सत्यमेव जयते

RENEWABLE ENERGY STATISTICS 2024-25

Government of India
MINISTRY OF NEW AND RENEWABLE ENERGY
www.mnre.gov.in

प्रल्हाद जोशी
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सत्यमेव जयते

उपभोक्ता मामले, खाद्य और सार्वजनिक वितरण तथा
नवीन और नवीकरणीय ऊर्जा मंत्री
भारत सरकार

MINISTER OF CONSUMER AFFAIRS
FOOD & PUBLIC DISTRIBUTION AND
MINISTER OF NEW & RENEWABLE ENERGY
GOVERNMENT OF INDIA

Message

Under the visionary leadership of Hon'ble Prime Minister Shri Narendra Modi, India has emerged as one of the fastest-growing nations in the global renewable energy landscape. With strong political will, clear policy direction, and ambitious climate commitments, India currently ranks fourth globally in terms of total renewable energy installed capacity. The nation has set a bold target of achieving 500 GW of non-fossil fuel-based installed capacity by 2030, an integral part of its Nationally Determined Contributions (NDCs) under the Paris Agreement and its overarching commitment to becoming a Net-Zero nation by 2070. To realize this vision, the Government of India has introduced and implemented several transformative reforms and strategic initiatives across key renewable energy sectors including solar, wind, bio power, small hydro power and green Hydrogen.

Among the flagship schemes driving this energy transition are PM-Surya Ghar Muft- Bijli Yojana, the world's largest domestic rooftop solar initiative, is reshaping India's energy landscape with a bold vision to supply solar power to one crore households by March 2027 and thus promoting both sustainability and energy affordability at the grassroots level , Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM), which promotes the adoption of solar energy in the agricultural sector by supporting the installation of solar pumps and grid-connected renewable power plants on barren or agricultural lands, thus empowering rural communities. India achieved the historic milestone of 100GW of Solar Power Capacity in January 2025 and now India secured 3rd position globally in solar sector both in installed capacity and electricity generation .

The publication of "Renewable Energy Statistics 2024–25", the second of its series presents accurate, reliable, and up-to-date statistical insights that reflect the country's transition from fossil-fuel-based energy to renewable alternatives. It provides detailed data on installed capacity and energy generation at national, state, and international levels; sector-specific performance metrics across solar, wind, hydro, and bio power; and trend analyses that track India's progress over the years.

(Pralhad Joshi)

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सत्यमेव जयते

SHRIPAD NAIK
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MESSAGE

Energy has long been a cornerstone of human progress, driving industrial development, enhancing quality of life, and enabling innovation. For a rapidly developing nation like India, energy continues to be a foundational pillar of economic growth. As the population expands and the economy accelerates, the demand for energy is expected to rise significantly. In response to this challenge, the Government of India has adopted a dual approach: ensuring access to affordable and reliable energy while simultaneously addressing the urgent global imperative of climate change. At the heart of this strategy lies the transition towards clean and sustainable energy sources, with renewable energy playing a transformative role in powering the nation's future.

Recognizing the immense renewable energy potential of the country, the government has introduced targeted policies and strategic investments to unlock this capacity and foster a shift to a greener energy mix. A wide range of transformative reforms across the renewable energy ecosystem, including solar, wind, small hydro, bio power, and green hydrogen, have created a favourable landscape for private sector participation, technological advancement, and foreign investment. These efforts are rapidly reshaping India's energy landscape and positioning it as a global leader in the clean energy transition. One of the clearest indicators of this transformation is the rising contribution of solar and wind power in India's energy portfolio. As on March 2025, renewable energy made up 46.32% and non-fossil accounted for 48.04% of India's total installed power generation capacity highlighting the impressive scale and momentum of the country's energy transition. During 2024–25 alone, India added a record 28.73 GW installed capacity under renewable energy sector, far surpassing the 3.72 GW added from non-renewable sources.

To support informed decision-making and data-driven policy formulation, *Renewable Energy Statistics 2024–25*, second in series offers a comprehensive and integrated database of the sector. This resource provides detailed insights into installed capacity and energy generation, with national, state-wise, and international comparisons, and tracks sector-specific trends across various Renewable Energy sources.

(Shripad Naik)

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सत्यमेव जयते

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भारत सरकार
नवीन और नवीकरणीय ऊर्जा मंत्रालय
Government of India
Ministry of New and Renewable Energy

FOREWORD

Renewable energy has emerged as a fundamental pillar in India's shift towards a cleaner, more sustainable, and energy-secure future. By offering a viable alternative to traditional fossil fuels, it not only addresses pressing environmental challenges but also underpins long-term economic growth and energy independence. Ministry of New and Renewable Energy (MNRE) is spearheading this transformation, actively shaping the future through development, implementation, and promotion of innovative renewable energy solutions. Through strategic planning and visionary leadership, the Ministry has established a robust foundation to support India's ambitious goal of achieving 500 GW of non-fossil fuel-based installed capacity by 2030. Policy interventions and sector-specific initiatives across solar, wind, small hydro, biomass, and green hydrogen of the Ministry have fostered a vibrant ecosystem that encourages investment, accelerates technology adoption, and generates employment, all while sustainably meeting the nation's rising energy demands.

