डॉ. वी.के. सारस्वत
Dr. V.K. Saraswat
सदस्य
Member
Tele : 23096566, 23096567
Fax : 23096603
E-mail : vk.saraswat@gov.in

सत्यमेव जयते

भारत सरकार
नीति आयोग, संसद मार्ग
नई दिल्ली - 110 001
Government of India
National Institution for Transforming India
NITI Aayog, Parliament Street,
New Delhi - 110 001

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

अमिताभ कांत
Amitabh Kant
मुख्य कार्यकारी अधिकारी
Chief Executive Officer

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Government of India
NATIONAL INSTITUTION FOR TRANSFORMING INDIA
NITI Aayog, Parliament Street,
New Delhi-110001
Tel. : 23096576, 23096574 Fax : 23096575
E-mail : ceo-niti@gov.in, amitabh.kant@nic.in

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.

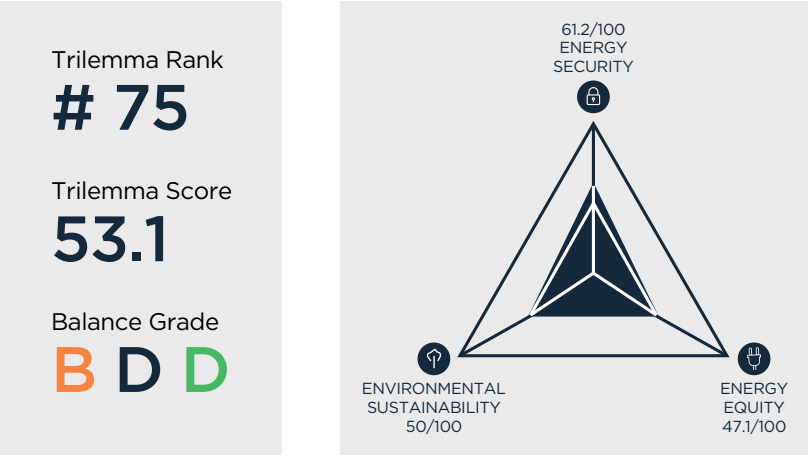

Fig 2.1: *India's Position (Trilemma Rank, score and balance)*

Source: *World Energy Trilemma Index, 2021*

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