores in energy security, energy access, regulation, political commitment, infrastructure and business environment. However, the country is still lagging in dimensions such as environmental sustainability, energy system structure, institutions, governance, human capital and consumer participation. To progress further in the clean energy domain, it is critical to have significant improvement in these dimensions and ensure economic, political and social progress.

C. Renewable Energy Country Attractiveness Index (RECAI)

Since 2003, the biannual RECAI[3] by Ernst & Young (EY) ranks top 40 markets on the basis of investment made in the renewable energy sector. The index ranks the performance of economies on the basis of several questions related to energy supply, ability to use renewables, infrastructure, finance, renewable technologies, strength of natural resources, macro-economic stability, ease of doing business, etc.

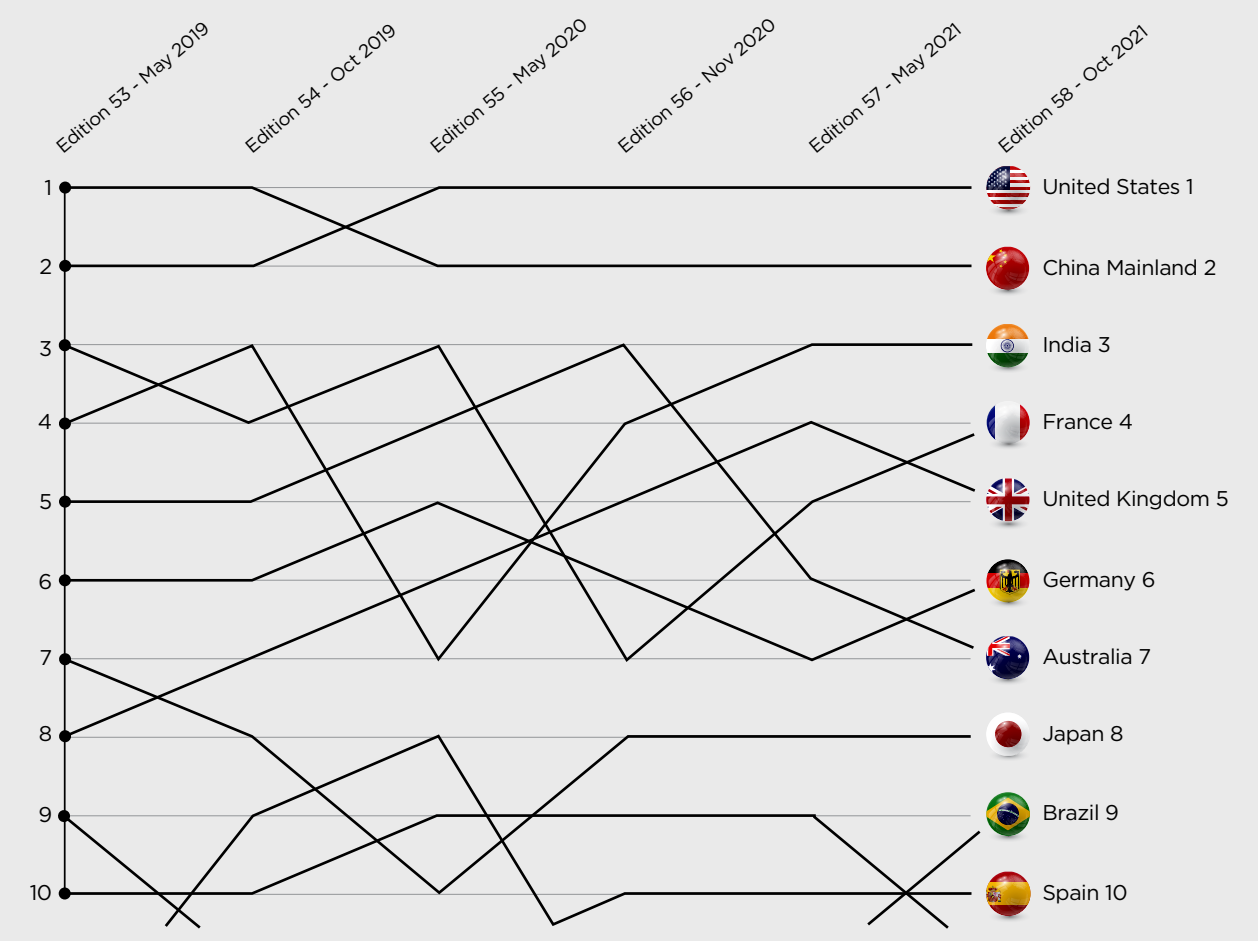

Fig 2.5: *Top 10 ranked countries and their performance since 2019.*

Source: *Renewable Energy Country Attractiveness Index (RECAI) 2021.*

3 Renewable Energy Country Attractiveness Index (RECAI) 2021. https://www.ey.com/en_in/recai

Rank	Previous rank	Movement on previous index (RECAI 2020)	Country/ region	RECAI score	Technology-specific scores						
					Onshore wind	Offshore wind	Solar PV	Solar CSP	Bio-mass	Geo-thermal	Hydro
1	1	●	US	72.8	58.3	59.8	57.9	46.3	43.3	46.3	39.9
2	2	●	Mainland China	70.7	54.8	56.8	60.2	53.9	50.8	28.3	54.3
3	3	●	India	70.2	54.3	28.8	62.4	49.6	45.1	25.1	46.2
4	5	▲	France	67.4	54.8	51.9	53.1	22.7	45.9	39.0	40.6
5	4	▼	UK	67.3	57.1	61.4	46.5	14.8	54.1	28.7	38.7
6	7	▲	Germany	67.0	51.3	51.4	52.4	16.8	49.3	40.3	34.3
7	6	▼	Australia	66.9	53.3	33.1	56.1	41.5	38.5	17.4	26.6
8	8	●	Japan	65.4	50.1	51.3	49.6	19.3	55.6	44.5	40.0
9	11	▲	Brazil	61.9	54.0	31.0	52.4	21.8	47.9	12.9	45.7
10	10	●	Spain	61.2	47.8	26.1	51.0	28.0	36.6	14.6	22.4
11	9	▼	Netherlands	61.0	48.3	44.8	46.3	15.0	44.4	18.4	21.2
12	12	●	Chile	60.8	50.4	20.4	48.6	44.5	41.4	46.3	44.0
13	15	▲	Italy	59.7	44.7	31.2	48.8	41.3	38.9	42.2	44.9
14	14	●	Ireland	59.6	47.5	41.3	43.9	18.7	41.8	18.2	22.2
15	13	▼	Denmark	59.3	49.4	49.0	43.5	15.2	40.1	14.3	17.0
16	16	●	Morocco	58.1	45.0	17.2	50.4	49.6	25.8	13.7	33.7

Fig 2.6: *RECAI score, previous rank and technology-specific scores of top 16 countries*

Source: *Renewable Energy Country Attractiveness Index (RECAI) 2021.*

India's position

India ranked 3rd with a 70.2 RECAI score, closely following China (2nd) with a 70.7 RECAI score and the US (1st) with a 72.8 RECAI score. India has retained the 3rd position again in the 58th edition of 'Renewable Energy Country Attractiveness Index (RECAI) 2021' released by EY. The RECAI highlights corporate Power Purchase Agreements (PPAs) as an emerging driver of clean energy growth. The ranking also reflects an assessment of market attractiveness and global market trends, when investors and firms are prioritising Environmental, Social and Governance (ESG) measures worldwide. The country's ongoing growth in renewable energy market conditions, inclusive policies and technological advancements have showcased the country's interest in the clean energy transition. The US is expected to hold its position in RECAI, with new initiatives being announced recently. Furthermore, favorable regulatory policies and investment conditions would continue to aid top-performing markets in China and India.

D. Climate Change Performance Index 2022

Germanwatch along with New Climate Institute and Climate Action Network International publishes the Climate Change Performance Index (CCPI)[4]. CCPI analyses and compares the climate protection performance of 63 countries and the European Union (EU). The index evaluates emission levels and promotes transparency in international climate politics. The CCPI measures a country's progress towards the Nationally Determined Contributions (NDCs) and 2030 targets. The national performances are assessed based on 14 indicators under four major categories: GHG emissions (40%), Renewable energy (20%), Energy use (20%) and Climate policy (20%). Based on the defined criteria, the index aims to compare mitigation efforts and progress of countries responsible for more than 90% of global greenhouse gas (GHG) emissions. The report noted that no country has performed well enough in all categories and hence, the top three places in the overall ranking remain empty. Three developing countries have secured places among the top ten ranking in CCPI 2022, Morocco (8th), Chile (9th) and India (10th). Despite operational inefficiencies led by the COVID-19 pandemic, India has retained 10th position in CCPI 2022.

Table 2.1: Climate Change Performance Index 2022 (Top 10 countries) – Rating table

Rank	Country	Score
1	-	-
2	-	-
3	-	-
4	Denmark	76.67
5	Sweden	74.22
6	Norway	73.29
7	United Kingdom	73.09
8	Morocco	71.60
9	Chile	69.51
10	**India**	**69.20**

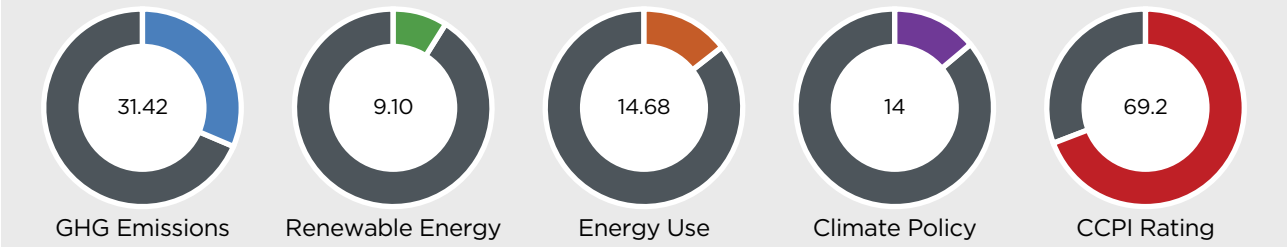

Fig 2.7: *CCPI Scorecard, India 2022*

Source: *CCPI 2022*

India's position

Fig 2.7 gives the performance scores of India for each category and overall score. India's performance was ranked 'High' in 3 of the 4 categories (GHG Emissions, Energy Use and Climate Policy). To evaluate GHG Emissions, 4 indicators have been used. The GHG

4 Climate Change Performance Index, 2022. https://ccpi.org/

emissions per capita at the current level including Land use, land-use change and forestry (LULUCF), GHG per capita- current trend (excluding LULUCF), GHG per capita compared to a well-below-2° benchmark and GHG 2030 target - compared to the well-below-2° benchmark are used as indicators with a weightage of 10% each. India has performed very high in all except for the Renewable Energy. Several schemes have given the country, the impetus it needed to remain on schedule to achieve its 2030 emissions target and Nationally Determined Contribution (NDC) goals. In the Energy Use category, 4 indicators with 5% of weightage, each was chosen. The indicators are Energy Use per capita at the current level, current trend, compared to the well-below-2° benchmark and Energy Use 2030 target when compared to the well-below-2° benchmark. India aims to have a 30% EV share among four-wheelers by 2030, with many initiatives to boost its adoption. The aggressive electrification schemes have resulted in near-universal electrification and increased clean energy use.

India has been ranked average in both the indicators of the Climate Policy category (National and International Climate Policies with 5% weightage each). The report notes that the country should set a target to achieve net-zero status and strengthen its policies for mitigating climate vulnerability. Lastly, though India has set an ambitious target of renewable electricity capacity of 500 GW, it was ranked 'Medium' in the Renewable Energy category. This is because there is much scope for the growth of renewable energy in this tropical country.

Table 2.2: Summarised list of Global indices and India's ranking

Index	World Energy Trilemma Index (WETI)	Energy Transition Index (ETI)	Renewable Energy Country Attractiveness Index (RECAI)	Climate Change Performance Index (CCPI)
Publishing Agency	World Energy Council	World Economic Forum (WEF)	Ernst & Young (EY)	Germanwatch e.V.
What it measures	Measures energy system performance in terms of Energy Security, Energy Equity, Environmental Sustainability in Country context	Checks nation's energy system information	Ranks performance of economies based on the investment made in the renewable energy sector -energy supply, renewable technologies, & ease of doing business	Measures country's progress towards the NDC 2030 targets and compares climate protection performance of countries
India's Rank	75/127 (2021)	87/115 (2021)	3/40 (2021)	10/63 (2022)
Best performing countries	Top 3: Sweden, Switzerland, Denmark	Top 3: Sweden, Norway, Denmark	Top 2: USA & Mainland China	Top 6: Denmark (4th), Sweden (5th), Norway (6th)

2.2. NATIONAL INDICES

A. State Energy Efficiency Index

The State Energy Efficiency Index[5] framework was jointly conceptualized by NITI Aayog, BEE and AEEE, after which it went through an extensive review, both at NITI Aayog and BEE. The composition of the Index has been developed considering energy consumption, energy-saving potential and states' influence in implementing energy efficiency in buildings, industry, municipalities, transport, agriculture and DISCOMs. It examines states' policies and regulations, financing mechanisms, institutional capacity, adoption of energy efficiency and energy savings.

SEEI 2020 evaluated 36 states and UTs using 68 indicators. These indicators were qualitative, quantitative and outcome-based. They belonged to 6 categories – buildings (16), industry (10), municipalities (11), transport (10), agriculture and DISCOMs (14) and cross-sector (7). Based on the scores, all states/UTs were classified into Front Runner, Achiever, Contender and Aspirant. Group 1 states have the highest TFEC while Group 4 has the lowest TFEC. From Fig 2.8, it can be seen that Karnataka is the top-performing state with a score of 70 followed by Rajasthan with a score of 61. Both these states have been categorized as Front Runners. Compared to the previous year's performance (i.e., SEEI 2019), Rajasthan and Maharashtra have improved the most, with the difference in scores being 42.5 and 19.5 respectively.

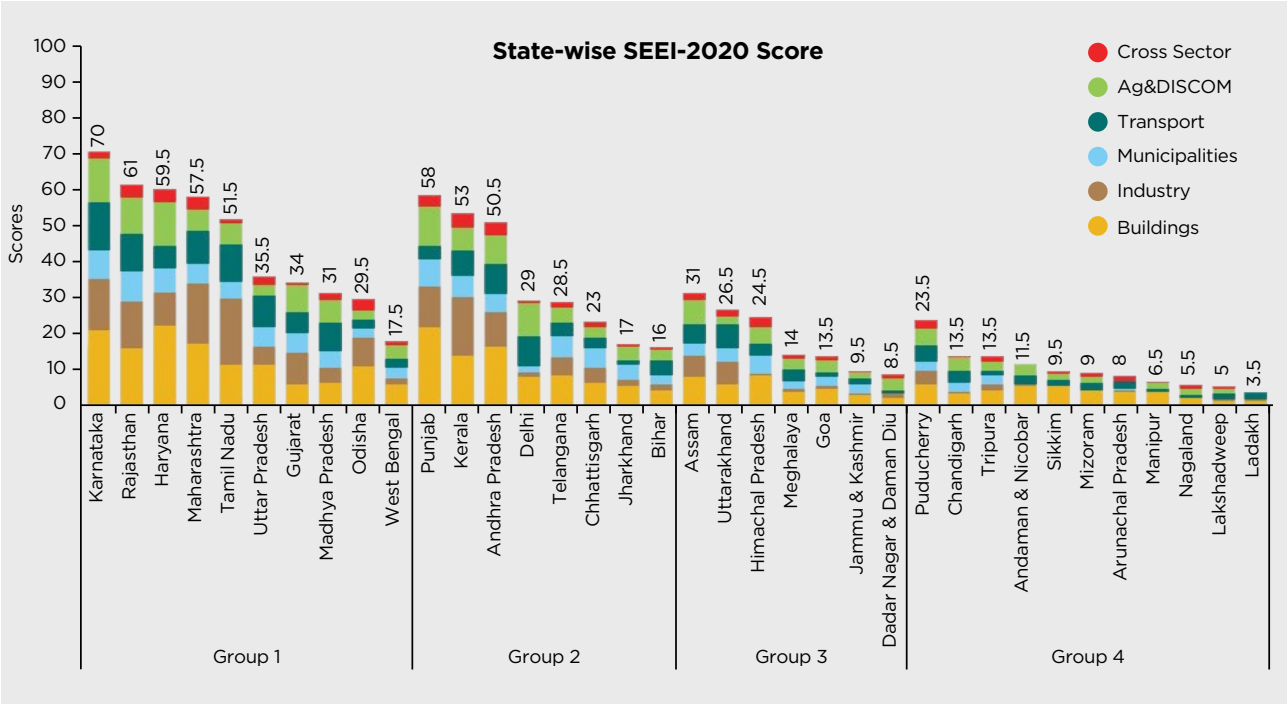

Fig 2.8: *State-wise SEEI-2020 Score*

5 State Energy Efficiency Index, 2020. https://stateenergyefficiencyindex.in/wpcontent/uploads/2021/10/SEEI-2020-Report-Final-web.pdf

B. Ranking & Annual Integrated Rating: State Distribution Utilities

Integrated Rating Methodology[6] was formulated in 2012 by the Ministry of Power. This rating exercise is undertaken annually by Power Finance Corporation Ltd. (PFC) and 2 designated credit rating agencies - ICRA and CARE. PFC has also been publishing a comprehensive report[7] on the financial and operational parameters annually, since 2004. For the year 2019-20, 115 utilities have been considered (66 DISCOMs, 23 power generation utilities, 22 power transmission utilities and 4 power trading utilities). Of these, 96 have submitted audited accounts, 8 have provided provisional accounts and the rest 10 are power departments that don't prepare annual accounts, due to which information provided in tariff petition has been used instead.

A review of all existing indices reveals that there is no comprehensive index to evaluate the performance of the states in the energy sector. A comprehensive index should ideally cover affordability, accessibility, efficiency, distributors performance and climate friendliness of all forms of energy. This formed the motivation for formulating the State Energy & Climate Index. This index is envisaged to be at par with the international indices covering the entire energy value-chain.

6 Ranking and ninth Annual Integrated Rating: State Distribution Utilities (July, 2021). https://pfcindia.com/DocumentRepository/ckfinder/files/GoI_Initiatives/Annual_Integrated_Ratings_of_State_DISCOMs/9th%20Integrated%20Rating%20Booklet.pdf

7 Report on Performance of Power Utilities, 2019-20. https://pfcindia.com/DocumentRepository/ckfinder/files/Operations/Performance_Reports_of_State_Power_Utilities/Report_on_Performance_of_Power_Utilities_2019_20_29092021.pdf

3 STATE ENERGY & CLIMATE INDEX (SECI)

3.1. INTRODUCTION

With a population of 1.3 billion, India has a massive demand for energy to run this growing economy. Since 2000, India has been responsible for more than 10% of growth in the world's energy demand and India's per capita energy demand has increased by more than 60 percent[8]. The per capita electricity consumption in 2018-19 was 1181 kWh, which is just 1/3rd of the world's average per capita electricity consumption of 3260 kWh. Also, it is lower than other developing countries like Brazil and China. There has been a marginal improvement over 2018-19 and the same has increased to 1208 kWh in 2019-2020[9].

India's energy use has doubled from 2000-level, due to an increase in income and improved standard of living[8]. Almost 80% of the country's energy requirements are met by coal, oil, natural gas and solid biomass[8]. India's per capita emission is quite low but in absolute terms, it is the 3rd largest greenhouse gas emitter (country-wise) in the world. With the robust renewable energy installation target, India may considerably reduce the overall emissions. India's ongoing industrialisation and urbanisation will place enormous pressure on the energy sector, therefore decarbonising the demand and supply sectors would be critical to reduce emissions.

3.2. INDIA AT GLOBAL STAGE

India has taken several measures at the international, national and state levels to address the energy and climate issues. NITI Aayog presented India's 2nd Voluntary National Review (VNR) in 2020 at the UN High-Level Political Forum (HLPF)[10]. India's achievements highlighted at the forum include electrifying more than 600,000 villages, an 80 million homes receiving clean fuel for cooking, for first time since 2015 and use of energy efficient appliances resulting in savings of almost 38 MT of CO_2 annually[11]. The efforts have been highly appreciated and India is said to be on track to achieve its goals as per the Paris Agreement[11]. India has also announced to reach net-zero emissions by 2070 at the COP26 UN Climate Change Conference held in Glasgow. The Honourable Prime Minister presented five nectar elements, Panchamrit, to deal with climate change:

1. India will reach its non-fossil installed electricity capacity to 500 GW by 2030.
2. India will meet 50 percent of its electricity requirements from renewable energy by 2030.
3. India will reduce the total projected carbon emissions by one billion tonnes from now onwards till 2030.
4. By 2030, India will reduce the carbon intensity of its economy by less than 45 percent.
5. By the year 2070, India will achieve the target of Net-zero.

These panchamrits will be an unprecedented contribution of India to climate action[12].

8 India Energy Outlook 2021.

9 https://pqars.nic.in/annex/253/AU2366.pdf

10 https://www.pib.gov.in/PressReleseDetailm.aspx?PRID=1638261

11 India VNR 2020 Decade of Action Taking SDGs from Global to Local Report

12 https://pib.gov.in/PressReleseDetail.aspx?PRID=1768712

Recently, India ranked 10th, 2nd time in a row, as per the Climate Change Performance Index (CCPI 2022), as a high-performing country[13]. India is one of the countries that occupy the center stage in the world's quest for clean energy transition and mitigation of climate change. States and UTs have to play a pivotal role in implementing the policies and realising the goals set. The government has given thrust to improve downstream delivery with an aim to improve transmission, distribution infrastructure and financial position of distribution companies; access to clean cooking fuel through efficient and affordable fuel and ensure 24*7 hours supply of electricity. All these efforts require differential planning and execution. Under cooperative and competitive federalism, ranking the state's initiatives can play an important role to improve performance. Rankings will be useful for policy-makers and the state authorities in identifying the leaders and the laggards in the energy sector, and fine-tuning the policies to promote better energy deployment.

The SECI developed by NITI Aayog which includes 27 indicators under 6 parameters is expected to play crucial role in pushing the states to adopt best practices and move the needle on clean energy transition.

3.3. DISCOM'S PERFORMANCE

To provide electricity to a massive population of 1.3 billion individuals and integrate this with the vision of using renewable energy sources, the efficiency of the DISCOM sector in India is at the apex of priorities of the policymakers and scientific community of the country.

In recent years, India has achieved significant milestones in electricity production and supply. Being the second-most populous nation on the planet, India has the world's largest and most complex power sectors. Highlighting the achievements, we have ensured the availability of electricity to almost 98% of our population. Power distribution is an integral part of the value chain of the Indian power sector. Unfortunately, the power distribution companies (DISCOMs) had accumulated financial losses to the tune of Rs 5.07 lakh crore in the year 2019-20[14].

To accurately evaluate the financial health of these DISCOMs, the debt-to-equity ratio, regulatory assets and open access charges have been considered as indicators. Further, implementing time of day or time of use tariff structure has also been considered one of the indicator. To gauge the operational health of the system, AT&C losses, ACS-ARR gap and the T&D losses have been considered as indicators. These indicators will show where the states need to focus to curb any losses in the system to improve the DISCOMs efficiency. A series of schemes were launched, by central and state governments, to upgrade the distribution infrastructure and improve DISCOM finances.

13 https://ccpi.org/wp-content/uploads/CCPI-2022-Results_neu.pdf

14 https://www.pfcindia.com/DocumentRepository/ckfinder/files/Operations/Performance_Reports_of_State_Power_Utilities/Report_on_Performance_of_Power_Utilities_201920_1.pdf

3.4. ACCESS, AFFORDABILITY AND RELIABILITY OF ENERGY

It is imperative for the citizens to have access to clean energy. The Council on Energy, Environment and Water (CEEW) undertakes an annual exercise called Indian Residential Energy Survey (IRES) for 21 states for their residential electric supply[15]. IRES 2020 concluded that Indian homes receive 20.6 hours of average daily electricity supply. Urban residents receive supply for 22.3 hours daily, while rural residences receive only 19.9 hours. Delhi, Gujarat, Tamil Nadu and Kerala have performed well by supplying 23 hours on an average whereas Jharkhand, Bihar, Haryana, Uttar Pradesh and Assam experience power outages for long periods.

Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY) scheme was launched in 2014 with a budget outlay of Rs. 43,033 crores. All DISCOMs were made eligible for financial assistance under this scheme[16]. It facilitated the separation of agricultural and non-agricultural feeders in the rural areas (to avoid the over-compensation of agriculture load[17]); strengthened and augmented sub-transmission and distribution infrastructure (including metering); carried forward with rural electrification (which was supported by the Saubhagya scheme)[16].