As a result of the sustained efforts, India's renewable energy sector has experienced remarkable growth, with total installed capacity under renewable sector reaching 220.10 GW as on 31st March 2025. India's continued advancement is particularly significant, maintaining its position as the world's fourth-largest in renewable energy installed capacity for the sixth consecutive year, showcasing the nation's steadfast commitment to the global energy transition and its leadership role in clean energy development. As India advances towards its clean energy objectives, it reaffirms its commitment to leading the global transition towards a sustainable, inclusive, and resilient energy future. While the journey remains challenging, continued innovation, collaboration, and resolve make the vision of a Net-Zero India by 2070, an achievable goal.

To promote transparency and support evidence-based policy, Renewable Energy Statistics 2024-25, which is second of its series offers detailed data on installed capacity and electricity generation, state-level performance comparisons, sector-specific analyses of solar, wind, hydro, bio power and global energy transition trends. This publication will serve as an indispensable tool for policymakers, planners, academics, researchers, and industry professionals, empowering them to shape India's renewable energy future.

I would like to extend my heartfelt appreciation to the dedicated team of the Statistics Division, led by Smt. Mini Prasannakumar, Deputy Director General, for their work in compiling this data-rich publication.

(Santosh Sarangi)

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Deputy Director General
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PREFACE

India has emerged as a global leader in renewable energy among major economies, showcasing unwavering commitment and sustained momentum in its transition towards a cleaner and more sustainable energy future. Over the past decade, the country has witnessed a remarkable rise in its installed renewable energy capacity from 81.22 GW of 31st March 2015 to 220.10 GW by 31st March 2025. This extraordinary growth reflects India's policy resolve and its success in fostering a supportive ecosystem for clean energy development.

Notably, the contribution of renewable sources such as solar, wind, bio-power, and small hydro power to total electricity generation in the country has grown from 5.58% of 2014–15 to 13.98 % by 2024–25, reflecting the consistent upward trajectory in green energy adoption. As India moves closer to its ambitious target of achieving 500 GW of non-fossil fuel-based capacity by 2030, and its long-term vision of attaining net-zero emissions by 2070, the need for accurate, comprehensive, and transparent data becomes paramount for its policy formulation. In this context , Ministry of New and Renewable Energy (MNRE) is proud to present the second edition of '*Renewable Energy Statistics 2024–25*' which provides a detailed, evidence-based account of India's renewable energy progress, offering valuable insights at national, state, and international levels.

The compilation draws from several authoritative sources, including the International Renewable Energy Agency (IRENA), whose *Renewable Energy Statistics – 2025* served as vital for global comparisons, and the Central Electricity Authority (CEA), Ministry of Power, for its regular updates on installed capacity and electricity generation. This important document is the result of dedicated collaboration across various divisions within the Ministry, and special recognition is due to Ms. Veena Singh, Assistant Director, and Ms. Komal, Stenographer (Grade D), of the Statistics Division, whose hard work and dedication were instrumental in its completion. As we continue to scale new heights in clean energy deployment, this report stands both as a testament to India's progress and a guiding tool for shaping its sustainable energy future.

Feedback and suggestions are welcome to help enhance and refine future editions.

(Mini Prasannakumar)

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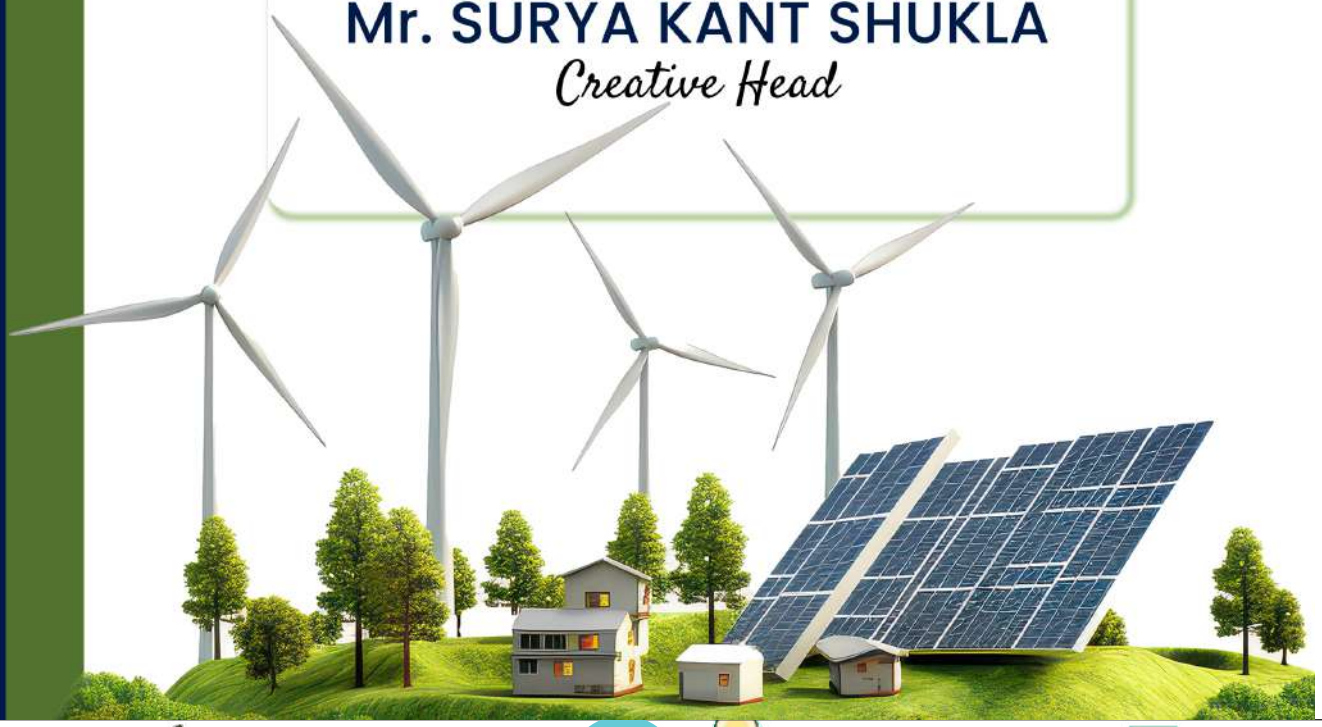