The Saubhagya (Pradhan Mantri Sahaj Bijli Har Ghar Yojana) scheme, the world's largest universal electrification scheme, was launched in 2017 to focus on the last-mile connectivity to all unelectrified households. Standalone electric grids were provided where connection to the main power grid was not possible[18]. Pradhan Mantri Sahaj Bijli Har Ghar Yojana (also known as Saubhagya) scheme actively improved the availability of electricity to these states from 12.5 hours in 2015 to 18.5 hours in 2020. Indicators have been chosen accordingly, in order to capture the efforts made by the states and the nation to provide clean and affordable energy to all. Thus, the daily supply of electricity for industrial and agricultural loads has been considered. Further, cross-subsidization and lifeline electricity tariffs will aid in gauging the efforts made by the states to provide support to low-income households and industry. Additionally, the per capita energy consumption of the state will serve as a measure of the status of access, affordability of energy.

15 State of Electricity Access in India : Insights from the India Residential Energy Survey (IRES) 2020, CEEW Report (https://www.ceew.in/sites/default/files/ceew-research-on-state-of-electricty-access-and-coverage-in-india.pdf)

16 http://www.ddugjy.gov.in/assets/uploads/1548234273fykio.pdf

17 IEA India 2020 Energy Policy Review

18 https://powermin.gov.in/en/content/saubhagya

3.5. CLEAN ENERGY INITIATIVE

Due to the aggressive push by the government, great strides have been made towards increasing renewable capacity. An action plan for achieving 175GW installation of renewable energy capacity by 2022 was released[19]. It includes 100GW of solar energy (of which solar PV rooftop contributes to 40GW), 60GW of wind energy, 10GW of biomass energy and 5GW of small hydropower. The new target includes 500 GW of RE capacity by 2030 with 280 GW solar, 140 GW wind, 30 GW others and 50 GW hydropower. This transition in the generation mix has created a need for change in the power grid infrastructure. Thus, Green Energy Corridors Project was launched with an initial budget of Rs. 34,141 crores to integrate renewable energy capacity of 32,713 MW with the existing grid[20]. Hence, the extent of penetration of renewable energy has been adopted as one of the indicators under this parameter.

The Ministry of Petroleum and Natural Gas (MoPNG) introduced its flagship scheme called Pradhan Mantri Ujjwala Yojana (PMUY) in 2016, with the aim to increase the uptake and usage of LPG in rural areas. This has been undertaken with the intention of weaning rural women off traditional cooking fuels like firewood, cow-dung and coal, which are freely available but can cause a detrimental and fatal impact on the health of the users[21]. The scheme has significantly helped the national and sub-national governments to increase the LPG coverage. This massive effort has been supported by Pratyaksh Hanstantrit Labh (PAHAL) scheme which is a Direct Benefits Transfer (DBT) process for LPG consumers through which households can receive subsidies[22]. These consistent and enormous efforts have been captured under the "Clean Cooking Fuel Supply" indicator.

In 2018, the Ministry of Transport announced that CNG and electric vehicles will not need road permits. MoPNG has also announced the Natural Gas Infrastructure Development Plan with the target of increasing the total number of CNG stations from 1,400 at present to 10,000 over the next few years. With an objective to capture the efforts of the government to push clean transport, an indicator has been added to evaluate the extent of penetration of CNG vehicles.

3.6. ENERGY EFFICIENCY

Energy intensity is a very important and insightful metric as it shows the energy consumed per unit of GDP. This shows how efficiently the states have utilized the energy available to them to produce their respective GDPs. India recorded an energy intensity of 0.106 koe/$15p while the world's energy intensity for 2020 stands at 0.114 koe/$15p[23].

19 Standing Committee Report Summary-Action plan for achievement of 175 GW renewable energy target, PRS Legislative Research "PRS"

20 https://powermin.gov.in/en/content/transmission-works-under-green-energy-corridors-i

21 https://www.pmuy.gov.in/about.html

22 http://petroleum.nic.in/dbt/DBTL_Handbook.pdf

23 https://yearbook.enerdata.net/total-energy/world-energy-intensity-gdp-data.html

According to Energy Efficiency 2020 report by IEA[24], global energy efficiency improved at the rate of 1.5% and 1.6% for 2018 and 2019, respectively. However, due to COVID-19, energy intensity was projected to improve by only 0.8% in 2020. In this report, the energy intensity of all states and UTs have been measured.

Bureau of Energy Efficiency (BEE) was set up within the purview of the Ministry of Power (MoP) in 2002, under the provisions of the Energy Conservation Act, 2001[25]. It has initiated many schemes since its formation, for example, Energy Conservation Building Codes (ECBC), Demand Side Management (DSM), Capacity Building of DISCOMs, Energy Efficiency in Small and Medium Enterprises (SMEs) Sector, etc.

As per the estimates for India, most of the buildings that will exist in 2040 are yet to be built[8]. This provides a huge potential for energy conservation in the building sector. Realizing this, the Ministry of Power, Government of India in collaboration with BEE released Eco-Niwas Samhita in 2018, along with a compliance tool calculator[26]. It is called the energy conservation code for residential buildings. The commercial building ECBC was revised in 2017[8]. As of March 2020, 14 states and 2 UTs (Rajasthan, Odisha, Uttarakhand, Punjab, Karnataka, Haryana, Kerala, Andhra Pradesh, Telangana, West Bengal, Uttar Pradesh, Puducherry, and Andaman & Nicobar Islands) have notified ECBC about their status[27].

Perform, Achieve and Trade (PAT) scheme was launched by BEE under the National Mission for Enhanced Energy Efficiency (NMEEE) to boost energy efficiency for energy-intensive industries[28]. BEE has also developed the State Energy Efficiency Index (SEEI) in collaboration with the Alliance for an Energy Efficient Economy (AEEE). The goal of releasing such an index is to help drive energy efficiency measures, ensure implementation of the developed policies, and successfully monitor the progress and performance of all the states.

The State Energy & Climate Index consists of three indicators to capture the state's performance in terms of energy efficiency. These indicators are Energy intensity, Energy saving in commercial and public buildings, and Industrial energy saving due to proper implementation of energy-efficient and energy-saving measures by the industry.

3.7. ENVIRONMENTAL SUSTAINABILITY

According to the Paris Agreement of COP21 in 2015, all participating nations must agree to reduce their greenhouse gas emissions in a bid to limit the increase in the global temperature to 1.5°C for this century[29]. A national action plan called Nationally Determined

24 https://iea.blob.core.windows.net/assets/59268647-0b70-4e7b-9f78-269e5ee93f26/Energy_Efficiency_2020.pdf

25 https://beeindia.gov.in/content/about-bee

26 https://www.beepindia.org/eco-niwassamhita/

27 Bureau of Energy Efficiency (BEE) Annual Report 2019-20

28 https://www.beeindia.gov.in/content/pat-read-more

29 https://www.un.org/en/climatechange/paris-agreement

Contribution (NDC) was charted for all countries whose progress will be reviewed every five years. According to India's NDC for the period 2021-30[30], the nation has pledged to decrease its emission intensity of GDP by 33-35% by 2030 from the 2005 level. As per biennial Report, it has reduced its emission intensity of GDP by 24% between 2005 and 2016. Further with Prime Minister's announcement in COP 26, India is committed to raise the non-fossil fuel-based installed electricity capacity of the country to 500 GW by 2030; reduce the total projected carbon emission by one billion tonnes between now and the year 2030 and reduce the carbon intensity of the economy by 45% by 2030.

As announced in COP 26 the country would strive to become carbon neutral and achieve net-zero emissions by the year 2070. Therefore, it becomes imperative to quantify the performance of the states with respect to indicators such as forest cover, emission intensity, carbon sink capacity, and utilization of renewable sources. As per ISFR-2019, the total forest and tree cover of the country is 80.73 million hectare which is 24.56 percent of the geographical area of the country.31 India is one of the few countries which has managed to increase its forest cover and adhered to the NDCs. The regular capture of data will provide the status of efforts undertaken by the states and will identify areas of improvement.

3.8. NEW INITIATIVES

Many initiatives have been announced to transform the Indian energy sector. Amongst many initiatives, penetration of EVs into the automobile market, availability of charging stations to facilitate charging of EVs and the proportion of consumers who have installed smart meters have been taken as indicators.

Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India (FAME India) was launched in 2015 to promote HEVs and EVs throughout their supply chain[32]. The 1st phase lasted until April 2019 after which, the 2nd phase was launched. Around 2.78 lakh EVs were supported with demand incentives of about Rs. 343 crores in the 1st phase[32] while more EVs will be sold in the 2nd phase[32]. In 2020, the government-sanctioned 670 e-buses in Maharashtra, Goa, Gujarat, and Chandigarh and 241 charging stations in 7 cities (Indore, Tiruchirapalli, Port Blair, Kollam, Thiruvananthapuram, Malappuram, and Surat)[33]. Awareness about electric vehicles seem to be on the rise. However, policy-wise, only 13 states have formulated policies related to EVs.

The distribution system lacks adequate metering, which makes it difficult to improve the system's operational efficiency. To tackle this issue, the National Smart Grid Mission was launched in 2015. It aims to set up a mechanism for planning, implementing, and monitoring

30 https://www.globalissues.org/news/2021/03/16/27388

31 https://www.pib.gov.in/PressReleaseIframePage.aspx?PRID=1597987

32 https://www.pib.gov.in/newsite/PrintRelease.aspx?relid=191377#:~:text=FAME%20India%20Scheme%20The%20National%20Electric%20Mobility%20Mission,electric%20vehicles%20and%20their%20manufacturing%20in%20the%20country

https://fame2.heavyindustries.gov.in/

33 https://www.jagranjosh.com/general-knowledge/fame-india-scheme-1601543765-1

policies in the smart grid domain[17]. According to the UDAY scheme, all consumers with consumption of more than 200 units per month must compulsorily install smart meters[34]. Energy Efficiency Services Limited (EESL), a government-owned energy services company, has signed an MoU which targets to replace 250 million conventional meters with smart meters under the Smart Meter National Programme (SMNP)[35]. This will improve metering and consumption transparency and avoid the errors and costs that come with a manual billing[35].

India has launched many other initiatives (for example, battery storage and green hydrogen) which may be included in future exercises. National Mission on Transformative Mobility and Battery Storage was unveiled in 2019. Also, the National Hydrogen Energy Mission (NHEM) was announced in the Union Budget 2021. NHEM will focus on green hydrogen and its end users – fertilizer, refinery industry, and steel industry etc. India was also one of the first countries to launch a cooling plan (India Cooling Action Plan – ICAP) to address cooling requirements across sectors and formulate action points to decrease cooling demand[36]. The Government of India has also identified new areas to achieve higher levels of penetration of Renewable energy by proposing certain amendments to Energy Conservation Act, 2001. The proposed changes to the EC Act will boost the adoption of clean technologies in various sectors of the economy. The provisions would facilitate the promotion of green Hydrogen as an alternative to the existing fossil fuels used by the industries. Amongst various parameters, only those indicators have been taken into consideration where data is reliable. This edition of the SECI report reveals that data on many important variables is not always available at the state level and going forward there is a need to develop systems for robust capturing of such data in this essential sector so that they can be included in the next version.

34 https://www.uday.gov.in/Targeted-Activites.php

35 https://eeslindia.org/en/smart-meters/

36 https://www.pib.gov.in/PressReleaseIframePage.aspx?PRID=1568328

4 METHODOLOGY

4.1. SELECTION OF INDICATORS AND DATA COLLECTION

The process of formulating India's State Energy & Climate Index started with finalization of parameters and indicators after several rounds of brainstorming sessions & discussions with experts from different institutions and the relevant ministries. An iterative method was followed to reach the final set of indicators with follow-up meetings held with experts. The institutes and ministries involved in the discussion were - IIT Bombay, IIT Kanpur, CEEW, TERI, Prayas, Ministry of Power (MoP), Central Electricity Authority (CEA), Ministry of Power (MoP), Ministry of Petroleum & Natural Gas (MoPNG), Petroleum, Planning & Analysis Cell (PPAC), Ministry of Environment, Forest & Climate Change (MoEFCC), Bureau of Energy Efficiency (BEE), Alliance for an Energy Efficient Economy (AEEE). The data was primarily provided by different ministries – Central Electricity Authority, Petroleum Planning & analysis Cell, Ministry of Road Transport & Highways etc. For some of the indicators, the data was compiled from secondary sources - Handbook of Statistics on Indian Economy by Power Finance Corporation (PFC), Ready Reckoner by PFC. The index consists of six parameters and 27 indicators (See Annexure 3). The data collected is for 2019-20. The indicators have been selected based on their importance and availability of reliable annual data from existing data sources.

The State Energy & Climate Index consists of 6 Parameters and 27 Key Performance Indicators (KPIs).

Parameters (6)	Weightage (100%)	Indicators (27) Progressive & Regressive
DISCOM'S Performance	40%	9
Access, Affordability and Reliability of Energy	15%	5
Clean Energy Initiatives	15%	3
Energy Efficiency	6%	3
Environmental Sustainability	12%	4
New Initiatives	12%	3

DISCOMS performance with eight indicators is the most important parameter because DISCOMs are the important link in the entire energy value chain and its performance has been assigned with higher weightage (40%). The other parameters such as

'access, affordability & reliability of energy', 'clean energy initiatives', 'energy efficiency', 'environmental sustainability, and 'new initiatives' have been assigned 15%, 15%, 6%, 12%, and 12% weightage respectively. The State Energy & Climate Index ranks the performance of the states in the energy and climate sector. The list of indicators under each parameter is given below. See Annexure 3 for definition, weights, and data source of indicators.

Table 4.1: State Energy & Climate Index: Parameter wise list of indicators

S.No.	Indicator Name	Weightage
	Parameter 1: DISCOM's Performance	40
1.1	Debt Equity Ratio	5
1.2	AT&C Losses	7
1.3	T&D Losses	5
1.4	ACS – ARR gap	7
1.5	Implementation of ToD/ToU tariff for Consumers	2.5
1.6	States Implemented DBT Transfer	2.5
1.7	Open Access Surcharge	5
1.8	Regulatory Assets	3
1.9	Complexity of Tariff	3
	Parameter 2: Access, affordability & reliability	15
2.1	Per capita energy consumption	4
2.2	Hours of Electricity Supplied (Industry)	1.5
2.3	Hours of Electricity Supplied (Agri)	1.5
2.4	Cross-Subsidization	5
2.5	Life-line electricity and tariff	3
	Parameter 3: Clean Energy Initiatives	15
3.1	Clean Cooking Fuel Supply	5
3.2	Renewable Energy Penetration	5
3.3	CNG Vehicle Penetration	5
	Parameter 4: Energy Efficiency	6
4.1	Energy Intensity of GSDP	2
4.2	Energy savings in Commercial & Public Buildings	2
4.3	Industrial energy Savings	2
	Parameter 5: Environmental Sustainability	12
5.1	Emission Intensity of GSDP	4
5.2	Utilization of RE potential	2
5.3	Percentage change in forest cover w.r.t 2005	4
5.4	Forest carbon stock	2
	Parameter 6: New Initiatives	12
6.1	EV penetration	4
6.2	Availability of Charging Infrastructure for Electric Mobility	4
6.3	Proportion of consumers with Smart meters	4

4.2. MISSING VALUES

For some of the indicators, adequate information was not available from any of the reliable sources for the states and union territories. The list of states with null values for any indicator has been provided in the annexure. With an objective to encourage states to take measures to minimise data gaps in future indexes, null values has been assigned zero in the final calculation. Annexure 4 provides the list of states with null values under different indicators.

4.3. CORRELATION MATRIX

The correlation matrix is a tool that has been used to drop indicators with overlapping domains, and retain unique indicators. Based on the correlation matrix, few indicators were removed and the final list of 27 key performing indicators was decided. The correlation matrix of final indicators is given in Annexure 5 and it can be observed that none of these indicators are highly correlated.

4.4. NORMALISATION OF INDICATORS

The normalisation of indicator values into a standard scale of 0 to 100 has been adopted to ensure comparability of different indicators. For instance, while debt-equity ratio has both positive and negative values, AT&C losses & T&D losses are measured as a percentage, implementation of ToD/ToU tariffs has binary values. All the indicators have different units of measurement which necessitates standardization to make them comparable. In the normalised range of zero to 100, the zero indicates the lowest performance, and 100 implies that the target has been achieved. Further, we have two types of indicators - progressive indicators and regressive indicators (Annexure 2). The normalisation method for both indicators is explained below:

- For progressive indicators – higher values imply better performance and vice-versa. For example, indicators such as per capita energy consumption, renewable energy penetration, EV penetration are progressive indicators. The following formula has been used for normalisation:

  *{(State's Actual value-Lowest value)/(Highest value-Lowest value)} * 100*

- For regressive indicators – lower values mean better performance and vice-versa. For example, indicators such as AT&C losses, T&D losses, emission intensity, energy intensity are regressive indicators. The following formula has been used for normalisation:

  *{(Highest value-State's Actual value)/(Highest Value-Lowest value)} * 100*

4.5. PARAMETER WISE SCORE

The State/UT-wise score for each parameter was estimated as the weighted average of the normalised values of all indicators under the parameter. Each parameter and indicator(s) within the parameter, have different weights decided on the basis of discussion with experts and stakeholders. The following formula is used for parameter scoring:

$$\text{Parameter score}_{kj} = \frac{\sum_{i=1}^{n_j}(w_{kji} \times \text{indicator value}_{kji})}{w_{kj}}$$

Where, w_{kji} is weights assigned to individual indicators within each parameters.
Indicator value$_{kji}$: normalised value of the indicator i in j^{th} parameter of k^{th} state
n_j number of indicators in each parameter

4.6. COMPOSITE SECI SCORE

The composite score is the weighted mean of all the weighted scores of the indicators, for each State/UT, assigning different weights to each parameter. This score is an indication of the overall position of the States/UTs in SECI.

$$\text{Composite SECI score} = \sum_{j=1}^{6}(\text{Parameter value}_{kj})$$

Where, parameter value$_{kj}$= $\sum_{i=1}^{n_j}(w_{kji} \times \text{indicator value}_{kji})$

4.7. CLASSIFICATION OF STATES

For better comparison, the states have been classified as larger states, smaller states and union territories. The classification is provided in the table below:

Table 4.3: Classification of states as Larger states, Smaller states and UTs

Category	No. of States/UTs	States/UTs
Larger states	20	Andhra Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Rajasthan, Madhya Pradesh, Maharashtra, Odisha, Punjab, Tamil Nadu, Telangana, Uttar Pradesh, Uttarakhand, West Bengal
Smaller States	8	Arunachal Pradesh, Goa, Manipur, Mizoram, Nagaland, Meghalaya, Sikkim, Tripura,
Union Territories	8	D&N and D&D[37], Chandigarh, Delhi, J&K[38], Puducherry, A&N, Lakshadweep

37 The union territories of Daman & Diu and Dadra & Nagar Haveli is considered together in this study because of their small size and small population size. The average value of both the states is taken as representative for each.

38 Due to non-availability of separate data for two UTs (J&K and Ladakh), Ladakh is not shown as a separate UT in this index. However, from the next round of the index, the data for J&K and Ladakh will be collected and shown separately.

4.8. CATEGORIZATION OF STATES ON THE BASIS OF SECI SCORE

The states and UTs are categorised based on Reference Year (2019-20). Composite SECI Score range as follows:

Category	SECI score	
Front-runners (Top one-third)	Composite SECI score>=46	
Achievers (Middle one-third)	Composite SECI score between 36 and 46	
Aspirants (Lowest one-third)	Composite SECI score<=36	

4.9. STATES/MINISTRIES CONSULTATION

Before releasing the final document, the states and ministries were consulted for their feedback and comments. The comments received from Ministry of Power (MoP), Central Electricity Authority (CEA), Ministry of Environment, Forest & Climate Change (MoEFCC), Bureau of Energy Efficiency (BEE) were thoroughly discussed and incorporated in the document. The final document with information on parameters, indicators, indicator-wise raw score, indicator-wise weighted score was shared with each state for their comments and feedback. The comments were received from few of the states and these were incorporated in the document.

5 KEY FINDINGS

The State Energy & Climate Index is an outcome of comprehensive research, to appraise the performance of the states in the energy & climate sector. The framework is an aggregation of six parameters consisting of twenty-seven indicators, which capture the energy and climate landscape of the sub-national governments in the country.

COUNTRY-LEVEL ANALYSIS

Before carrying out the state-level analysis of the parameters and indicators, a macro-picture at the country level is presented in Table 5.1 to understand the performance of the energy sector in India. A country-level analysis with a comprehensive outline of India's strengths and weaknesses in the sector would be extremely helpful in formulating efficient nationwide policies and strategies. The country-level scores, of each parameter, are calculated as an average of the state-wise score for their respective parameters. The overall score for India works out to be 40.6. The average score at the national level for DISCOM's performance is 56.8. The average scores of two parameters i.e., access, affordability & reliability, and environmental sustainability are 46.4 and 37.7 respectively. The state governments need to improve their performance in terms of clean energy initiatives and energy efficiency as the national level average score of these parameters are 22.2 and 29.1 respectively. The all-India average score for new initiatives is 11.1 which is the lowest among all parameters.

Table 5.1: All India average score, highest score and lowest score under each parameter and SECI score

	Average score	Highest Score	Lowest Score
SECI score	40.6	55.7 (Chandigarh)	26.9 (Lakshadweep)
DISCOM's Performance	56.8	77.1 (Punjab)	31.1 (Arunachal Pradesh)
Access, Affordability & Reliability	46.4	67.3 (Kerala)	25.9 (Lakshadweep)
Clean Energy Initiatives	22.2	69.2 (Chandigarh)	1.9 (Meghalaya)
Energy Efficiency	29.1	85.4 (Tamil Nadu)	0.0 (Lakshadweep)
Environmental Sustainability	37.7	62.5 (Chandigarh)	5.8 (Chhattisgarh)
New Initiatives	11.1	58.7 (Tripura)	0.0 (Andhra Pradesh, A&N)

The raw data for each indicator and all-India average values are given in Annexure 6. For DISCOM's performance, the absolute values and the all-India average of all indicators depict that the DISCOMs still needs huge improvement. The all-India average debt-equity ratio is 0.011 and a large number of State DISCOMs show a negative net-worth. While the national target for AT&C losses is 12-15% by 2024-25, twenty-four states had AT&C losses of more than 15% in 2019-20. Similarly, for the ACS-ARR gap, the national target is to bring the gap to zero by 2024-25 whereas the positive gap was observed at for large number of states. Similarly, India's average T&D losses was 21.3 which is more than twice the world average and much above the desirable range of 6-8%. A positive observation

is that the states such as Kerala, AP, MP, WB and Delhi have implemented ToD/ToU tariffs in all three categories and large number of states have implemented these in one of the two categories. However, India's average value is 1.4 for Implementation of T0D/ToU Tariff and zero for implementation of DBT. India's average open access surcharge was observed 1.5 INR/kWh and average regulatory assets was observed to be Rs.1883.3 crores (highest being Rs. 23139 crores in Delhi). On the indicator of complexity of tariff, large numbers of categories of tariffs are prevailing in different states. However, majority of the states have less than 50 categories of tariffs, which can be further reduced.

For the access, affordability & reliability, India's average per capita energy consumption is 272 kgoe which is low (this data is low as it has been calculated at consumption end of the states where biomass and energy loss has not been included due to lack of reliable state-wise data). In terms of hours of electricity supplied in industrial and agriculture sector all-India average was 24 and 17.1 hours respectively. Almost all states are providing 24 hours electricity supply in the industrial sector and almost half of the states are providing, more than 15 hours of electricity to the agriculture sector. The cross-subsidy value is ranging up to 5.3 INR/kWh and almost fifty percent of the states have values more than the all-India average of 1.7 INR/kWh indicating that the industrial sector are paying high tariffs which may adversely hamper the growth and development of DISCOMs. Similarly, the National Electricity Policy 2005 aims at providing minimum life-line consumption of 1 unit/household/day electricity. However, the all-India average tariff rate of power in the slab of 1 KW connection load (100 kWh/month) is 4.1 INR/kWh which is remarkably higher making electricity unaffordable to the bottom of the pyramid.

For the parameter, Clean Energy Initiatives, the all-India average supply of clean cooking fuel was observed at 0.029 toe/capita, RE penetration was 19 percent of total electricity generation and CNG vehicle penetration was 1.2 percent of the total numbers of registered vehicles.

For the Environmental Sustainability parameter, the forest cover has increased by 9 percent which is a remarkable progress at national level, and India's average per hectare carbon stock was observed at 98.4 tonnes which further needs to be improved. Similarly, for the New Initiatives parameter, in 2019-20 the all-India average EV penetration was 1.4 percent and the values of all India average availability of charging infrastructure for E-mobility and proportion of consumers with smart meters was very low.

STATE-LEVEL ANALYSIS

Given the nation's leadership at the global stage and its rigorous push towards adopting renewable energy, it is imperative to understand how the programs and policies are translating into action at the grassroots level. Thus, a state-level analysis would highlight the strengths and weaknesses of its various programmes. The SECI scorecard provides the scores of all states and UTs on 6 parameters along with the final SECI score.

The final SECI score and the parameter-wise scorecard are given in Table 5.2 and Table 5.3. The SECI score given in the last column is the summation of the weighted values of all the parameters. The parameter-wise scores are the weighted average of indicators under respective parameters. The categorisation has been made on the basis of the overall score range (26.9-55.7) for the reference period 2019-20. As highlighted in section 4.8, the top one-third are considered as front-runners followed by the middle one-third as achievers and the last one-third as aspirants.