Contents

SCOPE & COVERAGE

Scope: ***Renewable Energy Statistics 2024-25*** presents a comprehensive overview of the renewable energy sector through detailed statistics on electricity installed capacity and electricity generation. The publication covers developments at national, state, and international levels, offering insights into the current status and growth of renewable energy sources under electricity sector.

Coverage: At national and state levels, the analysis is limited to installed capacity and energy generation from utilities. Pumped storage is included under large hydro. For international statistics, International Renewable Energy Agency (IRENA) includes electricity installed capacity and electricity generation from both utility and non-utility power plants in their publication. Unlike national classification, IRENA excludes pumped storage from hydropower, considering only "renewable hydro" as part of the renewable energy .

Data Sources:

- **Non-Renewable Energy and Large Hydro:** Installed capacity data is sourced from the National Power Portal of the Central Electricity Authority (CEA), while energy generation figures have been taken from the website of CEA, Ministry of Power.
- **Renewable Energy (Solar, Wind, Bio, and Small Hydro):** Installed capacity data is from Ministry of New and Renewable Energy (MNRE).
- **International Data:** Installed capacity and energy generation figures are drawn from IRENA's publication *Renewable Energy Statistics 2025*. Share of Renewable energy (rounded to two decimal places) is used to estimate the electricity installed capacity and electricity generation from non-renewable sources for each country.

Reference Period: National data on installed capacity and energy generation is reported on a financial year basis (April–March), while international data follows the calendar year (January–December).

INTRODUCTION

Energy is the heartbeat of our planet, intricately linked to the climate challenge we face today. The rapid growth of the global population and advances in civilization have resulted in an exponential growth in energy demand. Despite the well-known environmental and health risks posed by fossil fuels, our dependence on them persists.

To address the growing energy demand and mitigate climate change risks, transitioning from fossil fuels to renewable energy is crucial. To accomplish this objective, India's power sector is also undergoing a transformative journey, brimming with enthusiasm for tapping into Renewable Energy from diverse renewable sources.

In line with its mandate, Ministry of New & Renewable Energy has launched multiple initiatives to encourage the widespread adoption and production of renewable energy technologies, with the goal of accelerating India's shift to clean energy and reducing reliance on fossil fuels. PM-Surya Ghar: Muft Bijli Yojana stands as the world's largest domestic rooftop solar initiative, targeting the electrification of one crore households with solar energy by March 2027. This transformative scheme not only promotes sustainability but also enhances energy affordability by empowering millions of families to generate clean power at the grassroots level. Complementing this effort, the Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM) supports the deployment of solar pumps and grid-connected renewable power plants on barren and agricultural lands, strengthening rural livelihoods and reducing the agricultural sector's reliance on fossil fuels. In parallel, National Green Hydrogen Mission envisions India as a global leader in green hydrogen production and utilization. As a clean energy vector, green hydrogen holds immense potential to decarbonize hard-to-abate sectors such as fertilizer manufacturing, steel production, heavy transport, and shipping. Together, these flagship initiatives are accelerating India's transition towards a sustainable, affordable, and inclusive clean energy future. During 2024–25, Ministry rolled out a series of progressive initiatives to accelerate India's clean energy transition while fostering inclusive and sustainable growth. A key milestone was the launch of the Viability Gap Funding (VGF) Scheme for 1,000 MW offshore wind energy projects. Ministry also introduced Model Solar Village initiative under PM-Surya Ghar: Muft Bijli Yojana, aiming to establish one solar-powered model village in every district. To advance green hydrogen adoption, a dedicated scheme was launched to support pilot projects for hydrogen production and utilization in residential and community settings. In a significant move to empower tribal populations, MNRE unveiled the New Solar Power Scheme for Tribal and PVTG Habitations/Villages under PM JANMAN and DA JGUA , targeting electrification in remote areas. Additionally, National Bioenergy Programme was revised to include updated Central Financial Assistance (CFA) rates for pellet and briquette manufacturing plants, promoting biomass utilization and strengthening the country's renewable energy mix.

The Ministry's effective policy measures have led to significant progress, reflected in the rise of renewable energy capacity installations and increased green energy generation. This publication highlights the transformative evolution of the renewable energy sector across national, state, and international levels.

HIGHLIGHTS

ALL INDIA STATUS

Installed Capacity:

- As on 31st March 2025, India's total installed power generation capacity reached to 475.21 GW, reflecting a substantial increase of 72.18% from 275.99 GW of 2014–15. A major highlight of this transformation has been the rapid expansion of installed capacity under renewable energy sources , which recorded a growth of 170.69% over the decade. Within this segment, solar, wind, bio power, and small hydro power sources experienced a combined growth of over 330%, showcasing the country's strong commitment to clean energy.

- The year 2024–25 marked a significant milestone, with annual addition of installed capacity under renewable energy sector hitting a record of 29.53 GW, far outpacing 3.72 GW added by non-renewable sources. This was accompanied by a sharp rise in the annual growth rate of installed capacity under renewable energy sector , which reached 15.50%, compared to just 1.5% under non-renewable energy sector.

- At the end of 2024–25, installed capacity under renewable energy accounted for 46.32% of India's total electricity installed capacity, while non-fossil sources collectively contributed 48.04%.

- As per *Renewable Energy Statistics 2025* published by International Renewable Energy Agency (IRENA), India ranks 4th globally in total renewable installed capacity and holds the 3rd position in solar installed capacity, reflecting its strong international standing in clean energy.

Electricity Generation:

- During 2024–25, India's total electricity generation reached 1824.12 Billion Units (BU), marking a substantial increase of 65.02% from 1105.38 BU of 2014–15. A key driver of this growth has been the rising share of renewable energy in the electricity generation which generated 403.64 BU, accounting for 22.13% of the total electricity generated in the country.

- Electricity generation from wind, solar, small hydro, and bio-energy reached 255.01 Billion Units (BU), during 2024-25 , a sharp rise from 61.72 BU of 2014–15. Solar power has emerged as the leading contributor, with its generation growing at a compound annual growth rate (CAGR) of 41.13% since 2014–15.

- As per *Renewable Energy Statistics 2025* by IRENA, India ranks 5th worldwide in total electricity energy generation from renewable energy sources and holds the 3rd position in electricity generation from solar power.

STATE WISE STATUS

Installed capacity:

- As on 31st March 2025, Rajasthan, Gujarat, Tamil Nadu, Karnataka, and Maharashtra are the top 5 states in Renewable Energy installed capacity, collectively contributed 63.19% of country's total electricity installed capacity under renewable energy sector.
- Rajasthan, Gujarat, Maharashtra, Tamil Nadu, and Karnataka accounted for 73.17% of the installed capacity under solar power sector of the country.
- Wind energy was highly concentrated in the states of Gujarat, Tamil Nadu, Karnataka, Maharashtra, Rajasthan, Andhra Pradesh, and Madhya Pradesh contributing about 99.59% of total wind power installed capacity.
- Bioenergy sector was mainly driven by Maharashtra, Uttar Pradesh, Karnataka, and Tamil Nadu, which together accounted for 71.37% of installed capacity under bioenergy sector.
- Installed capacity under Large hydro power was primarily contributed by Himachal Pradesh, Uttarakhand, Karnataka, Jammu & Kashmir, Maharashtra, and Telangana, making up 57.66% of the total installed capacity of the sector.

Electricity Generation during 2024-25:

- During 2024–25, Rajasthan, Gujarat, Karnataka, Himachal Pradesh, Tamil Nadu and Maharashtra emerged as the leading states in generation of electricity from renewable sources. Together, they accounted for approximately 65% of the country's total generation of electricity from renewable sources.
- Rajasthan, Gujarat, Tamil Nadu, Karnataka, Andhra Pradesh and Maharashtra led solar power generation in India, together accounting for over 81% of the nation's total electricity generation from solar power.
- Gujarat, Tamil Nadu, Karnataka, Maharashtra, Andhra Pradesh and Rajasthan emerged as the key players in wind energy, collectively producing about 94% of India's total electricity generation from wind power.
- In the bioenergy segment, Maharashtra, Uttar Pradesh, Karnataka, Chhattisgarh, West Bengal and Punjab together accounted for approximately 78% of the country's renewable energy generation from bio-based sources.
- Himachal Pradesh, Jammu & Kashmir, Uttarakhand and Karnataka were the top 4 contributors in the electricity generation from large hydro power , collectively producing 56% of India's total electricity generation from the source.

Top 5 states in India in electricity Installed Capacity under Renewable Energy:

I. RAJASTHAN

- As on 31st March 2025, Rajasthan led the country in renewable energy installed capacity, reaching 34.14 GW, which accounted for 15.51% of the total installed capacity . Over the past seven years, state's renewable energy capacity has grown 4.68 times, significantly outpacing the 1.21 fold increase in non-renewable energy installed capacity. Notably, in 2021-22, installed capacity under renewable energy sector in Rajasthan surpassed that of non-renewable sources for the first time.

- Share of renewable energy in Rajasthan's total electricity installed capacity has risen sharply, from 40.51% of 2017-18 to 72.45% by 2024-25. Within the renewable energy segment, solar power continues to dominate, contributing 82.86% of the installed capacity, followed by wind power with a share of 15.26%.

- Rajasthan also ranked as the top state in electricity generation from renewable energy sources during 2024-25, producing 57.35 Billion Units (BU), representing 14.21% of the country's electricity generation from Renewable Energy sources. The state remained a leader in electricity generation from solar, wind, biopower, and small hydro power sources also with a combined electricity generation of 56.45 BU, accounting for 22.14% of the country's electricity generation from these sources.

- During 2024-25, electricity generation from renewable sources contributed 43.86% to Rajasthan's overall power generation. Of this, solar power was the major contributor with 85.61%, while wind power accounted for 12.10%.