The final SECI score in Table 5.2 reveals that among larger states, Gujarat, Kerala, Punjab, Haryana, Uttarakhand, and Maharashtra fall under the category of Front-runners. The states such as HP, Karnataka, TN, Assam, Telangana, Andhra Pradesh, UP, WB and Bihar are achievers and the remaining states are aspirants. The highest score of 50.1 was achieved by Gujarat, followed by Kerala and Punjab with a score of 49.1 and 48.6 respectively. The lowest score of 31.7 was achieved by Chhattisgarh and it can be observed from the parameters score that the state has not performed well in terms of clean energy initiatives, energy efficiency, environmental sustainability, and new initiatives. The performance of Madhya Pradesh, Bihar, Jharkhand, and Orissa has greater scope for improvement in terms of clean energy initiatives, energy efficiency, environmental sustainability, and new initiatives. Though Gujarat is the best-performing state, its performance in terms of Environmental Sustainability and New initiatives needs improvement. The SECI score for states such as Tamil Nadu, Andhra Pradesh, Telangana, Karnataka, and Uttar Pradesh was observed within the range of 40-45.

The score and ranking of small States and Union Territories are given in Table 5.3. The final SECI score depicts that among the smaller states, Goa and Tripura are front-runners, Manipur is achiever and remaining smaller states fall in the category of aspirants. The highest score of 51.4 was achieved by Goa and the lowest score of 27 by Arunachal Pradesh. Tripura with a score of 58.7 is the best performer all over India in terms of the new initiative parameter. All the small states are performing average in the category of environmental sustainability and access, affordability & reliability with scores in range of 55-40 and 60-30 respectively.

In the third category of UTs, D&N/D&D, Chandigarh, Delhi and Puducherry are performing better and they are in the category of front-runners with a score of 53.2, 55.7, 55.6, and 48.5 respectively. J&K, A&N, and Lakshadweep fall in the category of aspirants with scores 29.3, 29.4, and 26.9 respectively. Among the UTs, Delhi has performed well on the parameter of energy efficiency. In terms of the first parameter of DISCOM's performance four UTs have scored above all India average and the overall score is in the range of 25-75. Similarly, in terms of the second parameter, three UTs have scored above all India average and the overall score is in the range of 25-61. Except Delhi, all other UTs' performance on energy efficiency parameter needs improvement. On the parameter of clean energy initiatives, Chandigarh, D&D/D&N, and Delhi are performing well with scores of 69.2, 68.6, and 67.6 respectively.

Overall, more than half of the states scored higher than the average value (40.6). Three UTs and two states have scored above 50. They are Chandigarh, Delhi, Daman & Diu and Dadra & Nagar Haveli). Gujarat and Goa are the best-performing states. Through 6 major parameters and 27 KPIs, an accurate and in-depth visualisation of State/UTs performance is assessed.

Table 5.2: SECI-Round I Scorecard of Larger States

Score and Ranking of Larger States								
Rank	States/UTs	DISCOM's Performance	Access, affordability & reliability	Clean Energy Initiatives	Energy Efficiency	Env Sustain-ability	New Initiatives	SECI score
1	Gujarat	72.7	52.4	39.2	40.1	35.1	5.5	50.1
2	Kerala	64.4	67.3	21.5	58	46.9	7.7	49.1
3	Punjab	77.1	46.8	26.1	35.1	37	2.3	48.6
4	Haryana	69.8	53.6	42.9	11.7	33.4	6.9	47.9
5	Uttarakhand	61.9	55.3	18.5	50.5	48.7	14.7	46.5
6	Maharashtra	57.7	51.2	34	75.7	36.2	10.4	46.0
7	Himachal Pradesh	57	56.3	14.3	20.1	52.1	38.1	45.4
8	Karnataka	56.8	45.5	27	57.2	41.7	14.5	43.8
9	Tamil Nadu	57.3	46.3	21.7	85.4	39.2	4	43.4
10	Assam	67.3	38.3	4.3	39	39.9	17.6	42.6
11	Telangana	55..1	60.4	18	64.7	34.6	0.4	41.9
12	Andhra Pradesh	65..1	42.6	16.9	40	35	0	41.6
13	Uttar Pradesh	59.9	37.8	12.6	42	30.9	27.4	41.0
14	West Bengal	55.3	52	8.5	27.7	40.9	9	38.9
15	Bihar	61.3	45	4.9	22.8	33.7	7.6	38.3
16	Odisha	59..0	57.4	4.8	21.8	22.6	0.9	37.1
17	Rajasthan	49.2	42.9	15.5	44	31.4	4.8	35.4
18	Jharkhand	58.3	46.5	2.9	17.2	19	9.3	35.2
19	Madhya Pradesh	53.7	42.7	6.2	8.3	24.1	3.3	32.6
20	Chhattisgarh	58.4	45.4	2.1	0	5.8	4.2	31.7

Table 5.3: SECI-Round I Scorecard of Smaller states and Union Territories

Score and ranking of Smaller States								
Rank	States/UTs	DISCOM's Performance	Access, affordability & reliability	Clean Energy Initiatives	Energy Efficiency	Env Sustainability	New Initiatives	SECI score
1	Goa	63.4	59.6	62.4	16.6	43.7	12.4	51.4
2	Tripura	57.3	33.1	22.9	31.7	39.6	58.7	45.0
3	Manipur	57.6	34.1	4.7	22.1	41.3	7.3	36.0
4	Mizoram	51.7	39.3	18.9	29.7	38.2	1.1	35.9
5	Sikkim	43.2	37.6	13.8	33.3	52.2	0.6	33.3
6	Meghalaya	47.9	30.9	1.9	4	39.8	2.8	29.4
7	Nagaland	35.9	32.9	12.2	26.4	40	3.4	27.9
8	Arunachal Pradesh	31.1	43.2	5.8	19.8	49	1.1	27.0
Score and ranking of Union Territories								
Rank	States/UTs	DISCOM's Performance	Access, affordability & reliability	Clean Energy Initiatives	Energy Efficiency	Env Sustainability	New Initiatives	SECI score
1	Chandigarh	65.6	58.7	69.2	16.2	62.5	14.1	55.7
2	Delhi	66.2	38.3	67.2	43.9	38.6	49.7	55.6
3	D&D and D&N	71.5	60.3	68.6	0	36	7.9	53.2
4	Puducherry	67.9	57.7	20.3	0.6	42.7	37.9	48.5
5	A&N	37.7	35	20.6	1.3	49.5	0	29.4
6	J&K*	31.2	51.4	11.6	9.9	51.8	4.5	29.3
7	Lakshadweep	42.9	25.9	33.6	0	7.1	0	26.9

**inclusive of Ladakh*

Overall, among the larger states, the top three performers are Gujarat, Kerala, and Punjab; and the bottom three performers are Jharkhand, MP and Chhattisgarh. Among the smaller states, Goa, Tripura, and Manipur are the top performers while Meghalaya, Nagaland and Arunachal Pradesh are the bottom three states. Among Union Territories Chandigarh, Delhi and D&D/D&N are the top three performers, and A&N, J&K and Lakshadweep are the bottom three performers.

Comparing results of SECI to the SEEI-2020, Karnataka, Rajasthan, and Haryana are the top-performing states. However, as per the SECI-Round I scorecard, among these three states, Haryana is the only front-runner state (category rank- 4th). Karnataka is in the group of Achievers (category rank- 8th) and Rajasthan is an Aspirant state with a score of 35.7 (category rank- 17th). As per the findings of both these reports, it can be observed that the states that are performing well in terms of overall energy efficiency may not necessarily perform well in the entire energy and climate sector.

Table 5.4: SECI Score-Top three & Bottom three performers

	Top Three Performers	Bottom Three Performers
Larger States	Gujarat, Kerala, Punjab	Jharkhand, MP, Chhattisgarh
Smaller States	Goa, Tripura, Manipur	Meghalaya, Nagaland, Arunachal Pradesh
Union Territories	Chandigarh, Delhi, D&D and D&N	A&N, J&K, Lakshadweep

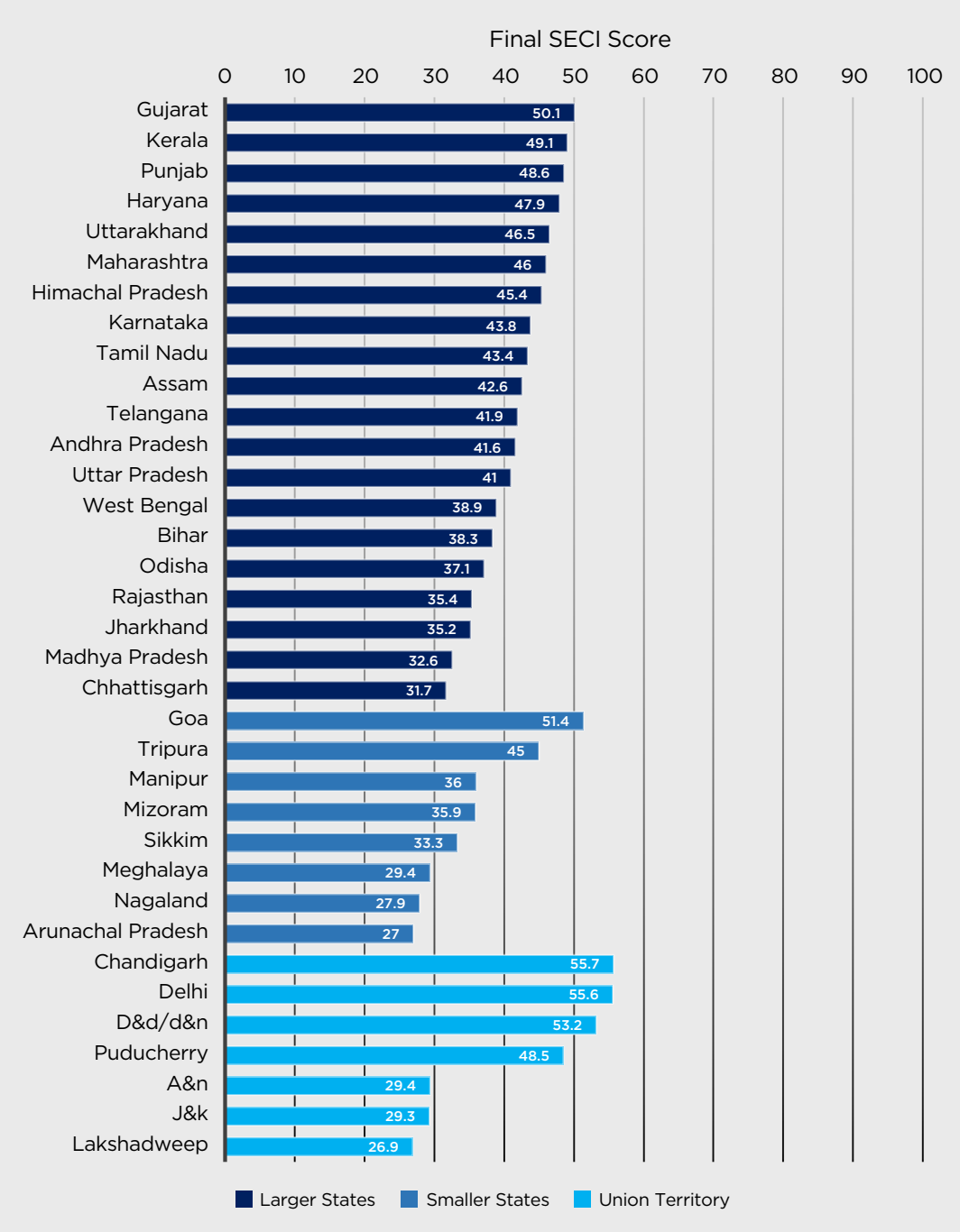

Fig 5.1: *SECI Score-Performance of States & UTs*

INDICATOR-WISE PERFORMANCE

1. DISCOM'S PERFORMANCE

The DISCOM's Performance parameter consists of 9 indicators namely, Debt-equity ratio, AT&C losses, ACS-ARR gap, T&D losses, ToD/ToU tariffs for consumers, DBT Transfer, Open access surcharge, Regulatory Assets and Complexity of Tariffs. As shown in Fig 5.2, Punjab, Gujarat, D&D, Goa have performed well in this parameter. Among larger states, Punjab is the best performing state because of comparatively higher scores achieved by Punjab in indicators such as debt-equity ratio, regulatory assets, open access surcharge and complexity of tariff. Rajasthan has not performed well, as it has scored zero in two indicators- debt-equity ratio and open access surcharge. It has also scored less in indicators such as AT&C losses and T&D losses. Among the smaller states, the best performing state Goa has scored 63.4.

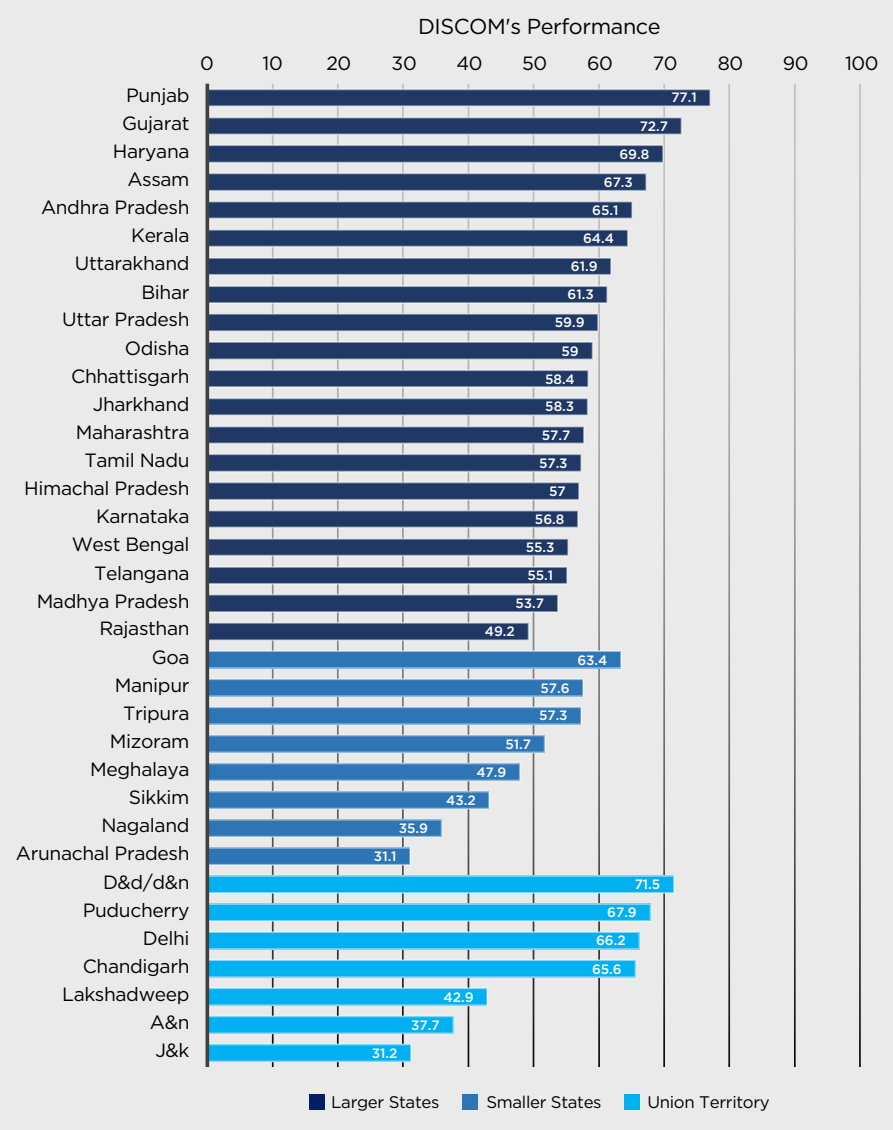

Fig 5.2: *Performance of States and UTs for DISCOM's Performance Parameter*

Table 5.5: DISCOM's performance-Top & Bottom performers

DISCOM's Performance				
Category	**Top performer**	**Scores**	**Bottom performer**	**Scores**
Larger states	Punjab	77.1	Rajasthan	49.2
Smaller States	Goa	63.4	Arunachal Pradesh	31.1
Union Territories	D&D and D&N	71.5	J&K	31.2

2. ACCESS, AFFORDABILITY & RELIABILITY (AAR)

The second parameter used in the study is access, affordability, and reliability of energy. It consists of five indicators namely; per capita energy consumption, hours of electricity supplied in agricultural and industrial sectors, cross-subsidization, and life-line electricity & tariff. The highest score achieved in this category is 67.3 and the lowest score is 25.9. D&N is the best performing Union Territory. Among larger states, the top performer is Kerala with a score of 67.3. Kerala scored better in three indicators namely, hours of electricity supplied in agriculture, hours of electricity supplied in industry and cross-subsidization. Similarly, among the small states, Goa with a score of 59.6 is the best.

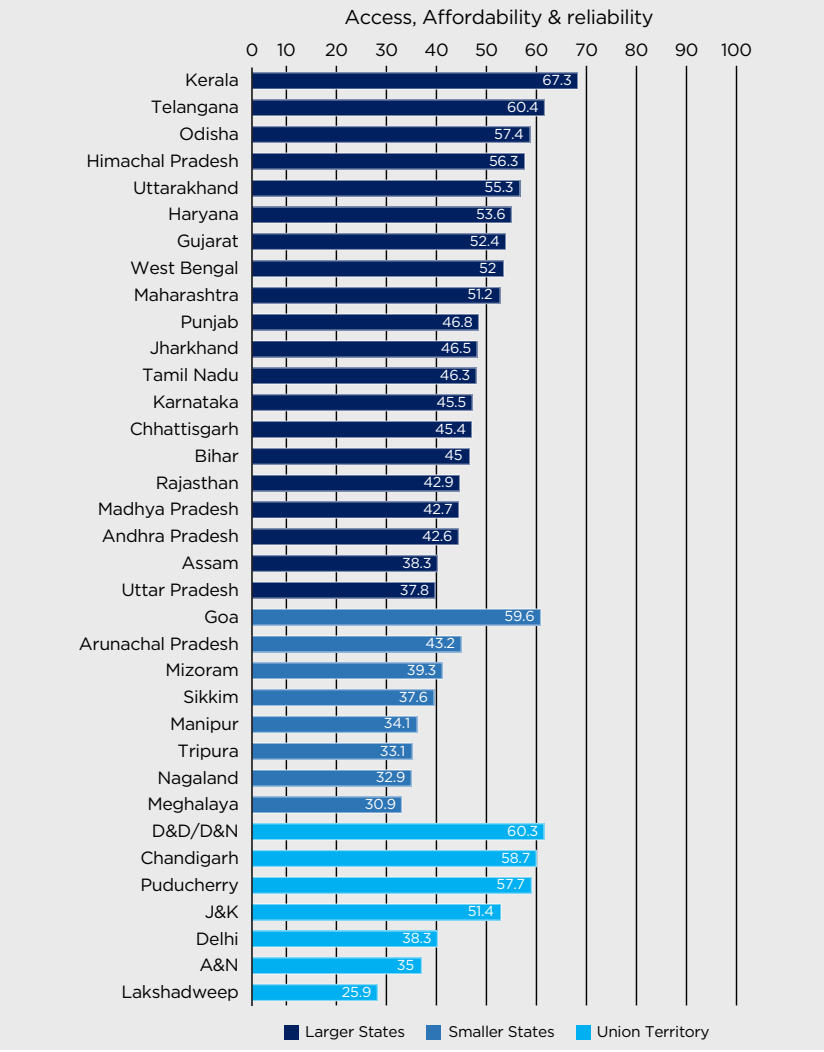

Fig 5.4: *Performance of States and UTs for Access, Affordability & Reliability Parameter*

Table 5.6: Access, Affordability & Reliability-Top & Bottom performers

Access, Affordability & Reliability (AAR)				
Category	**Top Performer**	**Scores**	**Bottom performer**	**Scores**
Larger states	Kerala	67.3	Uttar Pradesh	37.8
Smaller States	Goa	59.6	Meghalaya	30.9
Union Territories	D&N and D&D	60.3	Lakshadweep	25.9

3. CLEAN ENERGY INITIATIVES (CEI)

The performance of state/UTs in the third parameter are shown in Fig 5.5. This consists of three indicators- clean cooking fuel supply, RE penetration and CNG vehicle penetration. Delhi, Goa, D&D and Chandigarh are better performing than other states/UTs. As shown in the Table 5.7 Haryana (42.9), Goa (62.4), and Chandigarh (69.2) are the best performing states/UT among their respective categories. It can be observed from the table that their is wide variation in scores among all the three categories.

Table 5.7: Clean Energy Initiatives-Top & Bottom performers

Clean Energy Initiatives (CEI)				
Category	**Top Performer**	**Scores**	**Bottom performer**	**Scores**
Larger states	Haryana	**42.9**	Chhattisgarh	**2.1**
Smaller States	Goa	62.4	Meghalaya	1.9
Union Territories	Chandigarh	69.2	J&K	11.6

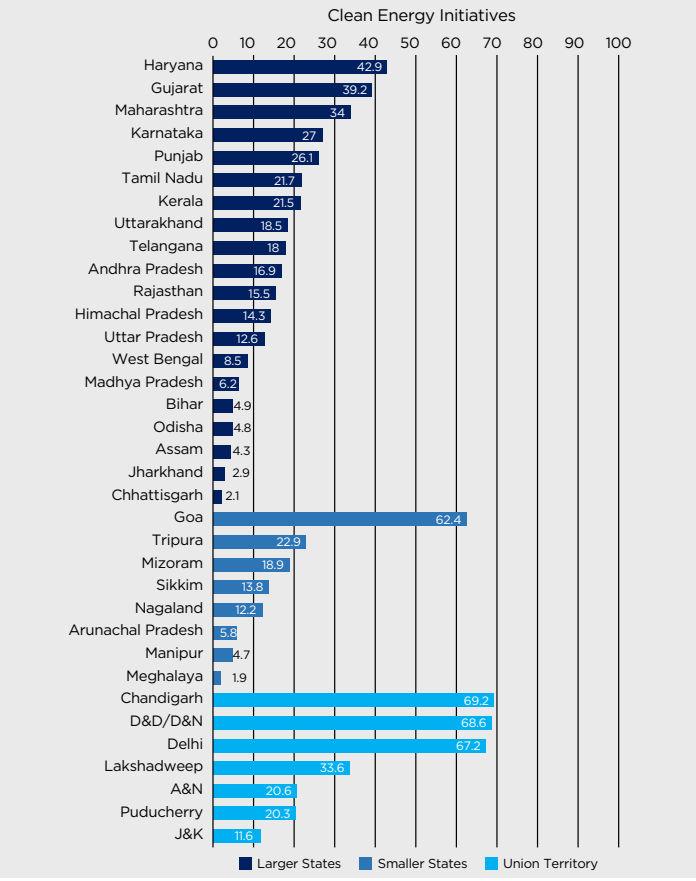

Fig 5.5: *Performance of States and UTs for Clean Energy Initiative Parameter*

4. ENERGY EFFICIENCY (EE)

The fourth parameter of energy efficiency consists of three indicators related to energy savings in industry, buildings, and energy intensity. The result is shown in Fig 5.6. Tamil Nadu and Maharashtra have performed well. The highest score achieved by the states/UTs under this parameter is 85.4 and the lowest score is zero, showing huge variation in the performance of the states/UTs. As shown in Table 5.8, Tamil Nadu (85.4), Sikkim (33.3), and Delhi (43.9) are the best performing states/UTs among their respective categories.