II. GUJARAT

- As on 31st March 2025, Gujarat ranked as the second-largest contributor to renewable energy installed capacity in India, with a cumulative installation of 33.39 GW, accounting for 15.17% of the total electricity installed capacity of the country. During 2017-18 to 2024-25, state's renewable energy installed capacity expanded by nearly 3.58 times, compared to a modest 1.06-fold increase under non-renewable installed capacity. A significant milestone was achieved in 2023-24, when renewable energy installed capacity surpassed that of non-renewable sources for the first time.

- Share of installed capacity under renewable energy sector in Gujarat's total installed capacity grew substantially from 28.45% of 2017-18 to 57.36% by 2024-25. Within the renewable energy electricity installed capacity as on 31st March 2025 , solar power leads with a 55.39% share, followed by wind power having 37.96%.

- In 2024-25, Gujarat emerged as the second-highest electricity generator under renewable energy in the country, producing 52.00 Billion Units (BU), representing 12.88% of India's total electricity generation from renewable energy sources. The state also held the second position in electricity generation from solar, wind, bioenergy and small hydro power sources, collectively producing 45.97 BU and contributing 18.03% to the national total from these technologies.

- Renewable sources contributed 32.97% of Gujarat's total electricity generation during 2024-25. Within this, wind power accounted for the largest share with 48.92%, followed by solar power having 38.88%.

III. TAMIL NADU

- As on 31st March, 2025, Tamil Nadu ranked third in the country in terms of renewable energy installed capacity, with a total of 25.24 GW, contributing 11.47% to the national total. Over the last seven years, the state's installed capacity under renewable energy sector has grown 1.88 times, compared to a 1.07-fold increase in non-renewable energy installed capacity.

- Share of renewable energy in Tamil Nadu's total installed capacity enhanced from 44.70% of 2017-18 to 58.59% by 2024-25. Wind power remained the dominant source within the renewable installed capacity, accounting for 46.51%, followed by solar power with a share of 40.23%.

- In 2024-25, Tamil Nadu ranked 5th nationally in electricity generation from renewable energy sources, producing 38.41 Billion Units (BU), which represented 9.52% of India's total electricity generation from RE sources. In the case of electricity generation from solar, wind, bioenergy, and small hydro sources, state ranked fourth, with a total generation of 33.81 BU, contributing 13.26% to the country's electricity generation from these sources.

- Renewable energy accounted for 29.52% of Tamil Nadu's total electricity generation during 2024-25. Electricity generation from wind power contributed the largest share within this segment with a share of 45.11%, followed closely by solar power having 40.98%.

IV. KARNATAKA

- As on 31st March 2025, Karnataka ranked fourth in the country for electricity installed capacity under renewable energy sector, reaching 23.92 GW, which accounted for 10.87% of India's total electricity installed capacity under RE sector . Over the past seven years, the state's renewable energy installed capacity grew 1.47 times by 2024-25, compared to a 1.02-fold increase in non-renewable energy installed capacity.

- Share of renewable energy in Karnataka's total installed capacity has risen from 60.71% to 68.98% over the last 7 years. Within this sector, solar energy leads with a share of 40.47%, followed by wind energy having 30.74% share.

- In 2024-25, Karnataka ranked third in India for electricity generation from renewable energy sources producing 48.14 Billion Units (BU), which constituted 11.93% of the country's electricity generation from RE sources. Specifically for solar, wind, bio power, and small hydro power, the state also ranked third, contributing 34.09 BU, with a share of 13.37% of the total electricity generation from these sources.

- During 2024-25, renewable energy accounted for 48.10% of Karnataka's total electricity generation. Of this, solar power contributed 32.61%, while wind power generated 28.29%.

V. MAHARASHTRA

- As on 31st March 2025, Maharashtra ranked fifth in India for electricity installed capacity under renewable energy sector with 22.40 GW, representing a 10.18% share of total electricity installed capacity under renewable energy sector of the country. Over the past 7 years, the state's renewable energy installed capacity has expanded 1.94 times by 2024-25, while non-renewable energy sector saw a marginal decline of 0.02 times.

- Share of renewable energy in Maharashtra's total electricity installed capacity has grown significantly from 27.86% to 43.35% over the past 7 years. Within this installed capacity, solar power leads with a share of 47.71% followed by wind power having 23.59% share.

- In 2024-25, Maharashtra was in sixth position in the country in electricity generation from renewable energy sources, producing 25.23 Billion Units (BU), which contributed 6.25% to the country's total electricity generation from RE sources. For electricity generation from solar, wind, bio power and small hydro power, Maharashtra ranked fifth, with 19.59 BU, accounting for 7.68% of India's total from these sources.

- During 2024-25, electricity generation from renewable energy sources contributed 14.82% to Maharashtra's total power generation. Within this, solar energy was the largest contributor with a share of 30.62%, closely followed by wind energy having 30.36% share.

INTERNATIONAL STATUS

Installed capacity:

- As on 31st December 2024, global installed capacity of renewable energy reached a total of 4442.76 GW as per Renewable Energy Statistics-2025 published by International Renewable Energy agency (IRENA). The share of renewable energy in worldwide installed capacity has risen from 29.50% of 2014 to 46.20% by 2024.

- In 2024, global renewable energy sector reached a significant milestone. The year witnessed a record-breaking installation of 581.86 GW of renewable energy installed capacity, against 55.66 GW installations from non-renewable sources.

- Among renewable energy sources, solar energy experienced the most substantial growth, rising from 225.72 GW of 2015 to 1866.31 GW by 2024, while wind energy increased from 416.39 GW to 1132.66 GW during the period.