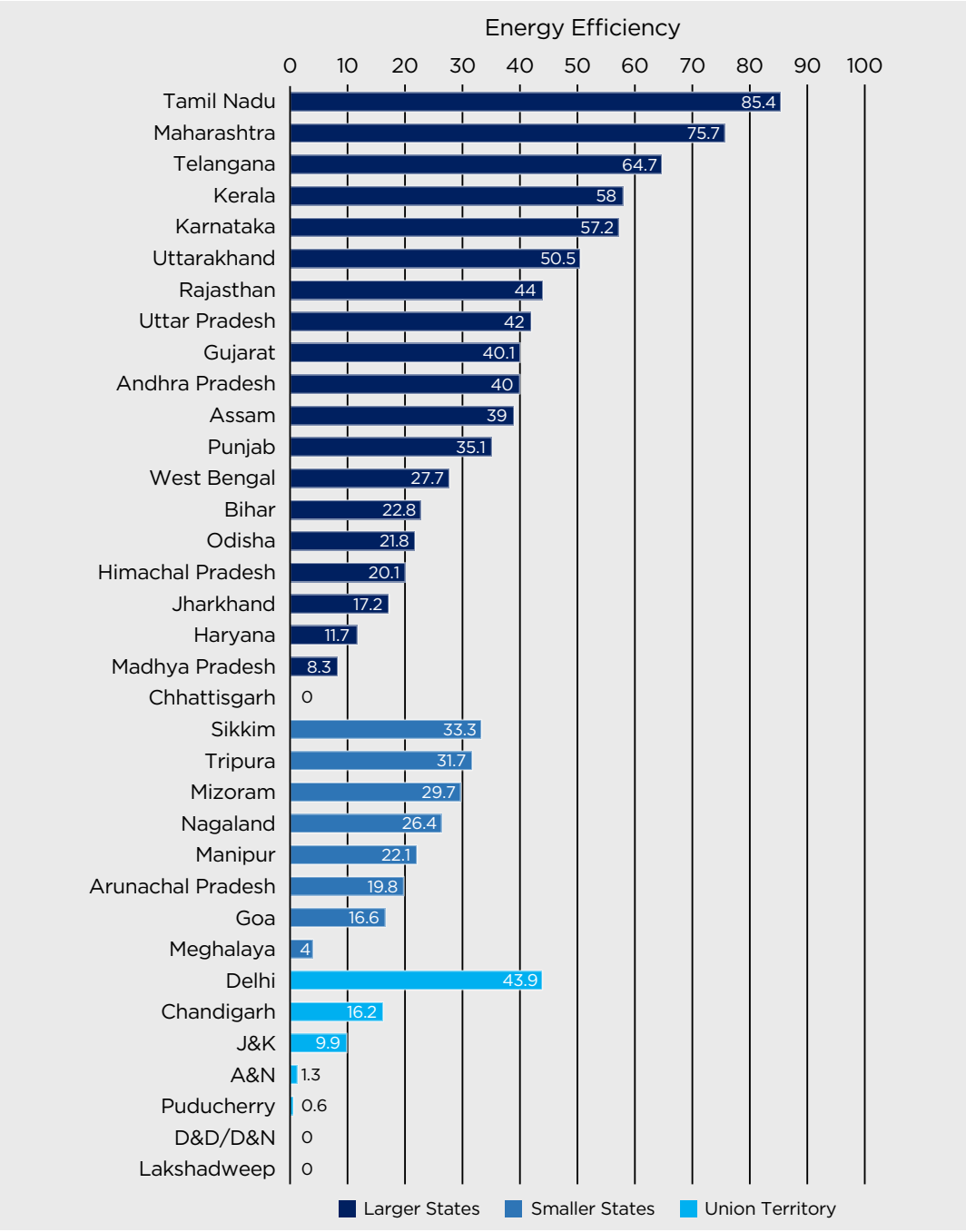

Fig 5.6: *Performance of States and UTs for Energy Efficiency Parameter*

Table 5.8: Energy Efficiency-Top & Bottom performers

Energy Efficiency (EE)				
Category	**Top Performer**	**Scores**	**Bottom Performer**	**Scores**
Larger states	Tamil Nadu	85.4	Chhattisgarh	0.0
Smaller States	Sikkim	33.3	Meghalaya	4
Union Territories	Delhi	43.9	D&D and D&N, Lakshadweep	0.0

5. ENVIRONMENTAL SUSTAINABILITY (ES)

Fig 5.7 represents the performance of the states and UTs on the parameter of environmental sustainability. This parameter consists of four indicators: energy intensity of GSDP, utilization of RE potential, percentage change in forest cover, forest carbon stock. The smaller states have scored better as majority of states- Sikkim, Arunachal Pradesh, Goa, Manipur, and Nagaland- under this category have scored more than 40 and the difference between the highest and lowest score is also low. HP (52.1), Sikkim (52.2), and Chandigarh (62.5) are top-performing states/UTs in their respective categories. The low performing states need to take initiatives to improve their performance in the respective indicators.

Table 5.9: Environmental Sustainability-Top & Bottom performers

Environmental Sustainability				
Category	**Top Performer**	**Scores**	**Bottom Performer**	**Scores**
Larger states	Himachal Pradesh	52.1	Chhattisgarh	5.8
Smaller States	Sikkim	52.2	Mizoram	38.2
Union Territories	Chandigarh	62.5	Lakshadweep	7.1

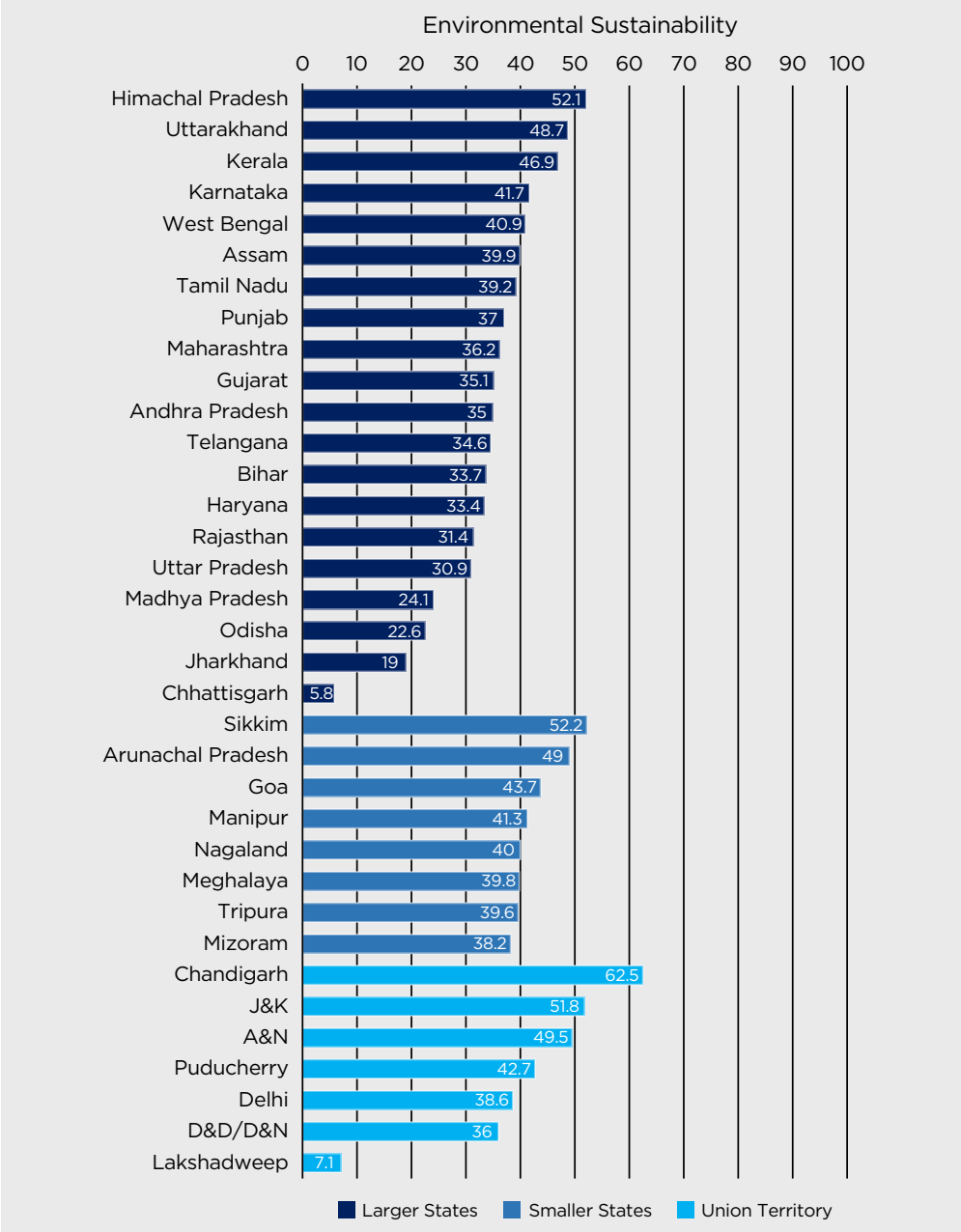

Fig 5.7: *Performance of States and UTs for Environmental Sustainability Parameter*

6. NEW INITIATIVES (NI)

The performance of states and UTs for the New Initiatives parameter is shown in Fig 5.8. This parameter consists of three indicators related to EV penetration, availability of charging infrastructure for EV, proportion of consumers with smart meters. However, the difference between the highest score (58.7) and lowest score (0.00) reveals that there is huge scope for improvement in the new emerging technologies. Among the larger states, Himachal Pradesh with a score of 38.1 is the top performer. Tripura (58.7) and Sikkim (0.6) are the best and worst-performing states, respectively, under the small states category. Delhi (49.7) is the best performing UT.

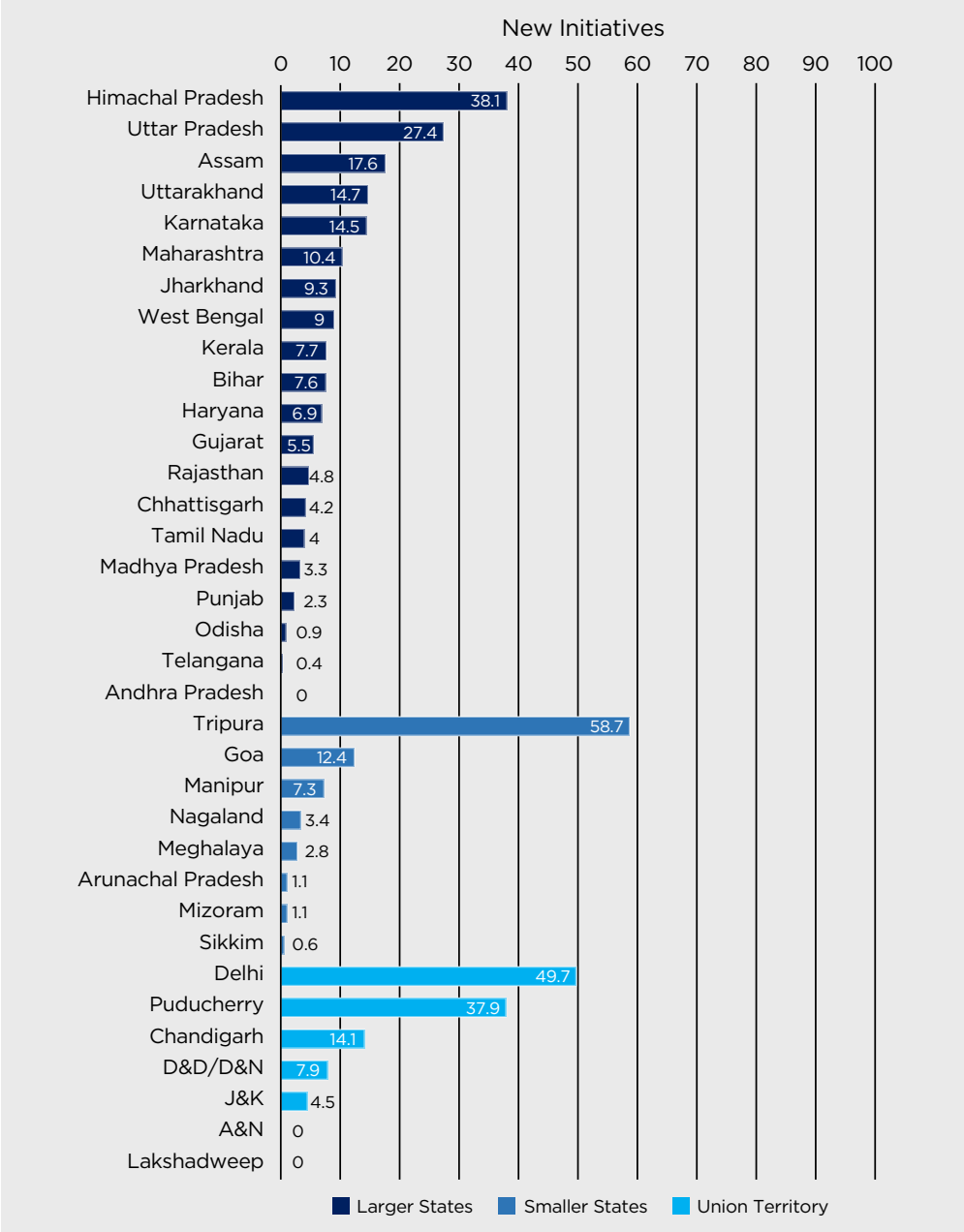

Fig 5.8: *Performance of States and UTs for New Initiatives Parameter*

Table 5.10: New Initiatives-Top & Bottom performers

New Initiatives (NI)				
Category	**Top Performer**	**Scores**	**Bottom Performer**	**Scores**
Larger states	Himachal Pradesh	38.1	Andhra Pradesh	0.0
Smaller States	Tripura	58.7	Sikkim	0.6
Union Territories	Delhi	49.7	Lakshadweep, A&N	0.0

6 LEARNINGS

A macro-picture at the country level presented in the study helps us to understand the energy sector's performance of various states on different dimensions. A state-level analysis provides a comprehensive outline of state's strengths and weaknesses in the sector, which would be extremely helpful in formulating specific policies and strategies. The parameter 'DISCOM's performance' is the highest-scoring parameter, and 'New Initiatives' is the least scoring parameter. GoI schemes such as Pradhan Mantri Ujjwala Yojana, Saubhagya Scheme, state government policies to provide subsidised lifeline tariffs, and GoI's efforts to achieve the NDC targets at the national level have helped the parameters – "Access, Affordability & Reliability of Energy" and "Environmental Sustainability" to garner better scores. However, the overall SECI score and the scores achieved under each parameter leave scope for huge improvements. This suggests that while India may possess a conducive environment and energy-related policies; it is not necessarily translating into transforming the sector.

The state governments need to prioritise policies to facilitate inclusive growth by providing affordable, accessible, reliable, and sustainable energy to the citizens. Energy being the centerpiece of any development process, the government needs to ensure access to sustainable and clean energy sources through various schemes. Though India has achieved almost 100 percent electrification, the national and sub-national governments are still required to work towards ensuring a reliable supply of power, reducing losses, reducing regulatory assets, etc. The targeted Direct Benefit Transfer (DBT) can help reduce leakages and improve efficiency. Also, future policy direction should aim to amplify energy efficiency programmes and technological innovation in supply and demand sectors of energy for better utilisation of existing resources. In the same way, EVs hold enormous potential for India, and appropriate policy measures are needed by the states/UTs to decarbonise the transport sector. While renewable energy capacity has been continuously expanding, fossil-fuel based energy is still an important source of power. The state governments should work toward meeting future energy needs in a more sustainable way.

STATE-LEVEL ANALYSIS

An efficient energy ecosystem would not only enhance the country's capacity to fully utilise renewable energy sources but also enable it to achieve clean energy transition. This creates a need to analyse the energy value chain comprehensively and capture the current efficacy levels of the energy ecosystem. State Energy and Climate Index (SECI) evaluates and analyses the efforts undertaken by the states and Union Territories (UTs) to efficiently manage the available resources and steer the power sector through a successful energy transition while taking measures to reduce their impact on the environment. There is a huge scope for improvement throughout the country and the states should accelerate their efforts to promote more efficient and easily accessible clean energy sources. To formulate an appropriate energy transition roadmap, a comprehensive review of state-level performance in terms of energy consumption, production, and emissions is required.

1. DISCOM'S PERFORMANCE

Though the states are striving hard to improve DISCOM's performance but the challenges faced by the DISCOM sector, in each state, are very complex. The Central Government has approved a "Revamped Distribution Sector Scheme - A Reforms based and Results linked Scheme" which aims to reduce the AT&C losses to pan-India levels of 12-15% and Average Cost of Supply (ACS) - Average Revenue Realised (ARR) gap to zero by 2024-25. However, only a few states such as Punjab, Gujarat, Goa, Kerala have AT&C losses below 15 percent, and majority of the states have higher AT&C losses. Similarly, for ACS-ARR gap, only few states/UTs such as Gujarat, Haryana, Chhattisgarh, Assam, Chandigarh, and D&D/D&N have ARR greater than ACS while the majority of states have ACS greater than ARR. Further, the states such as Maharashtra, UP, WB, Karnataka, and Delhi are required to make efforts to reduce their regulatory assets. Majority of the states have complex tariff structures.

Though states have scored well in relative terms, however, in absolute terms (refer to Annex 6) the all-India average values of indicators reveal that a lot of initiatives are required to improve the sector. Therefore, the states need to strive to solve the problem at the operational, and technical levels. State DISCOMs may benefit from aggressively using the revamped central government reform scheme to upgrade their distribution infrastructure and systems.

2. ACCESS, AFFORDABILITY & RELIABILITY (AAR)

According to the Economic Survey 2018-19, if India has to reach the Human Development Index (HDI) level of 0.8, which corresponds to high human development, it has to quadruple its per capita energy consumption. The states need to work together to improve the per capita energy consumption of the country.

National Electricity Policy-2005 aims at providing minimum lifeline consumption of 1 unit/household/day electricity as a merit good. The states/UTs that performed well in providing affordable energy are Tamil Nadu, D&D, and Lakshadweep. The states can improve their performance by increasing the hours of electricity supplied. Further, the states need to improve data availability of hours of electricity supply in rural and urban areas, SAIFI index, etc. so that performance of state/UTs on the parameter accessibility, affordability, and reliability of energy are evaluated in a better way.

3. CLEAN ENERGY INITIATIVES (CEI)

On an average, India has scored 22.6 in CEI parameter, showing that proactive measures need to be taken to actively initiate clean energy initiatives.

To provide clean cooking fuel and to safeguard the health of women & children, GoI launched Pradhan Mantri Ujjwala Yojna in 2016. Further, to cut subsidy leakage and increase the usage of clean fuels, DBT for LPG consumer (DBTL) scheme namely, 'PAHAL' was also been launched. In spite of all these initiatives, states like Bihar, Chhattisgarh, Jharkhand, Meghalaya and Nagaland need to put efforts to improve last-mile connectivity and the availability of clean energy sources for cooking.

In terms of CNG penetration, Delhi is the top performer, and the states- Gujarat, Haryana, Maharashtra have also performed well. The CNG vehicle penetration depends significantly on the availability of CNG infrastructure.

4. ENERGY EFFICIENCY (EE)

Tamil Nadu has performed well in the Energy Efficiency parameter. The highest score in Tamil Nadu is attributed to its efforts toward energy savings in industrial, public, and commercial buildings sector and comparatively low energy intensity. Almost half of the states have scored more than the all-India average value of 29.05. The majority of the states have to be diligent to improve energy efficiency.

The state governments need to understand the importance of energy efficiency measures in their economic development path and embrace energy efficiency measures to avail energy saving, emissions reduction, etc. Most of the smaller states have less emission intensity which is a good sign. Sikkim has scored highest in terms of energy efficiency followed by Tripura, Mizoram, and Delhi. However, larger states such as Tamil Nadu, Maharashtra and Telangana are making significant efforts in the adoption of the ECBC (Energy Conservation Building Code) and are the front-runners in Energy saving in commercial & public buildings. Tamil Nadu followed by Kerala performed well in terms of industrial energy-saving. Overall, a greater push towards energy conservation methods can be achieved if states participate proactively in policy formulation and implementation. The Bureau of Energy Efficiency (BEE), along with State Designated Agencies (SDAs), has been continuously trying to develop a robust mechanism for data measurement, management, and analysis. The Energy Conservation Building Code (ECBC), which sets minimum energy standards for new commercial buildings, was updated in 2017. BEE also launched the Eco-Niwas Samhita for residential buildings in December 2018. The Unnat Jyoti by Affordable LEDs for All (UJALA) programme was launched on 5th January 2015. The state governments can leverage the benefits of all such schemes that have been announced by the central agencies in this regard. A well-coordinated plan of action by every state government and SDAs is the need of the hour if we want to become an energy-efficient economy.

5. ENVIRONMENTAL SUSTAINABILITY (ES)

Chandigarh performed better as the installed capacity of renewable energy is maximum compared to its potential. The state has also worked towards reduction of emission intensity and also in improving the percentage of forest cover. The forest carbon stock (per ha stock in tonnes) is highest in Sikkim followed by A&N and J&K. D&D, West Bengal and Chandigarh are the top three performers in terms of percentage change in forest cover. On an average, the country has scored 37.7 under the ES parameter, with 50% of states scoring more than the average value. The national and sub-national governments should work together towards climate change mitigation and adaptation by mobilizing resources and enhancing investments in programmes in sectors vulnerable to climate change. The emphasis on bridging the resource gap, building capacities, creating infrastructure for quick diffusion of cutting-edge technology for emission reduction, and better utilisation of renewable resources is required at the state level.

6. NEW INITIATIVES (NI)

Tripura is the top performer in New Initiatives. It has taken appropriate steps to increase the proportion of consumers with smart meters and improve EV penetration. Tripura, Delhi & Assam are top-performing states/UTs in terms of highest electric vehicle (EV) penetration. Himachal Pradesh has developed the highest EV charging infrastructure in its state, in the year 2019-20. However, lack of data is the major stumbling block that we faced while devising the parameter and ranking the states in terms of new initiatives. Almost half of the states have no data on the availability of charging infrastructure and four states have no data on EV penetration. The problem of paucity of data is not limited to small states and UTs. Large states such as Andhra Pradesh and Madhya Pradesh have no data for such indicators, which adversely affects the overall ranking of states. For undertaking new initiatives related to electric mobility and smart metering technology, the states have to put up huge efforts. The related data needs to be provided so that performance evaluation is carried out in a better way.

For instance, the Government of India has identified new areas to achieve higher levels of penetration of Renewable energy and has proposed certain Amendments to Energy Conservation Act, 2001. The government is promoting green hydrogen as an alternative to fossil fuels to be used by the industries and promoting the deployment of clean technologies. The state governments need to work with national agencies for rolling out various policy measures at the state level and also to enable data maintenance on each indicator and parameter.

In the next round of SECI, utmost care will be taken to strengthen data coordination with states and relevant central agencies.

7 THE WAY FORWARD

The current energy paradigm is witnessing rapid transformations as countries are moving towards clean energy transition and net-zero pathways by 2050 and beyond. Calls for climate-friendly energy systems reached crescendo in 2021 at the COP26 climate conference. Energy discourse has firmly added sustainability to its portfolio along with traditional factors such as access, affordability, and energy security. The demography of energy consumers in India will be dominated by a green-minded young population that will consume more energy per capita than their predecessors due to better lifestyle aspirations. As the energy systems are getting transformed by leveraging a multitude of technological choices, there is immense scope for peer-to-peer learning among states.

SECI is the first step in this journey where states can explore and benchmark themselves on various parameters. For instance, in terms of energy efficiency, larger states like Tamil Nadu, and Maharashtra have done well, while in terms of DISCOM's performance, two small UTs- D&D and D&N have done well. The best practices for all indicators in better-performing states can be adopted by other states to improve their performance. SECI will help states to understand their performance across multiple parameters/indicators. This document also intends to create awareness among citizens in terms of energy and climate indicators and to initiate debate for better energy and climate-related services.

As energy transition is capital intensive, effective cooperation, mutual learning, and sharing of capital risks both by the central and state governments can drive the agenda of clean energy transition. Though care has been taken to ensure a fair and comprehensive selection of parameters for ranking the states, some parameters such as reliability of electricity in rural and urban areas, SAIFI and SAIDI, CBG penetration, bio-fuel consumption, energy storage capacity and green hydrogen production could not be selected for final computation, due to lack of reliable data. In addition, the time lag for many state-level energy data varies from two to three-year. Also, the financial data of DISCOMs come with a lag of two years due to long time taken for auditing financial data. The SECI report also highlight a list of states where data for a few indicators are not available. This has also affected the overall ranking of the states. Data updation and validation need to be a priority of state governments going forward to help them design better policies. The best practices of the states should be regularly documented and disseminated through mediums such as SECI to promote peer-to-peer learning. For instance, each state can learn from the best performing states/UTs. Eventually, healthy competition between states will enable the states to put an effort for enhanced levels of affordability, security, and sustainability for energy needs. SECI provides us an opportunity to work closely on strengthening energy systems and energy data management which is the crux of every planning process and development. The SECI is a work in progress and continuous refinements will be made as additional data are made available.

8 ANNEXURE

ANNEXURE 1: STATE-WISE PERFORMANCE ACROSS INDICATORS

ANDHRA PRADESH

SECI Score: 41.6

Overall Rank: 18

Category: Larger States

Category Rank: 12

ACHIEVER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (65.1)	
1.1	Debt Equity Ratio	0.0
1.2	AT&C Losses	87.8
1.3	T&D Losses	67.2
1.4	ACS – ARR gap	90.4
1.5	Implementation of ToD/ToU tariff for Consumers	100
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	53.1
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	67.7
	Parameter 2: Access, affordability & reliability (42.6)	
2.1	Per capita energy consumption	9.9
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	5.6
2.4	Cross-Subsidization	38.2
2.5	Life-line electricity and tariff	83.5
	Parameter 3: Clean Energy Initiatives (16.9)	
3.1	Clean Cooking Fuel Supply	33.1
3.2	Renewable Energy Penetration	17.7
3.3	CNG Vehicle Penetration	Null
	Parameter 4: Energy Efficiency (40)	
4.1	Energy Intensity of GSDP	9.9
4.2	Energy savings in Commercial & Public Buildings	50.0
4.3	Industrial energy Savings	60.0
	Parameter 5: Environmental Sustainability (35.0)	
5.1	Emission Intensity of GSDP	83.8
5.2	Utilization of RE potential	1.8
5.3	Percentage change in forest cover w.r.t 2005	14.7
5.4	Forest carbon stock	11.1
	Parameter 6: New Initiatives (0.0)	
6.1	EV penetration	Null
6.2	Availability of Charging Infrastructure for Electric Mobility	Null
6.3	Proportion of consumers with Smart meters	0.0

ASSAM

SECI Score: 42.6

Overall Rank: 16

Category: Larger States

Category Rank: 10

ACHIEVER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (67.3)	
1.1	Debt Equity Ratio	95.9
1.2	AT&C Losses	65.5
1.3	T&D Losses	42.7
1.4	ACS – ARR gap	91.6
1.5	Implementation of ToD/ToU tariff for Consumers	33.3
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	47.0
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	93.9
	Parameter 2: Access, affordability & reliability (38.3)	
2.1	Per capita energy consumption	1.6
2.2	Hours of Electricity Supplied (Industry)	Null
2.3	Hours of Electricity Supplied (Agri)	Null
2.4	Cross-Subsidization	95.8
2.5	Life-line electricity and tariff	29.9
	Parameter 3: Clean Energy Initiatives (4.3)	
3.1	Clean Cooking Fuel Supply	12.6
3.2	Renewable Energy Penetration	0.2
3.3	CNG Vehicle Penetration	3.9
	Parameter 4: Energy Efficiency (39)	
4.1	Energy Intensity of GSDP	77.0
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	40.0
	Parameter 5: Environmental Sustainability (39.9)	
5.1	Emission Intensity of GSDP	96.3
5.2	Utilization of RE potential	0.1
5.3	Percentage change in forest cover w.r.t 2005	8.4
5.4	Forest carbon stock	29.8
	Parameter 6: New Initiatives (17.6)	
6.1	EV penetration	49.2
6.2	Availability of Charging Infrastructure for Electric Mobility	0.1
6.3	Proportion of consumers with Smart meters	3.6

BIHAR

SECI Score: 38.3

Overall Rank: 21

Category: Larger States

Category Rank: 15

ACHIEVER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (61.3)	
1.1	Debt Equity Ratio	95.6
1.2	AT&C Losses	35.4
1.3	T&D Losses	35.7
1.4	ACS – ARR gap	86.7
1.5	Implementation of ToD/ToU tariff for Consumers	66.7
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	39.3
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	91.8
	Parameter 2: Access, affordability & reliability (45.0)	
2.1	Per capita energy consumption	0.0
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	66.7
2.4	Cross-Subsidization	74.0
2.5	Life-line electricity and tariff	18.5
	Parameter 3: Clean Energy Initiatives (4.9)	
3.1	Clean Cooking Fuel Supply	9.8
3.2	Renewable Energy Penetration	0.9
3.3	CNG Vehicle Penetration	3.9
	Parameter 4: Energy Efficiency (22.8)	
4.1	Energy Intensity of GSDP	48.3
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	20.0
	Parameter 5: Environmental Sustainability (33.7)	
5.1	Emission Intensity of GSDP	82.7
5.2	Utilization of RE potential	0.5
5.3	Percentage change in forest cover w.r.t 2005	12.5
5.4	Forest carbon stock	11.4
	Parameter 6: New Initiatives (7.6)	
6.1	EV penetration	20.3
6.2	Availability of Charging Infrastructure for Electric Mobility	0.0
6.3	Proportion of consumers with Smart meters	2.3

CHHATTISGARH

SECI Score: 31.7

Overall Rank: 29

Category: Larger States

Category Rank: 20

ASPIRANT

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (58.4)	
1.1	Debt Equity Ratio	0.0
1.2	AT&C Losses	65.1
1.3	T&D Losses	47.5
1.4	ACS – ARR gap	90.1
1.5	Implementation of ToD/ToU tariff for Consumers	66.7
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	30.1
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	98.9
	Parameter 2: Access, affordability & reliability (45.4)	
2.1	Per capita energy consumption	15.3
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	66.7
2.4	Cross-Subsidization	36.6
2.5	Life-line electricity and tariff	62.2
	Parameter 3: Clean Energy Initiatives (2.1)	
3.1	Clean Cooking Fuel Supply	5.5
3.2	Renewable Energy Penetration	0.8
3.3	CNG Vehicle Penetration	0.0
	Parameter 4: Energy Efficiency (0.0)	
4.1	Energy Intensity of GSDP	0.0
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	0.0
	Parameter 5: Environmental Sustainability (5.8)	
5.1	Emission Intensity of GSDP	97.1
5.2	Utilization of RE potential	100
5.3	Percentage change in forest cover w.r.t 2005	30.0
5.4	Forest carbon stock	21.1
	Parameter 6: New Initiatives (4.2)	
6.1	EV penetration	11.9
6.2	Availability of Charging Infrastructure for Electric Mobility	0.6
6.3	Proportion of consumers with Smart meters	0.0

GUJARAT

SECI Score: 50.1

Overall Rank: 5

Category: Larger States

Category Rank: 1

FRONT-RUNNER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (72.7)	
1.1	Debt Equity Ratio	99.5
1.2	AT&C Losses	85.6
1.3	T&D Losses	56.9
1.4	ACS – ARR gap	91.2
1.5	Implementation of ToD/ToU tariff for Consumers	66.7
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	49.5
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	57.0
	Parameter 2: Access, affordability & reliability (52.4)	
2.1	Per capita energy consumption	25.7
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	11.4
2.4	Cross-Subsidization	67.9
2.5	Life-line electricity and tariff	58.7
	Parameter 3: Clean Energy Initiatives (39.2)	
3.1	Clean Cooking Fuel Supply	32.4
3.2	Renewable Energy Penetration	13.7
3.3	CNG Vehicle Penetration	71.3
	Parameter 4: Energy Efficiency (40.1)	
4.1	Energy Intensity of GSDP	40.3
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	80.0
	Parameter 5: Environmental Sustainability (35.1)	
5.1	Emission Intensity of GSDP	92.3
5.2	Utilization of RE potential	1.5
5.3	Percentage change in forest cover w.r.t 2005	8.1
5.4	Forest carbon stock	8.3
	Parameter 6: New Initiatives (5.5)	
6.1	EV penetration	10.2
6.2	Availability of Charging Infrastructure for Electric Mobility	4.5
6.3	Proportion of consumers with Smart meters	1.8

HARYANA

SECI Score: 47.9

Overall Rank: 9

Category: Larger States

Category Rank: 4

FRONT-RUNNER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance 69.8	
1.1	Debt Equity Ratio	27.7
1.2	AT&C Losses	74.7
1.3	T&D Losses	54.7
1.4	ACS – ARR gap	91.2
1.5	Implementation of ToD/ToU tariff for Consumers	100
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	79.6
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	90.0
	Parameter 2: Access, affordability & reliability (53.6)	
2.1	Per capita energy consumption	27.2
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	12.8
2.4	Cross-Subsidization	68.0
2.5	Life-line electricity and tariff	61.9
	Parameter 3: Clean Energy Initiatives (42.9)	
3.1	Clean Cooking Fuel Supply	55.1
3.2	Renewable Energy Penetration	3.9
3.3	CNG Vehicle Penetration	69.8
	Parameter 4: Energy Efficiency (11.7)	
4.1	Energy Intensity of GSDP	35.0
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	0.0
	Parameter 5: Environmental Sustainability (33.4)	
5.1	Emission Intensity of GSDP	91.4
5.2	Utilization of RE potential	1.9
5.3	Percentage change in forest cover w.r.t 2005	6.7
5.4	Forest carbon stock	1.9
	Parameter 6: New Initiatives (6.9)	
6.1	EV penetration	20.3
6.2	Availability of Charging Infrastructure for Electric Mobility	0.2
6.3	Proportion of consumers with Smart meters	0.0

HIMACHAL PRADESH

SECI Score: 45.4

Overall Rank: 12

Category: Larger States

Category Rank: 7

ACHIEVER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (57.0)	
1.1	Debt Equity Ratio	0.0
1.2	AT&C Losses	86.2
1.3	T&D Losses	73.1
1.4	ACS – ARR gap	91.1
1.5	Implementation of ToD/ToU tariff for Consumers	0.0
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	17.7
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	90.0
	Parameter 2: Access, affordability & reliability (56.3)	
2.1	Per capita energy consumption	16.1
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	100
2.4	Cross-Subsidization	67.8
2.5	Life-line electricity and tariff	47.3
	Parameter 3: Clean Energy Initiatives (14.3)	
3.1	Clean Cooking Fuel Supply	37.8
3.2	Renewable Energy Penetration	5.0
3.3	CNG Vehicle Penetration	0.1
	Parameter 4: Energy Efficiency (20.1)	
4.1	Energy Intensity of GSDP	60.3
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	0.0
	Parameter 5: Environmental Sustainability (52.1)	
5.1	Emission Intensity of GSDP	98.7
5.2	Utilization of RE potential	0.6
5.3	Percentage change in forest cover w.r.t 2005	10.9
5.4	Forest carbon stock	93.0
	Parameter 6: New Initiatives (38.1)	
6.1	EV penetration	13.6
6.2	Availability of Charging Infrastructure for Electric Mobility	100
6.3	Proportion of consumers with Smart meters	0.8

JHARKHAND

SECI Score: 35.2

Overall Rank: 26

Category: Larger States

Category Rank: 18

ASPIRANT

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (58.3)	
1.1	Debt Equity Ratio	45.3
1.2	AT&C Losses	41.5
1.3	T&D Losses	67.8
1.4	ACS – ARR gap	84.7
1.5	Implementation of ToD/ToU tariff for Consumers	0.0
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	59.1
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	95.7
	Parameter 2: Access, affordability & reliability (46.5)	
2.1	Per capita energy consumption	6.3
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	77.8
2.4	Cross-Subsidization	68.0
2.5	Life-line electricity and tariff	22.0
	Parameter 3: Clean Energy Initiatives (2.9)	
3.1	Clean Cooking Fuel Supply	5.5
3.2	Renewable Energy Penetration	0.0
3.3	CNG Vehicle Penetration	33.7
	Parameter 4: Energy Efficiency (17.2)	
4.1	Energy Intensity of GSDP	31.7
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	20.0
	Parameter 5: Environmental Sustainability (19.0)	
5.1	Emission Intensity of GSDP	41.7
5.2	Utilization of RE potential	0.03
5.3	Percentage change in forest cover w.r.t 2005	9.9
5.4	Forest carbon stock	11.2
	Parameter 6: New Initiatives (9.3)	
6.1	EV penetration	11.9
6.2	Availability of Charging Infrastructure for Electric Mobility	16.1
6.3	Proportion of consumers with Smart meters	0.0

KARNATAKA

SECI Score: 43.8

Overall Rank: 14

Category: Larger States

Category Rank: 8

ACHIEVER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (56.8)	
1.1	Debt Equity Ratio	0.0
1.2	AT&C Losses	76.0
1.3	T&D Losses	66.7
1.4	ACS – ARR gap	89.2
1.5	Implementation of ToD/ToU tariff for Consumers	66.7
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	33.9
1.8	Regulatory Assets	69.7
1.9	Complexity of Tariff	78.5
	Parameter 2: Access, affordability & reliability (45.5)	
2.1	Per capita energy consumption	17.0
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	1.7
2.4	Cross-Subsidization	69.6
2.5	Life-line electricity and tariff	38.1
	Parameter 3: Clean Energy Initiatives (27)	
3.1	Clean Cooking Fuel Supply	43.6
3.2	Renewable Energy Penetration	36.2
3.3	CNG Vehicle Penetration	1.2
	Parameter 4: Energy Efficiency (57.2)	
4.1	Energy Intensity of GSDP	61.6
4.2	Energy savings in Commercial & Public Buildings	50.0
4.3	Industrial energy Savings	60.0
	Parameter 5: Environmental Sustainability (41.7)	
5.1	Emission Intensity of GSDP	95.3
5.2	Utilization of RE potential	2.5
5.3	Percentage change in forest cover w.r.t 2005	12.0
5.4	Forest carbon stock	33.3
	Parameter 6: New Initiatives (14.5)	
6.1	EV penetration	18.6
6.2	Availability of Charging Infrastructure for Electric Mobility	23.5
6.3	Proportion of consumers with Smart meters	1.2

KERALA

SECI Score: 49.1

Overall Rank: 6

Category: Larger States

Category Rank: 2

FRONT-RUNNER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (64.4)	
1.1	Debt Equity Ratio	0.0
1.2	AT&C Losses	81.2
1.3	T&D Losses	72.2
1.4	ACS – ARR gap	90.5
1.5	Implementation of ToD/ToU tariff for Consumers	100
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	46.1
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	77.4
	Parameter 2: Access, affordability & reliability (67.3)	
2.1	Per capita energy consumption	11.1
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	100
2.4	Cross-Subsidization	100
2.5	Life-line electricity and tariff	55.0
	Parameter 3: Clean Energy Initiatives (21.5)	
3.1	Clean Cooking Fuel Supply	48.1
3.2	Renewable Energy Penetration	12.1
3.3	CNG Vehicle Penetration	4.4
	Parameter 4: Energy Efficiency (58)	
4.1	Energy Intensity of GSDP	74.1
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	100
	Parameter 5: Environmental Sustainability (46.9)	
5.1	Emission Intensity of GSDP	98.6
5.2	Utilization of RE potential	1.03
5.3	Percentage change in forest cover w.r.t 2005	24.3
5.4	Forest carbon stock	34.4
	Parameter 6: New Initiatives (7.7)	
6.1	EV penetration	18.6
6.2	Availability of Charging Infrastructure for Electric Mobility	4.4
6.3	Proportion of consumers with Smart meters	0.1

RAJASTHAN

SECI Score: 35.4

Overall Rank: 25

Category: Larger States

Category Rank: 17

ASPIRANT

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (49.2)	
1.1	Debt Equity Ratio	0.0
1.2	AT&C Losses	54.3
1.3	T&D Losses	50.9
1.4	ACS – ARR gap	84.1
1.5	Implementation of ToD/ToU tariff for Consumers	66.7
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	Null
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	92.1
	Parameter 2: Access, affordability & reliability (42.9)	
2.1	Per capita energy consumption	11.5
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	1.7
2.4	Cross-Subsidization	89.1
2.5	Life-line electricity and tariff	0.0
	Parameter 3: Clean Energy Initiatives (15.5)	
3.1	Clean Cooking Fuel Supply	24.7
3.2	Renewable Energy Penetration	19.5
3.3	CNG Vehicle Penetration	2.2
	Parameter 4: Energy Efficiency (44)	
4.1	Energy Intensity of GSDP	22.1
4.2	Energy savings in Commercial & Public Buildings	50.0
4.3	Industrial energy Savings	60.0
	Parameter 5: Environmental Sustainability (31.4)	
5.1	Emission Intensity of GSDP	83.1
5.2	Utilization of RE potential	0.9
5.3	Percentage change in forest cover w.r.t 2005	9.8
5.4	Forest carbon stock	1.7
	Parameter 6: New Initiatives (4.8)	
6.1	EV penetration	11.9
6.2	Availability of Charging Infrastructure for Electric Mobility	0.0
6.3	Proportion of consumers with Smart meters	2.5

MADHYA PRADESH

SECI Score: 32.6

Overall Rank: 28

Category: Larger States

Category Rank: 19

ASPIRANT

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (53.7)	
1.1	Debt Equity Ratio	0.0
1.2	AT&C Losses	53.2
1.3	T&D Losses	44.1
1.4	ACS – ARR gap	87.3
1.5	Implementation of ToD/ToU tariff for Consumers	100
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	43.4
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	59.1
	Parameter 2: Access, affordability & reliability (42.7)	
2.1	Per capita energy consumption	7.6
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	61.1
2.4	Cross-Subsidization	54.2
2.5	Life-line electricity and tariff	32.6
	Parameter 3: Clean Energy Initiatives (6.2)	
3.1	Clean Cooking Fuel Supply	12.7
3.2	Renewable Energy Penetration	6.0
3.3	CNG Vehicle Penetration	0.0
	Parameter 4: Energy Efficiency (8.3)	
4.1	Energy Intensity of GSDP	24.8
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	0.0
	Parameter 5: Environmental Sustainability (24.1)	
5.1	Emission Intensity of GSDP	59.1
5.2	Utilization of RE potential	1.6
5.3	Percentage change in forest cover w.r.t 2005	6.5
5.4	Forest carbon stock	11.7
	Parameter 6: New Initiatives (3.3)	
6.1	EV penetration	Null
6.2	Availability of Charging Infrastructure for Electric Mobility	Null
6.3	Proportion of consumers with Smart meters	10.0

MAHARASHTRA

SECI Score: 46

Overall Rank: 11

Category: Larger States

Category Rank: 6

FRONT-RUNNER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (57.7)	
1.1	Debt Equity Ratio	81.0
1.2	AT&C Losses	71.6
1.3	T&D Losses	57.7
1.4	ACS – ARR gap	88.5
1.5	Implementation of ToD/ToU tariff for Consumers	66.7
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	24.1
1.8	Regulatory Assets	25.8
1.9	Complexity of Tariff	43.7
	Parameter 2: Access, affordability & reliability (51.2)	
2.1	Per capita energy consumption	14.6
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	16.7
2.4	Cross-Subsidization	88.8
2.5	Life-line electricity and tariff	30.2
	Parameter 3: Clean Energy Initiatives (34.0)	
3.1	Clean Cooking Fuel Supply	43.6
3.2	Renewable Energy Penetration	9.5
3.3	CNG Vehicle Penetration	48.8
	Parameter 4: Energy Efficiency (75.7)	
4.1	Energy Intensity of GSDP	67.0
4.2	Energy savings in Commercial & Public Buildings	100
4.3	Industrial energy Savings	60.0
	Parameter 5: Environmental Sustainability (36.2)	
5.1	Emission Intensity of GSDP	90.1
5.2	Utilization of RE potential	1.4
5.3	Percentage change in forest cover w.r.t 2005	7.0
5.4	Forest carbon stock	21.8
	Parameter 6: New Initiatives (10.4)	
6.1	EV penetration	17.0
6.2	Availability of Charging Infrastructure for Electric Mobility	14.3
6.3	Proportion of consumers with Smart meters	0.0

ODISHA

SECI Score: 37.1

Overall Rank: 22

Category: Larger States

Category Rank: 16

ACHIEVER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (59.0)	
1.1	Debt Equity Ratio	0.0
1.2	AT&C Losses	55.6
1.3	T&D Losses	60.9
1.4	ACS – ARR gap	89.4
1.5	Implementation of ToD/ToU tariff for Consumers	66.7
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	0.0
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	96.1
	Parameter 2: Access, affordability & reliability (57.4)	
2.1	Per capita energy consumption	12.0
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	100
2.4	Cross-Subsidization	57.1
2.5	Life-line electricity and tariff	75.7
	Parameter 3: Clean Energy Initiatives (4.8)	
3.1	Clean Cooking Fuel Supply	9.2
3.2	Renewable Energy Penetration	1.5
3.3	CNG Vehicle Penetration	3.8
	Parameter 4: Energy Efficiency (21.8)	
4.1	Energy Intensity of GSDP	25.3
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	40.0
	Parameter 5: Environmental Sustainability (22.6)	
5.1	Emission Intensity of GSDP	46.8
5.2	Utilization of RE potential	0.4
5.3	Percentage change in forest cover w.r.t 2005	11.4
5.4	Forest carbon stock	19.0
	Parameter 6: New Initiatives (0.9)	
6.1	EV penetration	2.0
6.2	Availability of Charging Infrastructure for Electric Mobility	Null
6.3	Proportion of consumers with Smart meters	0.6

PUNJAB

SECI Score: 48.6

Overall Rank: 7

Category: Larger States

Category Rank: 3

FRONT-RUNNER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (77.1)	
1.1	Debt Equity Ratio	89.7
1.2	AT&C Losses	81.4
1.3	T&D Losses	69.5
1.4	ACS – ARR gap	90.1
1.5	Implementation of ToD/ToU tariff for Consumers	66.7
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	77.2
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	77.8
	Parameter 2: Access, affordability & reliability (46.8)	
2.1	Per capita energy consumption	22.2
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	0.0
2.4	Cross-Subsidization	74.1
2.5	Life-line electricity and tariff	30.6
	Parameter 3: Clean Energy Initiatives (26.1)	
3.1	Clean Cooking Fuel Supply	57.8
3.2	Renewable Energy Penetration	9.4
3.3	CNG Vehicle Penetration	11.2
	Parameter 4: Energy Efficiency (35.1)	
4.1	Energy Intensity of GSDP	15.2
4.2	Energy savings in Commercial & Public Buildings	50.0
4.3	Industrial energy Savings	40.0
	Parameter 5: Environmental Sustainability (37.0)	
5.1	Emission Intensity of GSDP	88.6
5.2	Utilization of RE potential	5.0
5.3	Percentage change in forest cover w.r.t 2005	15.7
5.4	Forest carbon stock	8.2
	Parameter 6: New Initiatives (2.3)	
6.1	EV penetration	6.8
6.2	Availability of Charging Infrastructure for Electric Mobility	0.0
6.3	Proportion of consumers with Smart meters	0.0

TAMIL NADU

SECI Score: 43.4

Overall Rank: 15

Category: Larger States

Category Rank: 9

ACHIEVER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (57.3)	
1.1	Debt Equity Ratio	0.0
1.2	AT&C Losses	80.3
1.3	T&D Losses	66.3
1.4	ACS – ARR gap	81.2
1.5	Implementation of ToD/ToU tariff for Consumers	33.3
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	34.2
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	91.0
	Parameter 2: Access, affordability & reliability (46.3)	
2.1	Per capita energy consumption	19.1
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	16.7
2.4	Cross-Subsidization	28.7
2.5	Life-line electricity and tariff	100
	Parameter 3: Clean Energy Initiatives (21.7)	
3.1	Clean Cooking Fuel Supply	46.4
3.2	Renewable Energy Penetration	18.8
3.3	CNG Vehicle Penetration	0.0
	Parameter 4: Energy Efficiency (85.4)	
4.1	Energy Intensity of GSDP	56.1
4.2	Energy savings in Commercial & Public Buildings	100
4.3	Industrial energy Savings	100
	Parameter 5: Environmental Sustainability (39.2)	
5.1	Emission Intensity of GSDP	89.7
5.2	Utilization of RE potential	4.0
5.3	Percentage change in forest cover w.r.t 2005	17.1
5.4	Forest carbon stock	17.6
	Parameter 6: New Initiatives (4.0)	
6.1	EV penetration	11.9
6.2	Availability of Charging Infrastructure for Electric Mobility	0.0
6.3	Proportion of consumers with Smart meters	0.0

TELANGANA

SECI Score: 41.9

Overall Rank: 17

Category: Larger States

Category Rank: 11

ACHIEVER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance 55.1	
1.1	Debt Equity Ratio	0.0
1.2	AT&C Losses	68.7
1.3	T&D Losses	71.0
1.4	ACS – ARR gap	86.1
1.5	Implementation of ToD/ToU tariff for Consumers	66.7
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	13.9
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	76.3
	Parameter 2: Access, affordability & reliability (60.4)	
2.1	Per capita energy consumption	22.5
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	100
2.4	Cross-Subsidization	55.5
2.5	Life-line electricity and tariff	79.4
	Parameter 3: Clean Energy Initiatives (18.0)	
3.1	Clean Cooking Fuel Supply	42.6
3.2	Renewable Energy Penetration	11.5
3.3	CNG Vehicle Penetration	0.0
	Parameter 4: Energy Efficiency (64.7)	
4.1	Energy Intensity of GSDP	54.2
4.2	Energy savings in Commercial & Public Buildings	100
4.3	Industrial energy Savings	40
	Parameter 5: Environmental Sustainability (34.6)	
5.1	Emission Intensity of GSDP	83.5
5.2	Utilization of RE potential	2.2
5.3	Percentage change in forest cover w.r.t 2005	14.3
5.4	Forest carbon stock	9.7
	Parameter 6: New Initiatives (0.4)	
6.1	EV penetration	Null
6.2	Availability of Charging Infrastructure for Electric Mobility	Null
6.3	Proportion of consumers with Smart meters	1.2