- Installed capacity under Renewable energy sector has consistently achieved annual growth rates exceeding 7.78%, while growth of installed capacity under non-renewable sector has remained below 3 % since 2016.

- During the past five years, around 80% of annual installed capacity additions have been driven by the renewable energy sector.

- Asia had the largest expansion of 1651.77 GW in installed capacity under Renewable energy sources during 2016 to 2024 followed by Europe with an expansion of 386.24 GW.

- China leads the global renewable energy sector with an installed capacity of 1817.96 GW followed by United States with 427.89 GW, as on 31st December, 2024. Brazil ranked third with 213.86 GW while India secured fourth position with 204.48 GW of RE installed capacity. Germany was in 5th position with an installation of 178.65 GW. Together, top 5 countries accounted for around 64 % of the world's total installed capacity under Renewable energy sector.

- Among the top 5 countries in the Renewable Energy installed capacity, China, USA, India and Germany had their largest share of capacity installations from solar power in their respective country as on December 2024. In the case of wind power capacity installations among these countries Germany held the largest share of 40.76% in the country and Hydro Power installation was dominated in Brazil's RE sector with a contribution of 51.43% of its capacity installations.

Electricity Generation from Renewable Energy sources:

- During 2023, total electricity generation from renewable energy sources reached 8928.49 TWh, a significant increase from 5516.41 TWh of 2015 with an increase in share from 22.7% of 2015 to around 30 %.

- Asia expanded its energy generation from Renewable Energy sector from 2033.20 TWh of 2015 to 4007.63 TWh during 2023, followed by Europe with an expansion from 1174.08 TWh to 1626.36 TWh.

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ALL INDIA STATUS

INSTALLED CAPACITY

CHAPTER 1

Installed Capacity - RE and Non-RE sector

1.1 Installed Capacity in RE and Non-RE sector: As on 31st March, 2025, India's cumulative installed power generation capacity reached 475.21 GW, marking a substantial increase of 72.18% from 275.99 GW of 2014–15. The most notable progress has been in the renewable energy sector which witnessed a remarkable capacity growth of 170.69% during this period. Even more striking is the rise in installations from solar, wind, bio power, and small hydro power sources, which collectively grew by app roximately 331.49% during the same period. Annual installed capacity additions under Renewable energy sector peaked in 2024–25 with a record of 29.5d3 GW, significantly outpacing 3.72 GW added by non-renewable sector. Since 2017–18, annual growth rate of installed capacity under renewable energy sector has consistently exceeded 6%, reaching 15.50% in 2024–25. By the end of 2024–25, renewable energy accounted for 46.32% of India's total installed capacity, with non-fossil sources collectively contributing 48.04%. As detailed data in subsequent chapters will further illustrate, the decade has been defined not just by quantitative expansion, but by a qualitative transformation towards a cleaner, greener, and more inclusive energy future.

Table 1.1 Cumulative Installed Capacity since 2014-15 **(in GW)**

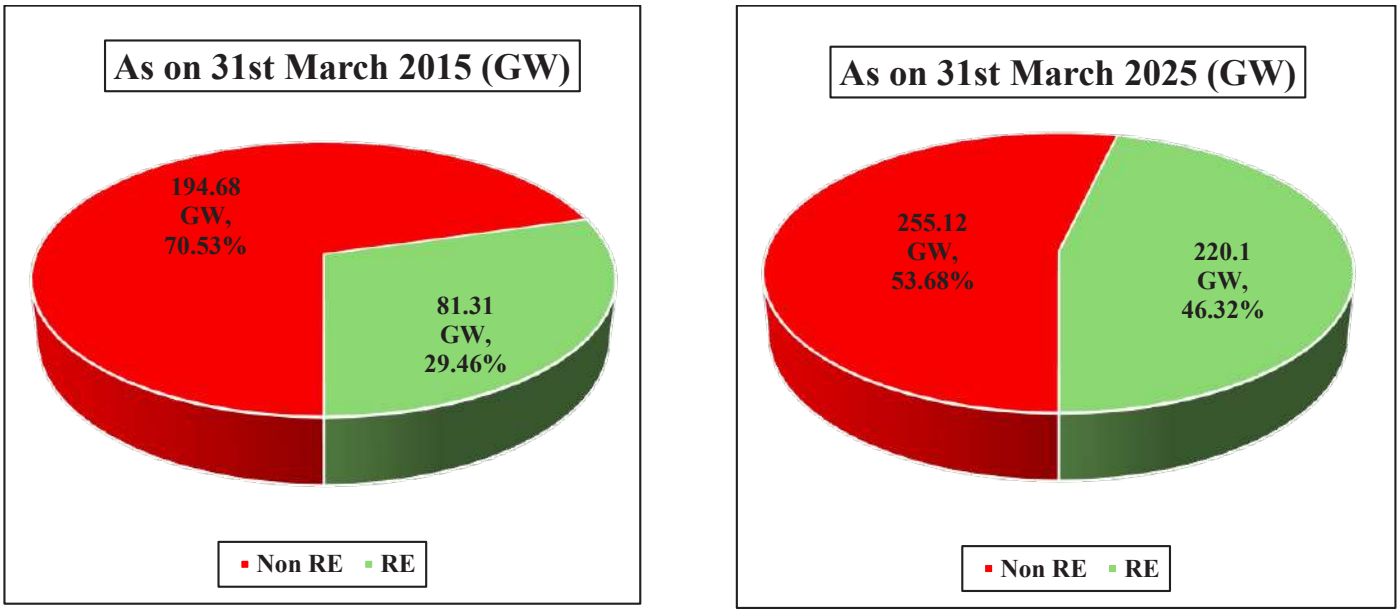
Year	Mode-wise Breakup (GW)						Grand Total	Growth(%)			Share(%)	
	Non-RE			Renewables (RE)								
	Thermal	Nuclear	Total	Large Hydro	RES*	Total		RES	RE	Total	RES	RE
2014-15	188.9	5.78	194.68	41.27	40.04	81.31	275.99	..	..	..	14.51	29.46
2015-16	210.68	5.78	216.46	42.78	47.09	89.87	306.33	17.61	10.53	10.99	15.37	29.34
2016-17	218.33	6.78	225.11	44.48	58.56	103.04	328.15	24.36	14.65	7.12	17.85	31.40
2017-18	222.91	6.78	229.69	45.29	70.65	115.94	345.63	20.65	12.52	5.33	20.44	33.54
2018-19	226.28	6.78	233.06	45.40	79.41	124.81	357.87	12.40	7.65	3.54	22.19	34.88
2019-20	230.6	6.78	237.38	45.70	88.26	133.96	371.34	11.14	7.33	3.76	23.77	36.07
2020-21	234.73	6.78	241.51	46.21	95.80	142.01	383.52	8.54	6.01	3.28	24.98	37.03
2021-22	236.11	6.78	242.89	46.72	109.89	156.61	399.5	14.71	10.28	4.17	27.51	39.20
2022-23	237.27	6.78	244.05	46.85	125.16	172.01	416.06	13.90	9.83	4.15	30.08	41.34
2023-24	243.22	8.18	251.4	46.93	143.64	190.57	441.97	14.77	10.79	6.23	32.50	43.12
2024-25	246.94	8.18	255.12	47.73	172.37	220.10	475.21	20.00	15.50	7.52	36.27	46.32
Gr (2014-15 to 2024-25)	**30.73%**	**41.52%**	**31.05%**	**15.65%**	**331.49%**	**170.69%**	**72.18%**					
CAGR (2014-15 to 2024-25)	**2.72%**	**3.53%**	**2.74**	**1.46%**	**15.72%**	**10.47%**	**5.58%**					

Source: Ministry of New and Renewable Energy(MNRE) and Central Electricity Authority (CEA)

RES*- Comprising of Solar, Wind, Bio-Power and Small Hydro Power

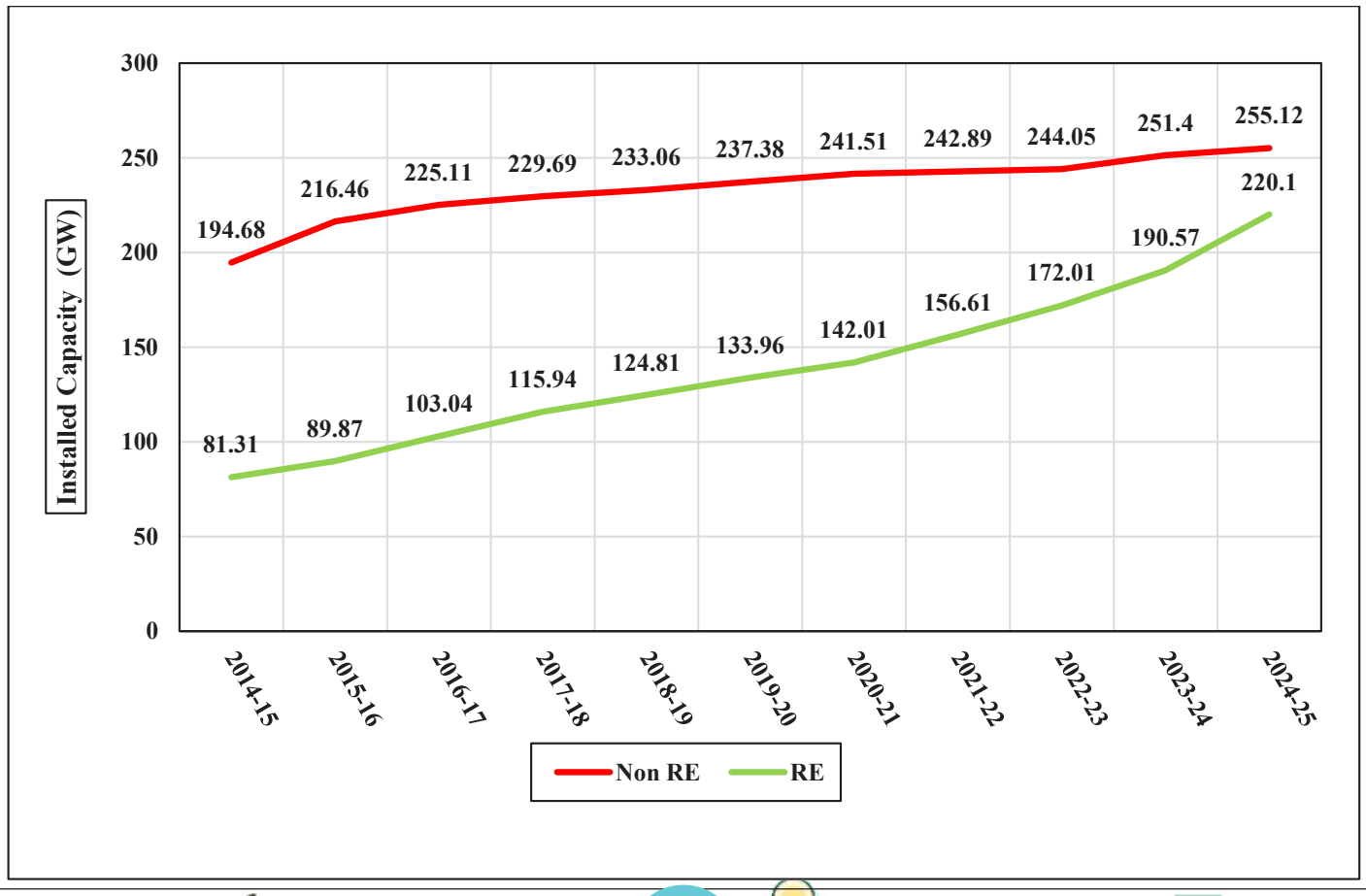
Gr=Growth (%)CAGR=Compound Annual Growth Rate