UTTAR PRADESH

SECI Score: 41.0

Overall Rank: 19

Category: Larger States

Category Rank: 13

ACHIEVER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (59.9)	
1.1	Debt Equity Ratio	54.9
1.2	AT&C Losses	53.7
1.3	T&D Losses	55.0
1.4	ACS – ARR gap	89.0
1.5	Implementation of ToD/ToU tariff for Consumers	33.3
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	46.7
1.8	Regulatory Assets	99.1
1.9	Complexity of Tariff	77.8
	Parameter 2: Access, affordability & reliability (37.8)	
2.1	Per capita energy consumption	4.5
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	97.7
2.4	Cross-Subsidization	56.0
2.5	Life-line electricity and tariff	65.2
	Parameter 3: Clean Energy Initiatives (12.6)	
3.1	Clean Cooking Fuel Supply	19.5
3.2	Renewable Energy Penetration	3.9
3.3	CNG Vehicle Penetration	14.5
	Parameter 4: Energy Efficiency (42)	
4.1	Energy Intensity of GSDP	16.0
4.2	Energy savings in Commercial & Public Buildings	50.0
4.3	Industrial energy Savings	60.0
	Parameter 5: Environmental Sustainability (30.9)	
5.1	Emission Intensity of GSDP	75.0
5.2	Utilization of RE potential	3.1
5.3	Percentage change in forest cover w.r.t 2005	9.3
5.4	Forest carbon stock	13.8
	Parameter 6: New Initiatives (27.4)	
6.1	EV penetration	30.5
6.2	Availability of Charging Infrastructure for Electric Mobility	Null
6.3	Proportion of consumers with Smart meters	51.7

UTTARAKHAND

SECI Score: 46.5

Overall Rank: 10

Category: Larger States

Category Rank: 5

FRONT-RUNNER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (61.9)	
1.1	Debt Equity Ratio	0.0
1.2	AT&C Losses	70.8
1.3	T&D Losses	60.3
1.4	ACS – ARR gap	90.0
1.5	Implementation of ToD/ToU tariff for Consumers	33.3
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	77.8
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	91.8
	Parameter 2: Access, affordability & reliability (55.3)	
2.1	Per capita energy consumption	14.4
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	79.3
2.4	Cross-Subsidization	35.0
2.5	Life-line electricity and tariff	35.2
	Parameter 3: Clean Energy Initiatives (18.5)	
3.1	Clean Cooking Fuel Supply	47.1
3.2	Renewable Energy Penetration	6.7
3.3	CNG Vehicle Penetration	1.7
	Parameter 4: Energy Efficiency (50.5)	
4.1	Energy Intensity of GSDP	71.4
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	80.0
	Parameter 5: Environmental Sustainability (48.7)	
5.1	Emission Intensity of GSDP	98.1
5.2	Utilization of RE potential	0.8
5.3	Percentage change in forest cover w.r.t 2005	6.2
5.4	Forest carbon stock	82.9
	Parameter 6: New Initiatives (14.7)	
6.1	EV penetration	44.1
6.2	Availability of Charging Infrastructure for Electric Mobility	0.04
6.3	Proportion of consumers with Smart meters	0.0

WEST BENGAL

SECI Score: 38.9

Overall Rank: 20

Category: Larger States

Category Rank: 14

ACHIEVER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (55.3)	
1.1	Debt Equity Ratio	87.7
1.2	AT&C Losses	70.8
1.3	T&D Losses	68.7
1.4	ACS – ARR gap	89.0
1.5	Implementation of ToD/ToU tariff for Consumers	100
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	Null
1.8	Regulatory Assets	20.5
1.9	Complexity of Tariff	0.0
	Parameter 2: Access, affordability & reliability (52)	
2.1	Per capita energy consumption	4.5
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	94.4
2.4	Cross-Subsidization	77.4
2.5	Life-line electricity and tariff	27.9
	Parameter 3: Clean Energy Initiatives (8.5)	
3.1	Clean Cooking Fuel Supply	23.2
3.2	Renewable Energy Penetration	1.9
3.3	CNG Vehicle Penetration	0.4
	Parameter 4: Energy Efficiency (27.7)	
4.1	Energy Intensity of GSDP	63.0
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	20.0
	Parameter 5: Environmental Sustainability (40.9)	
5.1	Emission Intensity of GSDP	80.0
5.2	Utilization of RE potential	1.6
5.3	Percentage change in forest cover w.r.t 2005	30.6
5.4	Forest carbon stock	22.4
	Parameter 6: New Initiatives (9)	
6.1	EV penetration	25.4
6.2	Availability of Charging Infrastructure for Electric Mobility	0.6
6.3	Proportion of consumers with Smart meters	0.9

ARUNACHAL PRADESH

SECI Score: 27

Overall Rank: 34

Category: Smaller States

Category Rank: 8

ASPIRANT

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (31.1)	
1.1	Debt Equity Ratio	0.0
1.2	AT&C Losses	26.0
1.3	T&D Losses	0.0
1.4	ACS – ARR gap	68.1
1.5	Implementation of ToD/ToU tariff for Consumers	0.0
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	0.0
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	95.3
	Parameter 2: Access, affordability & reliability (43.2)	
2.1	Per capita energy consumption	11.7
2.2	Hours of Electricity Supplied (Industry)	Null
2.3	Hours of Electricity Supplied (Agri)	Null
2.4	Cross-Subsidization	85.6
2.5	Life-line electricity and tariff	57.9
	Parameter 3: Clean Energy Initiatives (5.8)	
3.1	Clean Cooking Fuel Supply	17.1
3.2	Renewable Energy Penetration	0.03
3.3	CNG Vehicle Penetration	0.2
	Parameter 4: Energy Efficiency (19.8)	
4.1	Energy Intensity of GSDP	59.3
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	0.0
	Parameter 5: Environmental Sustainability (49.0)	
5.1	Emission Intensity of GSDP	97.1
5.2	Utilization of RE potential	0.3
5.3	Percentage change in forest cover w.r.t 2005	5.9
5.4	Forest carbon stock	87.6
	Parameter 6: New Initiatives (1.1)	
6.1	EV penetration	3.4
6.2	Availability of Charging Infrastructure for Electric Mobility	Null
6.3	Proportion of consumers with Smart meters	0.0

GOA

SECI Score: 51.4

Overall Rank: 4

Category: Smaller States

Category Rank: 1

FRONT-RUNNER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (63.4)	
1.1	Debt Equity Ratio	Null
1.2	AT&C Losses	82.2
1.3	T&D Losses	80.7
1.4	ACS – ARR gap	88.2
1.5	Implementation of ToD/ToU tariff for Consumers	66.7
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	39.0
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	92.8
	Parameter 2: Access, affordability & reliability (59.6)	
2.1	Per capita energy consumption	31.4
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	100
2.4	Cross-Subsidization	41.8
2.5	Life-line electricity and tariff	86.6
	Parameter 3: Clean Energy Initiatives (62.4)	
3.1	Clean Cooking Fuel Supply	87.0
3.2	Renewable Energy Penetration	100
3.3	CNG Vehicle Penetration	0.03
	Parameter 4: Energy Efficiency (16.6)	
4.1	Energy Intensity of GSDP	50.0
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	0.0
	Parameter 5: Environmental Sustainability (43.7)	
5.1	Emission Intensity of GSDP	98.0
5.2	Utilization of RE potential	0.1
5.3	Percentage change in forest cover w.r.t 2005	9.7
5.4	Forest carbon stock	46.3
	Parameter 6: New Initiatives (12.4)	
6.1	EV penetration	37.2
6.2	Availability of Charging Infrastructure for Electric Mobility	0.0
6.3	Proportion of consumers with Smart meters	0.0

MANIPUR

SECI Score: 36.0

Overall Rank: 23

Category: Smaller States

Category Rank: 3

ASPIRANTS

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance 57.6)	
1.1	Debt Equity Ratio	98.0
1.2	AT&C Losses	71.0
1.3	T&D Losses	28.0
1.4	ACS – ARR gap	83.3
1.5	Implementation of ToD/ToU tariff for Consumers	0.0
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	Null
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	98.2
	Parameter 2: Access, affordability & reliability (34.1)	
2.1	Per capita energy consumption	3.6
2.2	Hours of Electricity Supplied (Industry)	Null
2.3	Hours of Electricity Supplied (Agri)	Null
2.4	Cross-Subsidization	68.6
2.5	Life-line electricity and tariff	51.2
	Parameter 3: Clean Energy Initiatives (4.7)	
3.1	Clean Cooking Fuel Supply	13.1
3.2	Renewable Energy Penetration	1.04
3.3	CNG Vehicle Penetration	0.05
	Parameter 4: Energy Efficiency (22.1)	
4.1	Energy Intensity of GSDP	66.1
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	0.0
	Parameter 5: Environmental Sustainability (41.3)	
5.1	Emission Intensity of GSDP	97.8
5.2	Utilization of RE potential	0.0
5.3	Percentage change in forest cover w.r.t 2005	6.3
5.4	Forest carbon stock	39.7
	Parameter 6: New Initiatives (7.3)	
6.1	EV penetration	22.0
6.2	Availability of Charging Infrastructure for Electric Mobility	Null
6.3	Proportion of consumers with Smart meters	0.0

MEGHALAYA

SECI Score: 29.4

Overall Rank: 30

Category: Smaller States

Category Rank: 6

ASPIRANT

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (47.9)	
1.1	Debt Equity Ratio	0.0
1.2	AT&C Losses	46.3
1.3	T&D Losses	14.5
1.4	ACS – ARR gap	82.6
1.5	Implementation of ToD/ToU tariff for Consumers	33.3
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	53.0
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	97.1
	Parameter 2: Access, affordability & reliability (30.9)	
2.1	Per capita energy consumption	12.5
2.2	Hours of Electricity Supplied (Industry)	Null
2.3	Hours of Electricity Supplied (Agri)	Null
2.4	Cross-Subsidization	50.1
2.5	Life-line electricity and tariff	54.5
	Parameter 3: Clean Energy Initiatives (1.9)	
3.1	Clean Cooking Fuel Supply	0.0
3.2	Renewable Energy Penetration	5.7
3.3	CNG Vehicle Penetration	0.06
	Parameter 4: Energy Efficiency (4.0)	
4.1	Energy Intensity of GSDP	12.1
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	0.0
	Parameter 5: Environmental Sustainability (39.8)	
5.1	Emission Intensity of GSDP	93.1
5.2	Utilization of RE potential	0.2
5.3	Percentage change in forest cover w.r.t 2005	6.4
5.4	Forest carbon stock	39.4
	Parameter 6: New Initiatives (2.8)	
6.1	EV penetration	8.5
6.2	Availability of Charging Infrastructure for Electric Mobility	Null
6.3	Proportion of consumers with Smart meters	0.0

MIZORAM

SECI Score: 35.9

Overall Rank: 24

Category: Smaller States

Category Rank: 4

ASPIRANT

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (51.7)	
1.1	Debt Equity Ratio	Null
1.2	AT&C Losses	Null
1.3	T&D Losses	56.1
1.4	ACS – ARR gap	Null
1.5	Implementation of ToD/ToU tariff for Consumers	0.0
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	Null
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	98.2
	Parameter 2: Access, affordability & reliability (39.3)	
2.1	Per capita energy consumption	8.0
2.2	Hours of Electricity Supplied (Industry)	Null
2.3	Hours of Electricity Supplied (Agri)	Null
2.4	Cross-Subsidization	7.4
2.5	Life-line electricity and tariff	63.2
	Parameter 3: Clean Energy Initiatives (18.9)	
3.1	Clean Cooking Fuel Supply	34.8
3.2	Renewable Energy Penetration	22.0
3.3	CNG Vehicle Penetration	0.03
	Parameter 4: Energy Efficiency (29.7)	
4.1	Energy Intensity of GSDP	89.1
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	0.0
	Parameter 5: Environmental Sustainability (38.2)	
5.1	Emission Intensity of GSDP	99.2
5.2	Utilization of RE potential	0.07
5.3	Percentage change in forest cover w.r.t 2005	4.3
5.4	Forest carbon stock	22.0
	Parameter 6: New Initiatives (1.1)	
6.1	EV penetration	3.4
6.2	Availability of Charging Infrastructure for Electric Mobility	Null
6.3	Proportion of consumers with Smart meters	0.0

NAGALAND

SECI Score: 27.9

Overall Rank: 33

Category: Smaller States

Category Rank: 7

ASPIRANT

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (35.9)	
1.1	Debt Equity Ratio	Null
1.2	AT&C Losses	13.4
1.3	T&D Losses	59.4
1.4	ACS – ARR gap	64.7
1.5	Implementation of ToD/ToU tariff for Consumers	0.0
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	Null
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	97.1
	Parameter 2: Access, affordability & reliability (32.9)	
2.1	Per capita energy consumption	1.6
2.2	Hours of Electricity Supplied (Industry)	Null
2.3	Hours of Electricity Supplied (Agri)	Null
2.4	Cross-Subsidization	71.6
2.5	Life-line electricity and tariff	42.7
	Parameter 3: Clean Energy Initiatives (12.2)	
3.1	Clean Cooking Fuel Supply	7.0
3.2	Renewable Energy Penetration	29.5
3.3	CNG Vehicle Penetration	0.0
	Parameter 4: Energy Efficiency (26.4)	
4.1	Energy Intensity of GSDP	79.2
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	0.0
	Parameter 5: Environmental Sustainability (40.0)	
5.1	Emission Intensity of GSDP	98.9
5.2	Utilization of RE potential	0.08
5.3	Percentage change in forest cover w.r.t 2005	0.0
5.4	Forest carbon stock	42.0
	Parameter 6: New Initiatives (3.4)	
6.1	EV penetration	10.2
6.2	Availability of Charging Infrastructure for Electric Mobility	Null
6.3	Proportion of consumers with Smart meters	0.0

SIKKIM

SECI Score: 33.3

Overall Rank: 27

Category: Smaller States

Category Rank: 5

ASPIRANT

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (43.2)	
1.1	Debt Equity Ratio	Null
1.2	AT&C Losses	55.7
1.3	T&D Losses	28.6
1.4	ACS – ARR gap	88.4
1.5	Implementation of ToD/ToU tariff for Consumers	0.0
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	null
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	92.1
	Parameter 2: Access, affordability & reliability (37.6)	
2.1	Per capita energy consumption	13.7
2.2	Hours of Electricity Supplied (Industry)	Null
2.3	Hours of Electricity Supplied (Agri)	Null
2.4	Cross-Subsidization	49.5
2.5	Life-line electricity and tariff	87.2
	Parameter 3: Clean Energy Initiatives (13.8)	
3.1	Clean Cooking Fuel Supply	40.9
3.2	Renewable Energy Penetration	0.5
3.3	CNG Vehicle Penetration	0.1
	Parameter 4: Energy Efficiency (33.3)	
4.1	Energy Intensity of GSDP	100
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	0.0
	Parameter 5: Environmental Sustainability (52.2)	
5.1	Emission Intensity of GSDP	99.9
5.2	Utilization of RE potential	0.2
5.3	Percentage change in forest cover w.r.t 2005	6.4
5.4	Forest carbon stock	100
	Parameter 6: New Initiatives (0.6)	
6.1	EV penetration	1.7
6.2	Availability of Charging Infrastructure for Electric Mobility	Null
6.3	Proportion of consumers with Smart meters	0.0

TRIPURA

SECI Score: 45.0

Overall Rank: 13

Category: Smaller States

Category Rank: 2

ACHIEVERS

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (57.3)	
1.1	Debt Equity Ratio	93.7
1.2	AT&C Losses	40.4
1.3	T&D Losses	50.9
1.4	ACS – ARR gap	88.9
1.5	Implementation of ToD/ToU tariff for Consumers	33.3
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	Null
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	93.9
	Parameter 2: Access, affordability & reliability (33.1)	
2.1	Per capita energy consumption	1.8
2.2	Hours of Electricity Supplied (Industry)	Null
2.3	Hours of Electricity Supplied (Agri)	Null
2.4	Cross-Subsidization	73.0
2.5	Life-line electricity and tariff	41.6
	Parameter 3: Clean Energy Initiatives (22.9)	
3.1	Clean Cooking Fuel Supply	15.2
3.2	Renewable Energy Penetration	0.3
3.3	CNG Vehicle Penetration	53.2
	Parameter 4: Energy Efficiency (31.7)	
4.1	Energy Intensity of GSDP	95.0
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	0.0
	Parameter 5: Environmental Sustainability (39.6)	
5.1	Emission Intensity of GSDP	100
5.2	Utilization of RE potential	0.3
5.3	Percentage change in forest cover w.r.t 2005	2.5
5.4	Forest carbon stock	32.7
	Parameter 6: New Initiatives (58.7)	
6.1	EV penetration	100
6.2	Availability of Charging Infrastructure for Electric Mobility	Null
6.3	Proportion of consumers with Smart meters	76.0

ANDAMAN & NICOBAR

SECI Score: 29.4

Overall Rank: 31

Category: Union Territory

Category Rank: 5

ASPIRANT

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (37.7)	
1.1	Debt Equity Ratio	Null
1.2	AT&C Losses	66.6
1.3	T&D Losses	88.5
1.4	ACS – ARR gap	0.0
1.5	Implementation of ToD/ToU tariff for Consumers	0.0
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	Null
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	99.6
	Parameter 2: Access, affordability & reliability (35)	
2.1	Per capita energy consumption	20.8
2.2	Hours of Electricity Supplied (Industry)	Null
2.3	Hours of Electricity Supplied (Agri)	Null
2.4	Cross-Subsidization	39.5
2.5	Life-line electricity and tariff	81.2
	Parameter 3: Clean Energy Initiatives (20.6)	
3.1	Clean Cooking Fuel Supply	50.3
3.2	Renewable Energy Penetration	11.5
3.3	CNG Vehicle Penetration	0.0
	Parameter 4: Energy Efficiency (1.3)	
4.1	Energy Intensity of GSDP	3.8
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	0.0
	Parameter 5: Environmental Sustainability (49.5)	
5.1	Emission Intensity of GSDP	92.4
5.2	Utilization of RE potential	0.3
5.3	Percentage change in forest cover w.r.t 2005	7.7
5.4	Forest carbon stock	96.3
	Parameter 6: New Initiatives (0.0)	
6.1	EV penetration	0.0
6.2	Availability of Charging Infrastructure for Electric Mobility	Null
6.3	Proportion of consumers with Smart meters	0.0

CHANDIGARH

SECI Score: 55.7

Overall Rank: 1

Category: UTs

Category Rank: 1

FRONT-RUNNER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (65.6)	
1.1	Debt Equity Ratio	Null
1.2	AT&C Losses	98.6
1.3	T&D Losses	71.2
1.4	ACS – ARR gap	94.7
1.5	Implementation of ToD/ToU tariff for Consumers	66.7
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	30.1
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	98.9
	Parameter 2: Access, affordability & reliability (58.7)	
2.1	Per capita energy consumption	16.2
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	100
2.4	Cross-Subsidization	59.9
2.5	Life-line electricity and tariff	72.0
	Parameter 3: Clean Energy Initiatives (69.2)	
3.1	Clean Cooking Fuel Supply	100
3.2	Renewable Energy Penetration	100
3.3	CNG Vehicle Penetration	7.6
	Parameter 4: Energy Efficiency (16.2)	
4.1	Energy Intensity of GSDP	48.6
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	0.0
	Parameter 5: Environmental Sustainability (62.5)	
5.1	Emission Intensity of GSDP	97.1
5.2	Utilization of RE potential	100
5.3	Percentage change in forest cover w.r.t 2005	30.0
5.4	Forest carbon stock	21.1
	Parameter 6: New Initiatives (14.1)	
6.1	EV penetration	42.3
6.2	Availability of Charging Infrastructure for Electric Mobility	Null
6.3	Proportion of consumers with Smart meters	0.0

DAMAN & DIU AND DADRA & NAGAR HAVELI

SECI Score: 53.2

Overall Rank: 3

Category: UTs

Category Rank: 3

FRONT-RUNNER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (71.5)	
1.1	Debt Equity Ratio	Null
1.2	AT&C Losses	100
1.3	T&D Losses	84.9
1.4	ACS – ARR gap	91.8
1.5	Implementation of ToD/ToU tariff for Consumers	0.0
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	100
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	98.2
	Parameter 2: Access, affordability & reliability (60.3)	
2.1	Per capita energy consumption	100
2.2	Hours of Electricity Supplied (Industry)	Null
2.3	Hours of Electricity Supplied (Agri)	Null
2.4	Cross-Subsidization	46.8
2.5	Life-line electricity and tariff	90.3
	Parameter 3: Clean Energy Initiatives (68.6)	
3.1	Clean Cooking Fuel Supply	93.3
3.2	Renewable Energy Penetration	100
3.3	CNG Vehicle Penetration	12.4
	Parameter 4: Energy Efficiency (0)	
4.1	Energy Intensity of GSDP	0.0
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	0.0
	Parameter 5: Environmental Sustainability (36)	
5.1	Emission Intensity of GSDP	Null
5.2	Utilization of RE potential	Null
5.3	Percentage change in forest cover w.r.t 2005	100
5.4	Forest carbon stock	16.2
	Parameter 6: New Initiatives (7.9)	
6.1	EV penetration	23.8
6.2	Availability of Charging Infrastructure for Electric Mobility	Null
6.3	Proportion of consumers with Smart meters	0.0

DELHI

SECI Score: 55.6

Overall Rank: 2

Category: UTs

Category Rank: 2

FRONT-RUNNER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (66.2)	
1.1	Debt Equity Ratio	88.1
1.2	AT&C Losses	88.6
1.3	T&D Losses	77.4
1.4	ACS – ARR gap	95.0
1.5	Implementation of ToD/ToU tariff for Consumers	100.0
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	Null
1.8	Regulatory Assets	0.0
1.9	Complexity of Tariff	97.8
	Parameter 2: Access, affordability & reliability (38.3)	
2.1	Per capita energy consumption	18.9
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	100
2.4	Cross-Subsidization	0.0
2.5	Life-line electricity and tariff	66.4
	Parameter 3: Clean Energy Initiatives (67.2)	
3.1	Clean Cooking Fuel Supply	95.1
3.2	Renewable Energy Penetration	6.5
3.3	CNG Vehicle Penetration	100
	Parameter 4: Energy Efficiency (43.9)	
4.1	Energy Intensity of GSDP	81.7
4.2	Energy savings in Commercial & Public Buildings	50.0
4.3	Industrial energy Savings	0.0
	Parameter 5: Environmental Sustainability (38.6)	
5.1	Emission Intensity of GSDP	99.7
5.2	Utilization of RE potential	2.5
5.3	Percentage change in forest cover w.r.t 2005	15.0
5.4	Forest carbon stock	0.0
	Parameter 6: New Initiatives (49.7)	
6.1	EV penetration	84.7
6.2	Availability of Charging Infrastructure for Electric Mobility	4.5
6.3	Proportion of consumers with Smart meters	59.9

JAMMU & KASHMIR

SECI Score: 29.3

Overall Rank: 32

Category: UTs

Category Rank: 6

ASPIRANT

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (31.2)	
1.1	Debt Equity Ratio	Null
1.2	AT&C Losses	0.0
1.3	T&D Losses	21.9
1.4	ACS – ARR gap	81.6
1.5	Implementation of ToD/ToU tariff for Consumers	0.0
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	Null
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	89.2
	Parameter 2: Access, affordability & reliability (51.4)	
2.1	Per capita energy consumption	10.9
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	Null
2.4	Cross-Subsidization	64.0
2.5	Life-line electricity and tariff	85.8
	Parameter 3: Clean Energy Initiatives (11.6)	
3.1	Clean Cooking Fuel Supply	32.3
3.2	Renewable Energy Penetration	2.2
3.3	CNG Vehicle Penetration	0.01
	Parameter 4: Energy Efficiency (9.9)	
4.1	Energy Intensity of GSDP	29.7
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	0.0
	Parameter 5: Environmental Sustainability (51.8)	
5.1	Emission Intensity of GSDP	98.2
5.2	Utilization of RE potential	0.01
5.3	Percentage change in forest cover w.r.t 2005	10.0
5.4	Forest carbon stock	94.4
	Parameter 6: New Initiatives (4.5)	
6.1	EV penetration	13.6
6.2	Availability of Charging Infrastructure for Electric Mobility	Null
6.3	Proportion of consumers with Smart meters	0.0

LAKSHADWEEP

SECI Score: 26.9

Overall Rank: 35

Category: UTs

Category Rank: 7

ASPIRANT

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (42.9)	
1.1	Debt Equity Ratio	Null
1.2	AT&C Losses	81.6
1.3	T&D Losses	100
1.4	ACS – ARR gap	6.3
1.5	Implementation of ToD/ToU tariff for Consumers	0.0
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	Null
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	100
	Parameter 2: Access, affordability & reliability (25.9)	
2.1	Per capita energy consumption	11.0
2.2	Hours of Electricity Supplied (Industry)	Null
2.3	Hours of Electricity Supplied (Agri)	Null
2.4	Cross-Subsidization	14.4
2.5	Life-line electricity and tariff	90.6
	Parameter 3: Clean Energy Initiatives (33.6)	
3.1	Clean Cooking Fuel Supply	0.9
3.2	Renewable Energy Penetration	100
3.3	CNG Vehicle Penetration	0.0
	Parameter 4: Energy Efficiency (0.0)	
4.1	Energy Intensity of GSDP	Null
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	0.0
	Parameter 5: Environmental Sustainability (7.1)	
5.1	Emission Intensity of GSDP	Null
5.2	Utilization of RE potential	0.6
5.3	Percentage change in forest cover w.r.t 2005	10.1
5.4	Forest carbon stock	22.0
	Parameter 6: New Initiatives (0.0)	
6.1	EV penetration	Null
6.2	Availability of Charging Infrastructure for Electric Mobility	Null
6.3	Proportion of consumers with Smart meters	0.0

PUDUCHERRY

SECI Score: 48.5

Overall Rank: 8

Category: UTs

Category Rank: 4

FRONT-RUNNER

PARAMETER-WISE & INDICATOR-WISE SCORE

S.No.	Indicator Name	Scores
	Parameter 1: DISCOM's Performance (67.9)	
1.1	Debt Equity Ratio	95.6
1.2	AT&C Losses	74.3
1.3	T&D Losses	71.3
1.4	ACS – ARR gap	86.4
1.5	Implementation of ToD/ToU tariff for Consumers	66.7
1.6	States Implemented DBT Transfer	0.0
1.7	Open Access Surcharge	0.0
1.8	Regulatory Assets	100
1.9	Complexity of Tariff	96.1
	Parameter 2: Access, affordability & reliability (57.7)	
2.1	Per capita energy consumption	24.6
2.2	Hours of Electricity Supplied (Industry)	100
2.3	Hours of Electricity Supplied (Agri)	100
2.4	Cross-Subsidization	42.0
2.5	Life-line electricity and tariff	86.0
	Parameter 3: Clean Energy Initiatives (20.3)	
3.1	Clean Cooking Fuel Supply	59.1
3.2	Renewable Energy Penetration	1.5
3.3	CNG Vehicle Penetration	0.0
	Parameter 4: Energy Efficiency (0.6)	
4.1	Energy Intensity of GSDP	1.9
4.2	Energy savings in Commercial & Public Buildings	0.0
4.3	Industrial energy Savings	0.0
	Parameter 5: Environmental Sustainability (42.7)	
5.1	Emission Intensity of GSDP	95.2
5.2	Utilization of RE potential	3.3
5.3	Percentage change in forest cover w.r.t 2005	26.3
5.4	Forest carbon stock	12.6
	Parameter 6: New Initiatives (37.9)	
6.1	EV penetration	13.6
6.2	Availability of Charging Infrastructure for Electric Mobility	0.0
6.3	Proportion of consumers with Smart meters	100

ANNEXURE 2: INDICATOR-WISE PERFORMANCE OF ALL STATES

DISCOM's Performance									
States/UTs	Debt equity ratio	AT&C losses	T&D losses	ACS-ARR gap	Imple-mentation of ToD/ ToU Tariff	Imple-mentation of DBT transfer	Open Access Surcharge	Regula-tory Assets	Comp-lexity of tariff
A&N	Null	66.6	88.5	0	0	0	Null	100	99.6
Andhra Pradesh	0	87.8	67.2	90.4	100	0	53.1	100	67.7
Arunachal Pradesh	0	26	0	68.1	0	0	0	100	95.3
Assam	95.9	65.5	42.7	91.6	33.3	0	47	100	93.9
Bihar	95.6	35.5	35.7	86.7	66.7	0	39.3	100	91.8
Chandigarh	Null	98.7	71.2	94.7	66.7	0	30.1	100	98.9
Chhattisgarh	0	65.1	47.5	90.0	66.7	0	57.1	100	85.7
D&D/D&N	Null	100	84.9	91.7	0	0	100	100	98.2
Delhi	88.1	92.4	77.4	90.0	100	0	Null	0	97.8
Goa	Null	82.1	80.7	88.0	66.7	0	39	100	92.8
Gujarat	99.5	85.6	56.9	91.2	66.7	0	49.5	100	57
Haryana	27.7	74.7	54.7	91.2	100	0	79.6	100	90
Himachal Pradesh	0	86.2	73.2	91.0	0	0	17.7	100	95
J&K	Null	0	21.9	81.5	0	0	Null	100	89.2
Jharkhand	45.3	41.5	67.7	84.7	0	0	59.1	100	95.7
Karnataka	0	76	66.7	89.2	66.7	0	33.9	69.7	78.5
Kerala	0	81.2	72.2	90.5	100	0	46.1	100	77.4
Lakshadweep	Null	81.6	100	6.3	0	0	Null	100	100
Madhya Pradesh	0	53.0	44.1	87.2	100	0	43.4	100	59.1
Maharashtra	81	71.5	57.7	88.5	66.7	0	24.1	25.8	43.7
Manipur	98	71.0	28	83.3	0	0	Null	100	98.2
Meghalaya	0	46.3	14.5	82.5	33.3	0	53.1	100	97.1
Mizoram	Null	70.3	56.1	100	0	0	Null	100	98.2
Nagaland	Null	13.4	59.4	64.7	0	0	Null	100	97.1
Odisha	0	55.6	60.9	89.4	66.7	0	61.9	100	88.2
Puducherry	95.6	74.2	71.3	86.4	66.7	0	0	100	96.1
Punjab	89.7	81.4	69.5	90.1	66.7	0	77.2	100	77.8
Rajasthan	0	54.4	50.9	84.0	66.7	0	Null	100	92.1
Sikkim	Null	55.8	28.6	88.4	0	0	Null	100	92.1
Tamil Nadu	0	80.3	66.3	81.2	33.3	0	34.2	100	91
Telangana	0	68.7	71	86.0	66.7	0	13.9	100	76.3
Tripura	93.7	40.4	50.9	89	33.3	0	Null	100	93.9
Uttar Pradesh	54.9	53.7	55	89	33.3	0	46.7	99.1	77.8
Uttarakhand	0	70.8	60.3	90.0	33.3	0	77.8	100	91.8
West Bengal	87.7	70.8	68.7	89.0	100	0	Null	20.5	0

Access, Affordability & Reliability of Energy					
States/UTs	Per capita energy consumption	Hours of electricity supplied (industry)	Hours of electricity supplied (Agriculture)	Cross-subsidisation	Life-line electricity and tariff
A&N	20.9	Null	Null	39.5	81.3
Andhra Pradesh	9.9	100	5.6	38.2	83.5
Arunachal Pradesh	11.7	Null	Null	85.7	57.9
Assam	1.6	Null	Null	95.8	29.9
Bihar	0	100	66.7	74	18.5
Chandigarh	16.3	100	100	59.9	72
Chhattisgarh	15.3	100	66.7	36.6	62.2
D&D	100	Null	Null	46.8	90.3
Delhi	18.9	100	100	0	66.4
Goa	31.4	100	100	41.8	86.6
Gujarat	25.7	100	11.4	67.9	58.7
Haryana	27.3	100	12.8	68	61.9
Himachal Pradesh	16.1	100	100	67.8	47.3
J&K	10.9	100	Null	64	85.8
Jharkhand	6.3	100	77.8	68	22.1
Karnataka	17	100	1.7	69.6	38.1
Kerala	11.2	100	100	100	54.9
Lakshadweep	11	Null	Null	14.4	90.6
Madhya Pradesh	7.6	100	61.1	54.2	32.6
Maharashtra	14.6	100	16.7	88.8	30.2
Manipur	3.6	Null	Null	68.6	51.2
Meghalaya	12.5	Null	Null	50.1	54.5
Mizoram	8	Null	Null	73.7	63.2
Nagaland	1.6	Null	Null	71.6	42.7
Orissa	11.9	100	100	57.2	75.7
Puducherry	24.6	100	100	42	86
Punjab	22.2	100	0	74.1	30.6
Rajasthan	11.5	100	1.7	89.1	0
Sikkim	13.7	Null	Null	49.5	87.3
Tamil Nadu	19.1	100	16.7	28.7	100
Telangana	22.5	100	100	55.5	79.5
Tripura	1.8	Null	Null	73	41.6
Uttar Pradesh	4.5	100	79.3	35	35.2
Uttarakhand	14.4	100	97.7	56	65.2
West Bengal	4.5	100	94.4	77.4	27.9

Clean Energy Initiatives			
States/UTs	Clean cooking fuel supply	Renewable energy penetration (at generation level)	CNG Vehicle Penetration
A&N	50.3	11.5	0
Andhra Pradesh	33.1	17.7	Null
Arunachal Pradesh	17.1	0	0.2
Assam	12.6	0.2	0.1
Bihar	9.8	0.9	3.9
Chandigarh	100	100	7.6
Chhattisgarh	5.5	0.8	0
D&D/D&N	93.3	100	12.4
Delhi	95.1	6.5	100
Goa	87.1	100	0
Gujarat	32.4	13.7	71.4
Haryana	55.1	3.9	69.8
Himachal Pradesh	37.8	5	0.1
J&K	32.4	2.3	0
Jharkhand	5.5	0	3.4
Karnataka	43.6	36.2	1.2
Kerala	48.1	12.1	4.4
Lakshadweep	0.9	100	0
Madhya Pradesh	12.7	6	0
Maharashtra	43.6	9.5	48.8
Manipur	13.1	1	0.1
Meghalaya	0	5.7	0.1
Mizoram	34.8	22	0
Nagaland	7	29.5	0
Odisha	9.2	1.5	3.8
Puducherry	59.3	1.5	0.1
Punjab	57.8	9.4	11.2
Rajasthan	24.7	19.5	2.2
Sikkim	40.9	0.5	0.1
Tamil Nadu	46.4	18.8	0
Telangana	42.6	11.5	0
Tripura	15.3	0.3	53.2
Uttar Pradesh	19.5	3.9	14.5
Uttarakhand	47.1	6.7	1.7
West Bengal	23.2	1.9	0.4

Energy Efficiency			
States/UTs	Energy intensity	Energy Savings in Commercial & Public Buildings	Industrial energy savings
A&N	3.8	0	0
Andhra Pradesh	9.9	50	60
Arunachal Pradesh	59.3	0	0
Assam	77	0	40
Bihar	48.3	0	20
Chandigarh	48.6	0	0
Chhattisgarh	0	0	0
D&D/D&N	Null	0	0
Delhi	81.7	50	0
Goa	49.9	0	0
Gujarat	40.3	0	80
Haryana	35	0	0
Himachal Pradesh	60.3	0	0
J&K	29.7	0	0
Jharkhand	31.7	0	20
Karnataka	61.6	50	60
Kerala	74.1	0	100
Lakshadweep	Null	0	0
Madhya Pradesh	24.8	0	0
Maharashtra	67	100	60
Manipur	66.2	0	0
Meghalaya	12.1	0	0
Mizoram	89.1	0	0
Nagaland	79.2	0	0
Orissa	25.3	0	40
Puducherry	1.9	0	0
Punjab	15.2	50	40
Rajasthan	22.1	50	60
Sikkim	100	0	0
Tamil Nadu	56.1	100	100
Telangana	54.2	100	40
Tripura	95.1	0	0
Uttar Pradesh	16	50	60
Uttarakhand	71.4	0	80
West Bengal	63	0	20

Environmental Sustainability				
States/UTs	Emission intensity	Utilisation of RE potential	Percentage change in forest cover	Forest carbon stock
A&N	92.4	0.3	7.7	96.4
Andhra Pradesh	83.8	1.8	14.7	11.2
Arunachal Pradesh	97.1	0.3	5.9	87.6
Assam	96.3	0.1	8.4	29.8
Bihar	82.7	0.5	12.5	11.4
Chandigarh	97.1	100	30	21.1
Chhattisgarh	0	0.7	6.3	21.4
D&D/D&N	Null	Null	100	16.3
Delhi	99.7	2.5	15	0
Goa	98	0.1	9.7	46.4
Gujarat	92.4	1.5	8.1	8.3
Haryana	91.5	1.9	6.7	1.9
Himachal Pradesh	98.7	0.6	10.9	93
J&K	98.2	0	10	94.5
Jharkhand	41.7	0	9.9	11.2
Karnataka	95.4	2.5	11.9	33.3
Kerala	98.6	1	24.3	34.4
Lakshadweep	Null	0.6	10.1	22
Madhya Pradesh	59.1	1.6	6.5	11.7
Maharashtra	90.1	1.4	7	21.8
Manipur	97.8	0	6.3	39.7
Meghalaya	93.2	0.2	6.4	39.4
Mizoram	99.3	0.1	4.3	22
Nagaland	98.9	0.1	0	42
Odisha	46.8	0.4	11.4	19
Puducherry	95.2	0.3	26.3	12.6
Punjab	88.6	5	15.7	8.2
Rajasthan	83.1	0.9	9.8	1.7
Sikkim	99.9	0.2	6.4	100
Tamil Nadu	89.7	4	17.1	17.6
Telangana	83.6	2.2	14.4	9.7
Tripura	100	0.3	2.5	32.7
Uttar Pradesh	75.1	3.1	9.3	13.8
Uttarakhand	98.1	0.9	6.2	82.9
West Bengal	80	1.6	30.6	22.4

New Initiatives			
States/UTs	**EV penetration**	**Availability of Charging Infrastructure for Electric Mobility**	**Proportion of consumers with smart meter**
A&N	0	Null	0
Andhra Pradesh	Null	Null	0
Arunachal Pradesh	3.4	Null	0
Assam	49.2	0.1	3.6
Bihar	20.3	0	2.3
Chandigarh	42.4	Null	0
Chhattisgarh	11.9	0.6	0
D&D/D&N	23.7	Null	0
Delhi	84.7	4.5	59.9
Goa	37.3	0	0
Gujarat	10.2	4.5	1.8
Haryana	20.3	0.3	0
Himachal Pradesh	13.6	100	0.8
J&K	13.6	Null	0
Jharkhand	11.9	16.1	0
Karnataka	18.6	23.5	1.2
Kerala	18.6	4.4	0.1
Lakshadweep	Null	Null	0
Madhya Pradesh	Null	Null	10
Maharashtra	16.9	14.3	0
Manipur	22	Null	0
Meghalaya	8.5	Null	0
Mizoram	3.4	Null	0
Nagaland	10.2	Null	0
Orissa	2	Null	0.6
Puducherry	13.6	0	100
Punjab	6.8	0	0
Rajasthan	11.9	0	2.5
Sikkim	1.7	Null	0
Tamil Nadu	11.9	0	0
Telangana	Null	Null	1.2
Tripura	100	Null	76
Uttar Pradesh	30.5	Null	51.7
Uttarakhand	44.1	0	0
West Bengal	25.4	0.6	1

ANNEXURE 3: INDICATORS-SECI ROUND I

Parameter 1 DISCOM's performance 40%

Indicator 1.1	Debt Equity Ratio
Description	It provides information that will be used to assess the financial leverage of DISCOMs. A low debt-equity ratio indicates less risk and therefore, it attracts favorable investment and helps in further improvement of DISCOM's performance. The states with negative net worth reflect DISCOMs weak financial profile.
Methodology	1. Total borrowings/Total net worth[39] Score = 0, if state's net-worth is negative
Unit of measurement	Ratio
Data Source	PFC
Weights	5
Type of indicator	Regressive indicator
Normalization method	(Highest-Actual)/(Highest-Lowest)
Indicator 1.2	**AT&C losses (Aggregate Technical & Commercial losses)**
Description	The concept of Aggregate Technical & Commercial losses provides a realistic picture of loss situation in the context it is measured. The DISCOMs in each state should target to reduce AT&C losses through improvement in billing efficiency and collection efficiency.
Methodology	--
Unit of measurement	Percentage
Data Source	PFC
Weights	7
Type of indicator	Regressive indicator
Normalization method	(Highest-Actual)/(Highest-Lowest)
Indicator 1.3	**T&D losses[40]**
Description	Transmission and distribution losses in the electricity sector occur when the amount of electricity generated is greater than the amount of electricity delivered to end-users. Few of the reasons for T & D losses are long distribution lines, inappropriate size of conductors, theft etc. On the basis of the score received, the state government can take several steps such as improving quality of power lines, using correct size of transformers, steps taken to reduce theft to reduce their technical losses.

39 https://pfcindia.com/DocumentRepository/ckfinder/files/GoI_Initiatives/Annual_Integrated_Ratings_of_State_DISCOMs/9th%20Integrated%20Rating%20Booklet.pdf

40 Both T&D loss and AT&C loss have been included in the study because the correlation between them was not high. And At 100% Collection Efficiency, AT&C Loss equals Distribution Loss. Transmission Losses, Energy Traded/ Inter-state sales and energy transmitted/wheeled under Open Access are not considered in the calculation of AT&C Loss. Since Transmission Losses are not included in AT&C loss, it is possible that T&D losses are higher than AT&C Losses.

Methodology	--
Unit of measurement	Percentage
Data Source	CEA
Weights	5
Type of indicator	Regressive indicator
Normalization method	(Highest-Actual)/(Highest-Lowest)
Indicator 1.4	**ACS-ARR Gap**
Description	The gap between Average Cost of Supply (ACS) per unit and Average Revenue Realised (ARR) per unit is one of the most important performance parameters for power distribution in India. The DISCOM's should aim at achieving negative ACS-ARR gap which reflects profitability of the DISCOM's as they realise revenue higher than the cost.
Methodology	Gap on Tariff Subsidy received basis (adjusted for Regulatory Income and UDAY Grant)
Unit of measurement	INR/kWh
Data Source	PFC
Weights	7
Type of indicator	Regressive indicator
Normalization method	(Highest-Actual)/(Highest-Lowest)
Indicator 1.5	**Implementation of ToD/ToU tariff for Consumers**
Description	The objective is to check whether consumers are being charged dynamic prices for electricity consumed during peak and off-peak periods to shift demand to off-peak periods thereby reducing peak demand.
Methodology	The data is available for three types of consumers, as given below: 1. Commercial Consumers (C): Value is 1, if implemented otherwise; 0 {Weightage: 0.83} 2. Residential Consumers (R): Value is 1, if implemented otherwise; 0 {Weightage: 0.83} 3. Industrial Consumers (I): Value is 1, if implemented otherwise; 0 {Weightage: 0.83} 4. Weighted score for each set of consumers is calculated separately as: $(\text{Weighted score})_i = \text{Value}_i * 0.83$; where i = type of consumer R, D & C 5. Total score of the indicator= $\Sigma(\text{Weighted score})_i$ where i = type of consumer R, D & C
Unit of measurement	Binary values
Data Source	BEE
Weights	2.5
Type of indicator	Progressive indicator
Normalization method	(Actual-Lowest)/(Highest-Lowest)

Indicator 1.6	Implementation of Direct Benefit Transfer
Description	Under the National Electricity Policy, electricity is subsidized for the agricultural sector. Now the government has proposed that state should start Direct Benefit Transfer (DBT) of electricity subsidy to farmers.
Methodology	Value is 1, if implemented otherwise; 0
Unit of measurement	Binary values
Data Source	--
Weights	2.5
Type of indicator	Progressive indicator
Normalization method	Not required
Indicator 1.7	**Open Access Surcharge**
Description	An Open Access consumer, receiving the supply of electricity from a person other than the distribution licensee of his area of supply, shall pay to the distribution licensee, an additional surcharge on the charges of wheeling, in addition to wheeling charges and cross-subsidy surcharge.
Methodology	State-wise average of all OA surcharge
Unit of measurement	Rs./Kwh
Data Source	CEA
Weights	5
Type of indicator	Regressive indicator
Normalization method	(Highest-Actual)/(Highest-Lowest)
Indicator 1.8	**Regulatory Assets**
Description	Often SERCs do not increase tariffs to match the increasing costs of DISCOMs, in order to shield consumers from tariff shocks. The higher costs have to be absorbed by DISCOMs. However, they are recognised by the regulator as regulatory assets, to be recovered through future tariff hikes. Mounting regulatory assets create cash-flow problems for DISCOMs, forcing them to borrow funds to cover the revenue deficit. The additional borrowing, coupled with the interest, adds to the burden[41]. Therefore, the states have to deal effectively with regulatory assets.
Methodology	State-wise average of all OA surcharge
Unit of measurement	Rs.(in crores)
Data Source	PFC
Weights	3
Type of indicator	Regressive indicator
Normalization method	(Highest-Actual)/(Highest-Lowest)

41 https://www.niti.gov.in/sites/default/files/2021-08/Electricity-Distribution-Report_030821.pdf

Indicator 1.9	Complexity of Tariff
Description	A critical issue in the power sector is a complex tariff structure. Different states and UTs have different categories of customers, different slabs and sub-slabs, and different slabs for ToD/ToU tariffs. This makes it difficult to understand the tariff structure. Some states also have different tariff structures for public and private suppliers.
Methodology	State-wise Numbers of categories of tariffs
Unit of measurement	Numbers
Data Source	CEA
Weights	3
Type of indicator	Regressive indicator
Normalization method	(Highest-Actual)/(Highest-Lowest)

Parameter 2 Access, affordability and Reliability of Energy 15%

Accessibility of Energy	
Indicator 2.1	**Per capita energy consumption**
Description	The state's performance in providing access to energy is measured by per capita energy consumption. Per capita energy consumption has been calculated by using state-wise consumption data of LPG, MS, HSD, PNG, CNG, and electricity. The state-wise data for other forms of energy were not available.
Methodology	1. Total energy consumption= Sum of LPG, MS, HSD, PNG, CNG, and electricity consumption 2. Total energy consumption/State's projected population
Unit of measurement	kgoe/capita
Data Source	MoPNG, CEA, PNGRB, Census
Weights	4
Type of indicator	Progressive indicator
Normalization method	(Actual-Lowest)/(Highest-Lowest)
Reliability of Energy	
Indicator 2.2	**Hours of electricity supplied (Industry)**
Description	This indicator would show - the number of hours electricity is supplied to the consumers. The number of hours for which electricity has been supplied would be taken for the industrial sector in each state. The data for commercial and domestic consumers is not available.
Methodology	--
Unit of measurement	Hours
Data Source	CEA
Weights	1.5
Type of indicator	Progressive indicator
Normalization method	(Actual-Lowest)/(Highest-Lowest)

Indicator 2.3	Hours of electricity supplied (Agriculture) *
Description	This indicator would show the number of hours electricity is supplied to the consumers. The number of hours for which electricity has been supplied would be taken for the agriculture sector in each state. The data for commercial and domestic consumers is not available.
Methodology	--
Unit of measurement	Hours
Data Source	CEA
Weights	1.5
Type of indicator	Progressive indicator
Normalization method	(Actual-Lowest)/(Highest-Lowest)
Affordability	
Indicator 2.4	**Cross-subsidization**
Description	The cross-subsidised electricity tariffs may encourage inefficiencies as the industrial sector are required to pay high tariffs to subsidize the electricity consumption in agriculture and domestic sector. This hampers the growth and development of states.
Methodology	Average tariff rate of power (Industry) – Average tariff rate of power (Domestic)
Unit of measurement	INR/kWh
Data Source	CEA
Weights	5
Type of indicator	Regressive indicator
Normalization method	(Highest-Actual)/(Highest-Lowest)
Indicator 2.5	**Life-line electricity and tariff**
	National electricity policy aims at providing minimum lifeline consumption of 1 unit/household/day electricity as a merit good. The indicator of affordable energy in the state is also measured through average tariff rate of power in the slab of 1KW connection load (100 kWh/Month), which may represent affordability of lifeline support to households below the poverty line, which would need to be adequately subsidized.
Methodology	--
Data Source	CEA
Weights	3
	Regressive indicator
Normalization method	(Actual-Lowest)/(Highest-Lowest)

**State-wise data of hours of electricity supplied to domestic consumers and industrial consumers is not available.*

Parameter 3 Clean Energy Initiatives 15%

Indicator 3.1	Clean cooking fuel supply
Description	In order to understand the last-mile connectivity and availability of clean energy source for cooking, the presence of LPG and PNG will be evaluated. Since, the number of households using biomass fuels for cooking is difficult to evaluate, the per capita sale of LPG (kg/capita) and per capita PNG connection (scm/capita) in the state would give us an idea about the same.
Methodology	1. {[State's volume of LPG sales]/[Population]}*Calorific value 2. {[State's volume of PNG sales]/[Population]}* Calorific value Clean cooking fuel supply = 1+2 (convert kcal/capita to toe/capita)
Unit of measurement	toe/capita
Data Source	PPAC, PGRNB, Census
Weights	5
Type of indicator	Progressive indicator
Normalization method	(Actual-Lowest)/(Highest-Lowest)
Indicator 3.2	**Renewable energy penetration (at generation level)**
Description	This will provide a definitive assessment of high RE generation, and drive states to ensure efficient pathways to achieve a low-carbon electricity system.
Methodology	{Total electricity generation from RE sources/Total Electricity generation from all sources}*100
Unit of measurement	Gwh
Data Source	CEA
Weights	5
Type of indicator	Progressive indicator
Normalization method	(Actual-Lowest)/(Highest-Lowest)
Indicator 3.3	**CNG Vehicle Penetration**
Description	In order to understand the penetration as well as the influence of the various schemes/plans, the number of CNG vehicles will be evaluated. This will help us in understanding the role of states in reducing and combating pollution.
Methodology	If CNG infrastructure is available, CNG vehicle penetration = {[State's CNG vehicles registered]/[Total number of vehicles registered]}*100; Otherwise = null
Unit of measurement	Percentage
Data Source	MoRTH
Weights	5
Type of indicator	Progressive indicator
Normalization method	(Actual-Lowest)/(Highest-Lowest)

Parameter 4 Energy efficiency 6%

Indicator 4.1	Energy intensity
Description	Energy Intensity is measured by the quantity of energy required per unit output or activity, so using less energy to produce a product reduces the intensity. The lower the energy intensity of the state, the more energy-efficient the state is, and would rank higher. The states will require technological innovations, sufficient investment, and a good combination of incentives and regulation to reduce their energy intensity. The total energy consumption has been calculated by using state-wise consumption data of LPG, MS, HSD, PNG, CNG, and electricity. The state-wise data for other forms of energy were not available.
Methodology	1. Total energy consumption = Sum of LPG, MS, HSD, PNG, CNG, and electricity consumption 2. Energy intensity = Total energy consumption/GSDP (constant price)
Unit of measurement	kgoe/GDP in 1000 INR
Data Source	MoPNG, PNGRB, CEA, RBI
Weights	2
Type of indicator	Regressive indicator
Normalization method	(Highest-Actual)/(Highest-Lowest)
Indicator 4.2	**Energy Savings in Commercial & Public Buildings**
Description	The indicator will evaluate the reduction in energy consumption in commercial and public buildings, specifically due to the implementation of EE measures
Methodology	Data taken from State Energy Efficiency Index
Unit of measurement	Scores
Data Source	BEE
Weights	2
Type of indicator	Progressive indicator
Normalization method	(Actual-Lowest)/(Highest-Lowest)
Indicator 4.3	**Industrial energy savings in kWh/ktoe specifically due to implementation of EE/EC measures**
Description	The indicator will evaluate the energy savings (kWh/ktoe) in industrial energy use, specifically due to energy efficiency/energy conservation measures.
Methodology	Data taken from State Energy Efficiency Index
Unit of measurement	Scores
Data Source	BEE
Weights	2
Type of indicator	Progressive indicator
Normalization method	(Actual-Lowest)/(Highest-Lowest)

Parameter 5 Environmental Sustainability 12%

Indicator 5.1	Emission intensity
Description	Emission intensity is the volume of emissions per unit of GDP. The state should aim at reducing emission intensity, and target that less pollution is being created per unit of GDP. The state-wise consumption data of LPG, MS, HSD, PNG, CNG, coal and respective emission factors[42] and conversion factors[43] has been used for calculation. The state-wise data for other forms of energy were not available.
Methodology	Energy source: LPG, MS, HSD, PNG, CNG and coal consumption 1. CO2 Emissions (tonnes) = ∑(Energy sourcei * Emission factor) 2. CH4 Emissions (tonnes) = ∑(Energy sourcei * Emission factor) 3. N2O Emissions (tonnes) = ∑(Energy sourcei * Emission factor) 4. CO2eq Emissions (tonnes) = CO2 Emissions + (CH4 Emissions * conversion factor) + (N2O Emissions*conversion factor) 5. Emission intensity = CO2eq Emissions/GSDP (constant)
Unit of measurement	kgCO2eq/GSDP in 1000 INR
Data Source	CEA, MoPNG, PPAC, PGRNB, RBI
Weights	4
Type of indicator	Regressive indicator
Normalization method	(Highest-Actual)/(Highest-Lowest)
Indicator 5.2	**Utilisation of RE potential**
Description	The indicator will measure the State's effort to achieve about 40 per cent cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030. As of July 2021, India had 98.8 GW of installed renewable energy capacity.
Methodology	(RE installed capacity/RE potential)*100
Unit of measurement	Percentage
Data Source	CEA, MNRE
Weights	2
Type of indicator	Progressive indicator
Normalization method	(Actual-Lowest)/(Highest-Lowest)

42 https://unfccc.int/sites/default/files/resource/INDIA_%20BUR-3_20.02.2021_High.pdf; https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf

43 http://www.ercevolution.energy/ipcc-sixth-assessment-report/

Indicator 5.3	Percentage change in forest cover
Description	The Total Forest Cover (TFC) of India is 712,249 square kilometres (sq km) according to the biennial assessment of India State of forest Report 2019 (ISFR, 2019). India has set a target of bringing 33 percent of its geographical area under forest cover. The TFC of India in 2019 is 21.67 percent of the total geographical area (TGA) of the country.
Methodology	Percentage change in forest cover since 2005.
Unit of measurement	Percentage change
Data Source	India State of Forest Report 2019
Weights	4
Type of indicator	Progressive indicator
Normalization method	(Actual-Lowest)/(Highest-Lowest)
Indicator 5.4	**Forest carbon stock**
Description	Very dense forests, which absorb maximum carbon dioxide from the atmosphere, increased by a mere 1.14 % between 2017 and 2019, according to the India State of Forest Report 2019 (ISFR, 2019). This indicator has been incorporated to check the State's efforts to increase its forest carbon stock.
Methodology	--
Unit of measurement	Per ha carbon stock in tonnes
Data Source	India State of Forest Report 2019
Weights	2
Type of indicator	Progressive indicator
Normalization method	(Actual-Lowest)/(Highest-Lowest)

Parameter 6 New Initiatives 12%

Indicator 6.1	EV Penetration
Description	In order to understand the penetration as well as the influence of the various schemes/plans, the number of EV vehicles will be evaluated. This will help us in understanding the role of states in reducing and combating pollution.
Methodology	[State's EV & Hybrid Registered number]/[Total number of vehicles registered] * 100
Unit of measurement	Percentage
Data Source	MoRTH
Weights	4
Type of indicator	Progressive indicator
Normalization method	(Actual-Lowest)/(Highest-Lowest)

Indicator 6.2	Availability of Charging Infrastructure for Electric Mobility
Description	The availability of adequate charging stations is important to promote EV penetration.
Methodology	1. If EV>0, (No. of charging stations/EV vehicles)*100 Otherwise = null
Unit of measurement	Percentage
Data Source	CEA
Weights	4
Type of indicator	Progressive indicator
Normalization method	(Actual-Lowest)/(Highest-Lowest)
Indicator 6.3	**Proportion of consumers with smart meter**
Description	Advanced Metering Infrastructure (AMI) facilitates monitoring and measurement of consumer information through Smart Meters installed at customer premises. Smart meters will also enable Time of Day (ToD) and Critical Peak Pricing (CPP)/Real-Time Pricing (RTP) rate metering and monitoring based on energy consumption.
Methodology	1. State-wise cumulative numbers of smart meters installed/State-wise total no. of consumers
Unit of measurement	Percentage
Data Source	CEA
Weights	4
Type of indicator	Progressive indicator
Normalization method	(Actual-Lowest)/(Highest-Lowest)

List of progressive and regressive indicators

Indicators	Type of indicator
Debt equity ratio	Regressive indicator
AT&C losses	Regressive indicator
ACS-ARR gap	Regressive indicator
T&D losses	Regressive indicator
Implementation of ToD/ToU Tariff	Progressive indicator
Implementation of Direct Benefit Transfer	Progressive indicator
Open Access Charges	Regressive indicator
Regulatory Assets	Regressive indicator
Complexity of Tariff	Regressive indicator
Per capita energy consumption	Progressive indicator

Indicators	Type of indicator
Hours of electricity supplied (industry)	Progressive indicator
Hours of electricity supplied (Agriculture)	Progressive indicator
Cross-subsidization	Regressive indicator
Life-line electricity and tariff	Progressive indicator
Clean cooking fuel supply	Progressive indicator
Renewable energy penetration	Progressive indicator
CNG vehicle penetration	Progressive indicator
Energy intensity	Regressive indicator
Energy Savings in Commercial & Public Buildings	Progressive indicator
Industrial energy savings	Progressive indicator
Emission intensity	Regressive indicator
Utilisation of RE potential	Progressive indicator
Percentage change in forest cover	Progressive indicator
Forest carbon stock	Progressive indicator
EV penetration	Progressive indicator
Availability of charging infrastructure for electric mobility	Progressive indicator
Proportion of consumers with smart meters	Progressive indicator

ANNEXURE 4: STATES WITH NULL VALUES FOR ALL INDICATORS

Indicators	States with Null Values
Debt equity ratio	A&N, Arunachal Pradesh, Chandigarh, D&D, Goa, J&K, Lakshadweep, Mizoram, Nagaland, Sikkim
AT&C losses	None
ACS-ARR gap	None
T&D losses	None
Implementation of ToD/ToU Tariff	None
Implementation of Direct Benefit Transfer	None
Open Access Charges	A&N, Arunachal Pradesh, Delhi, J&K, Lakshadweep, Manipur, Mizoram, Nagaland, Rajasthan, Sikkim, Telangana, Tripura, West Bengal
Regulatory Assets	None
Complexity of Tariff	None
Per capita energy consumption	None
Hours of electricity supplied (industry)	A&N, Arunachal Pradesh, Assam, D&N, D&D, Lakshadweep, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura
Hours of electricity supplied (Agriculture)	A&N, Arunachal Pradesh, Assam, D&N, D&D, J&K, Lakshadweep, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura
Cross-subsidization	None
Life-line electricity and tariff	None
Clean cooking fuel supply	None
Renewable energy penetration	None
CNG vehicle penetration	Andhra Pradesh
Energy intensity	D&N, D&D, Lakshadweep
Energy Savings in Commercial & Public Buildings	None
Industrial energy savings	None
Emission intensity	D&N, D&D, Lakshadweep
Utilisation of RE sources	D&N, D&D
Percentage change in forest cover	None
Forest carbon stock	None
EV penetration	Andhra Pradesh, Lakshadweep, Madhya Pradesh, Telangana
Availability of charging infrastructure for electric mobility	A&N, Andhra Pradesh, Arunachal Pradesh, Chandigarh, D&N, D&D, J&K, Lakshadweep, Madhya Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Sikkim, Telangana, Tripura, Uttar Pradesh
Proportion of consumers with smart meters	None

ANNEXURE 5: CORRELATION MATRIX OF ALL THE INDICATORS

	Debt equity ratio	AT&C losses	ACS-ARR gap	T&D losses	Implementation of ToD/ToU Tariff	Implementation of Direct Benefit Transfer	Open Access Charges	Regulatory Assets	Complexity of Tariff	Per capita energy consumption	Hours of electricity supplied (industry)	Hours of electricity supplied (Agriculture)	Cross-subsidization	Life-line electricity and tariff	Clean cooking fuel supply	Renewable energy penetration	CNG vehicle penetration	Energy intensity	Energy Savings in Commercial & Public Buildings	Industrial energy savings	Emission intensity	Utilisation of RE potential	Percentage change in forest cover	Forest carbon stock	EV penetration	Availability of charging infrastructure for electric mobility	Proportion of consumers with smart meters
Debt equity ratio	1																										
AT&C losses	0.12	1																									
ACS-ARR gap	-0.03	0.17	1																								
T&D losses	0.03	0.7	-0.07	1																							
Implementation of ToD/ToU Tariff	0.13	-0.37	-0.36	-0.19	1																						
Implementation of Direct Benefit Transfer	0	0	0	0	0	1																					
Open Access Charges	-0.15	0.08	0.25	-0.04	0.13	0	1																				
Regulatory Assests	0.24	-0.21	-0.1	-0.17	0.39	0	0.25	1																			
Complexity of Tariff	0.09	-0.11	-0.19	-0.06	0.53	0	0.15	0.53	1																		
Per capita energy consumption	0.01	-0.48	-0.02	-0.37	-0.06	0	-0.42	-0.05	-0.13	1																	
Hours of electricity supplied (industry)	0	0	0	0	0	0	0	0	0	0	0																
Hours of electricity supplied (Agriculture)	-0.38	0.08	-0.16	-0.33	-0.14	0	0.29	0.05	-0.16	-0.12	0	1															
Cross-subsidization	-0.01	-0.23	0.14	-0.38	-0.01	0	-0.01	0.11	-0.24	0.24	0	0.23	1														
Life-line electricity and tariff	0.23	0.25	-0.17	0.25	0.18	0	-0.01	0.2	0.31	-0.45	0	-0.26	-0.61	1													
Clean cooking fuel supply	0.03	-0.66	-0.04	-0.47	0.24	0	-0.02	0.25	-0.1	0.62	0	0.15	0.25	-0.41	1												
Renewable energy penetration	0.08	-0.53	-0.11	-0.52	-0.1	0	-0.12	-0.11	-0.21	0.52	0	0.1	0.28	-0.38	0.48	1											
CNG vehicle penetration	0.29	-0.25	-0.17	-0.11	0.39	0	-0.22	0.5	0.12	0.13	0	-0.24	0.16	0.05	0.31	-0.12	1										
Energy intensity	0.07	0.1	0.28	-0.08	0.22	0	-0.16	-0.28	0.02	0.28	0	-0.25	0.29	-0.05	-0.11	-0.05	-0.19	1									
Energy Savings in Commercial & Public Buildings	0.13	-0.23	-0.08	-0.18	0.27	0	0.31	0.34	0.24	0.02	0	-0.42	0.13	0.03	0.18	-0.08	0.18	0.02	1								
Industrial energy savings	-0.08	-0.25	-0.18	-0.15	0.33	0	0	0.03	0.33	-0.09	0	-0.38	-0.22	0.14	-0.01	-0.17	0.04	-0.01	0.53	1							
Emission intensity	0.05	0.21	-0.09	-0.01	0.19	0	-0.26	-0.08	0.15	-0.11	0	0.06	0.18	0.16	-0.43	-0.22	-0.16	0.51	-0.04	-0.03	1						
Utilisation of RE potential	0.21	-0.34	-0.13	-0.14	0.13	0	0.15	-0.04	-0.1	0.09	0	0.17	0.01	-0.11	0.47	0.53	-0.01	0.01	-0.05	-0.1	-0.09	1					
Percentage change in forest cover	-0.03	-0.44	-0.14	-0.36	0.01	0	-0.34	0.06	0.04	0.84	0	0.34	0.11	-0.26	0.52	0.49	-0.04	0.14	-0.03	-0.03	-0.06	0.48	1				
Forest carbon stock	-0.54	0.35	0.45	0.3	-0.59	0	0.09	-0.19	-0.23	-0.09	0	0.38	-0.08	-0.26	-0.04	-0.11	-0.35	-0.23	-0.34	-0.23	-0.32	-0.1	-0.2	1			
EV penetration	0.06	-0.14	-0.28	-0.17	0.26	0	-0.02	0.34	-0.07	-0.06	0	0.42	0.19	0.08	0.27	0.11	0.52	-0.42	0.03	-0.08	-0.23	0.17	0.03	-0.19	1		
Availability of charging infrastructure for electric mobility	-0.4	-0.09	-0.16	-0.26	-0.52	0	0.38	-0.03	-0.11	-0.02	0	0.18	-0.09	0.1	-0.05	-0.07	-0.11	-0.18	-0.07	-0.2	-0.12	-0.14	-0.12	0.62	-0.16	1	
Proportion of consumers with smart meters	0.22	0.02	-0.1	-0.09	0.21	0	0.32	0.17	-0.12	-0.03	0	0.23	0.28	-0.03	0.16	-0.21	0.45	0.05	0	-0.18	-0.13	-0.07	-0.01	-0.25	0.53	-0.14	1

ANNEXURE 6: RAW DATA OF EACH STATE FOR ALL INDICATORS

States/UTs	DISCOM'S PERFORMANCE									ACCESS, AFFORDABILITY, AND RELIABILITY OF ENERGY				
	Debt equity ratio	AT&C losses (Percentage)	ACS-ARR gap (INR/kWh)	T&D losses (Percentage)	Implementation of ToD/ToU Tariff	Implementation of Direct Benerfit Transfer	Open Access Charges (Rs./kWh)	Regulatory Assests (Rs. In crores)	Complexity of Tariff (Numbers)	Per capita energy consumption (kgoe/capita)	Hours of electricity supplied (industry) (Hours)	Hours of electricity supplied (Agriculture) (Hours)	Cross-subsidisation (INR/kWh)	Life-line electricity and tariff (INR/kWh)
A&N	Null	22.7	19.6	7.5	0	0	Null	0	15	337.5	Null	Null	2.9	2.3
Andhra Pradesh	-1.4	10.8	0.12	17	3	0	1.3	0	104	197.7	24	7	3	2.1
Arunachal Pradesh	Null	45.8	4.92	47.1	0	0	Null	0	27	220.3	Null	Null	-0.1	4
Assam	0.3	23.4	-0.14	28	1	0	1.4	0	31	92	Null	Null	-0.7	6.1
Bihar	0.4	40.4	0.92	31.1	2	0	1.6	0	37	71.8	24	18	0.7	7
Chandigarh	Null	4.6	-0.82	15.3	2	0	1.8	0	17	279	24	24	1.6	3
Chhattisgarh	-1.5	23.7	-0.18	25.9	2	0	1.2	0	54	267	24	18	3.1	3.7
D&D/D&N	0	3.9	-0.2	9.1	0	0	0.2	0	19	1345	Null	Null	2.4	1.6
Delhi	0.9	8.2	0.2	12.5	3	0	Null	23139.5	20	312.7	24	24	5.3	3.4
Goa	Null	14	0.6	11	2	0	1.6	0	34	471.7	24	24	2.7	1.9
Gujarat	0.1	12	-0.1	21.6	2	0	1.4	0	134	399.5	24	8.1	1.1	4
Haryana	5.1	18.2	-0.1	22.6	3	0	0.7	0	42	419.2	24	8.3	1.1	3.7
Himachal Pradesh	-7.5	11.7	-0.02	14.4	0	0	2.1	0	28	276.4	24	24	1.1	4.8
J&K	Null	60.5	2.03	37.3	0	0	Null	0	44	210.9	24	Null	1.4	2
Jharkhand	3.9	37.1	1.3	16.8	0	0	1.2	0	26	151.4	24	20	1.1	6.7
Karnataka	7.1	17.5	0.4	17.3	2	0	1.7	7001.2	74	288.7	24	6.3	1	5.5
Kerala	-3.7	14.5	0.10	14.8	3	0	1.5	0	77	213.8	24	24		4.3
Lakshadweep	Null	14.3	18.2	2.3	0	0	Null	0	14	212.4	Null	Null	4.4	1.6
Madhya Pradesh	-1.6	30.4	0.79	27.3	3	0	1.5	0	128	168.4	24	17	2	5.9
Maharashtra	1.4	20	0.53	21.3	2	0	2	17173.8	171	257.1	24	9	-0.3	6.1
Manipur	0.2	20.3	1.64	34.6	0	0	Null	0	19	117.8	Null	Null	1.1	4.5
Meghalaya		34.3	1.81	40.6	1	0	1.3	0	22	231.2	Null	Null	2.2	4.3
Mizoram	Null	20.7	-1.94	22	0	0	Null	0	19	174.1	Null	Null	0.8	3.6
Nagaland	Null	52.9	5.62	20.5	0	0	Null	0	22	92.8	Null	Null	0.9	5.2
Orissa	-0.8	29	0.34	19.8	2	0	1.1	0	47	223.4	24	24	1.8	2.7
Puducherry	0.4	18.5	1	15.2	2	0	2.5	0	25	385.2	24	24	2.7	1.9
Punjab	0.8	14.4	0.2	16	2	0	0.7	0	76	354.3	24	6	0.7	6.1
Rajasthan	-1.1	29.7	1.5	24.3	2	0	Null	0	36	218.8	24	6.3	-0.3	8.4
Sikkim	Null	28.9	0.6	34.3	0	0	Null	0	36	246.2	Null	Null	2.3	1.8
Tamil Nadu	-1.8	15	2.1	17.4	1	0	1.7	0	39	314.7	24	9	3.6	0.9
Telangana		21.6	1.1	15.3	2	0	2.2	0	80	357.9	24	24	1.9	2.4
Tripura	0.5	37.6	0.43	24.3	1	0	Null	0	31	94.8	Null	Null	0.8	5.3
Uttar Pradesh	3.2	30.1	0.5	22.5	1	0	1.4	210.7	76	129.2	24	20.3	3.2	5.7
Uttarakhand	-3.5	20.4	0.21	20.1	1	0	0.7	0	37	255.8	24	23.6	1.9	3.5
West Bengal	0.9	20.4	0.42	16.4	3	0	Null	18387.7	293	129.7	24	23	0.5	6.3

States/UTs	CLEAN ENERGY INITIATIVES			ENERGY EFFICIENCY			ENVIRONMENTAL SUSTAINABILITY				NEW INITIATIVES		
	Clean cooking fuel supply (toe/ capita)	Renewable energy penetration (Percentage)	CNG vehicle penetration (Percentage)	Energy intensity (kgoe/GDP in 1000 INR)	Energy Savings in Commercial & Public Buildings	Industrial energy savings	Emission intensity (kgCO2eq/ GSDP in 1000 INR)	Utilisation of RE potential (Percentage)	Percentage change in forest cover	Forest carbon stock (Per ha carbon stock in tonnes)	EV penetration (Percentage)	Availability of charging infrastructure for electric mobility (Percentage)	Proportion of consumers with smart meters (Percentage)
A&N	0.037	11.6	0	2.9	0	0	0.008	1.4	1.2	167.2	0	Null	0
Andhra Pradesh	0.028	17.8	Null	2.7	1	1.5	0.014	7.3	10.1	75.3	Null	Null	0
Arunachal Pradesh	0.02	0.2	0.1	1.7	0	0	0.004	1.3	-1.2	157.7	0.2	Null	0
Assam	0.017	0.3	0.1	1.4	0	1	0.005	0.6	2.1	95.4	2.9	0.000	0.002
Bihar	0.016	1.1	0.4	1.9	0	0.5	0.015	2.1	7.4	75.6	1.2	0	0.002
Chandigarh	0.063	100	0.7	1.9	0	0	0.004	397.6	29.6	86	2.5	Null	0
Chhattisgarh	0.014	1	0.1	2.9	0	0	0.077	2.8	-0.6	86.4	0.7	0.000	0
D&D/D&N	0.06	100	1.1	Null	0	0	Null	Null	118.7	80.8	1.4	Null	0
Delhi	0.061	6.6	8.9	1.3	1	0	0.002	10	10.5	63.3	5	0.003	0.040
Goa	0.057	100	0.1	1.9	0	0	0.004	0.6	3.8	113.3	2.2	0	0
Gujarat	0.028	13.9	6.4	2.1	0	2	0.008	5.9	1.8	72.2	0.6	0.003	0.001
Haryana	0.04	4.1	6.2	2.2	0	0	0.008	7.9	-0.2	65.3	1.2	0.000	0.022
Himachal Pradesh	0.031	5.1	0.1	1.7	0	0	0.003	2.6	5.3	163.6	0.8	0.075	0.001
J&K	0.028	2.4	0.1	2.3	0	0	0.003	0.2	4.1	165.2	0.8	Null	0
Jharkhand	0.014	0.1	0.3	2.3	0	0.5	0.046	0.3	4	75.4	0.7	0.012	0
Karnataka	0.034	36.3	0.2	1.7	1	1.5	0.006	9.9	6.6	99.2	1.1	0.018	0.001
Kerala	0.036	12.2	0.4	1.4	0	2.5	0.003	4.3	22.4	100.4	1.1	0.003	0.000
Lakshadweep	0.011	100	0	Null	0	0	Null	2.5	4.3	87	Null	Null	0
Madhya Pradesh	0.017	6.1	0	2.4	0	0	0.033	6.3	-0.4	75.9	Null	Null	0.007
Maharashtra	0.034	9.6	4.4	1.6	2	1.5	0.01	5.9	0.3	86.8	1	0.011	0
Manipur	0.018	1.2	0.1	1.6	0	0	0.004	0.1	-0.7	106.1	1.3	Null	0
Meghalaya	0.011	5.9	0.1	2.7	0	0	0.007	0.8	-0.5	105.8	0.5	Null	0
Mizoram	0.029	22.1	0.1	1.1	0	0	0.003	0.5	-3.2	87	0.2	Null	0
Nagaland	0.015	29.6	0	1.3	0	0	0.003	0.5	-8.7	108.6	0.6	Null	0
Orissa	0.016	1.6	0.4	2.4	0	1	0.042	1.6	5.9	83.7	0.2	Null	0.000
Puducherry	0.042	1.6	0.1	2.9	0	0	0.006	1.5	24.8	76.9	0.8	0	0.068
Punjab	0.041	9.6	1	2.6	1	1	0.011	20.2	11.4	72.1	0.4	0	0
Rajasthan	0.024	19.7	0.2	2.5	1	1.5	0.015	3.6	3.9	65.1	0.7	0	0.002
Sikkim	0.032	0.6	0.1	0.9	0	0	0.002	1.1	-0.5	171.1	0.1	Null	0
Tamil Nadu	0.035	19	0	1.8	2	2.5	0.01	16.2	13.1	82.2	0.7	0	0
Telangana	0.033	11.6	0	1.8	2	1	0.014	8.9	9.7	73.7	Null	Null	0.001
Tripura	0.019	0.5	4.8	1	0	0	0.002	1.2	-5.5	98.5	5.9	Null	0.051
Uttar Pradesh	0.021	4	1.3	2.6	1	1.5	0.021	12.3	3.3	78.1	1.8	Null	0.035
Uttarakhand	0.036	6.8	0.2	1.5	0	2	0.004	3.6	-0.8	152.7	2.6	0.000	0
West Bengal	0.023	2	0.1	1.6	0	0.5	0.017	6.5	30.4	87.4	1.5	0.000	0.001

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