Fig 1.1 Share of Renewable Energy



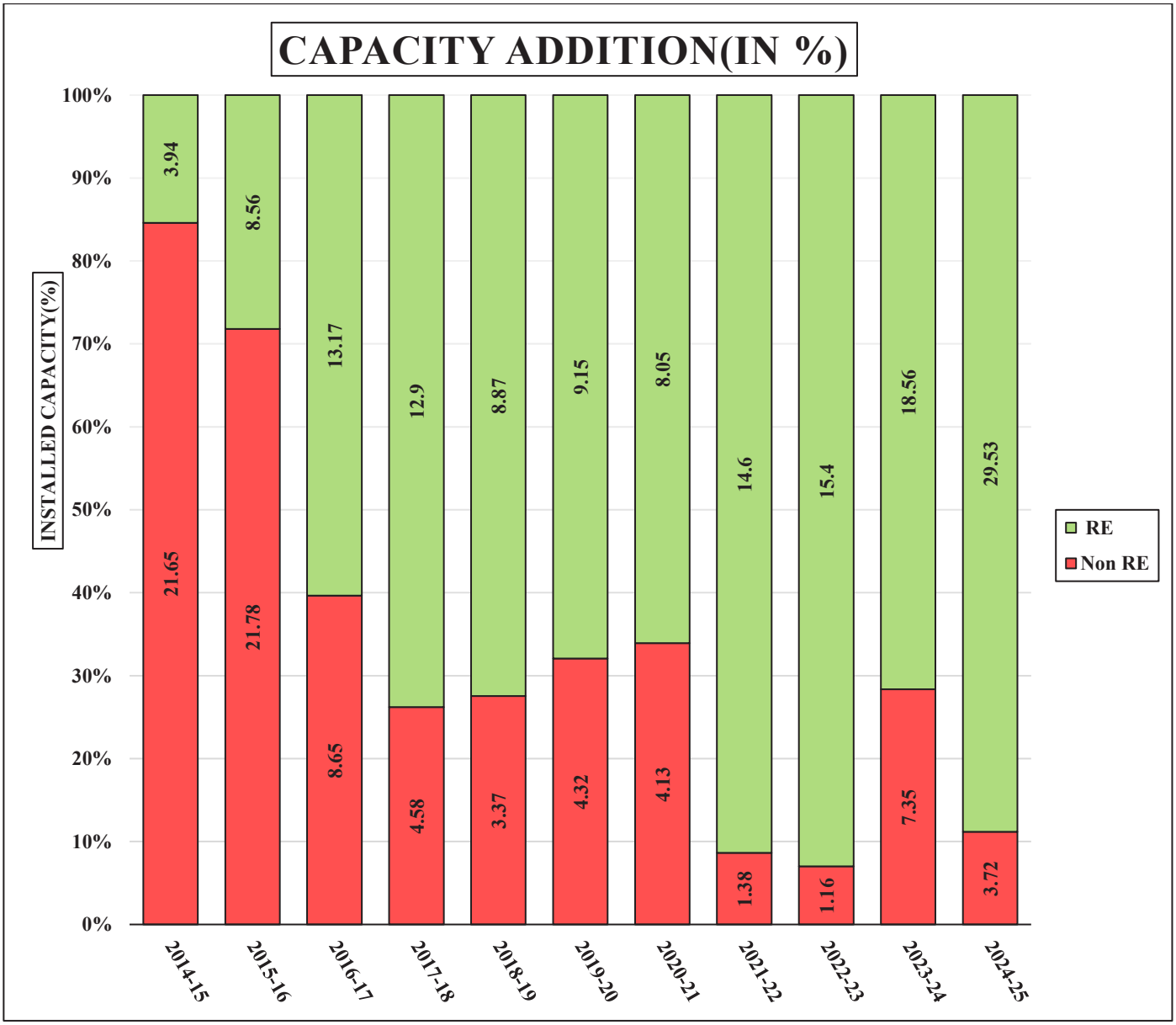
Over the last decade, Renewable Energy (RE) sector has made a remarkable contribution to India's power generation landscape, significantly enhancing its share in the total installed capacity. In 2014–15, renewable energy accounted for just 29.46% of the country's total installed power capacity. By 2024–25, this share had surged to an impressive share of 46.32%, underscoring the sector's central role in driving India's clean energy transition.

Fig 1.2 Trend in Cumulative Installed Capacity



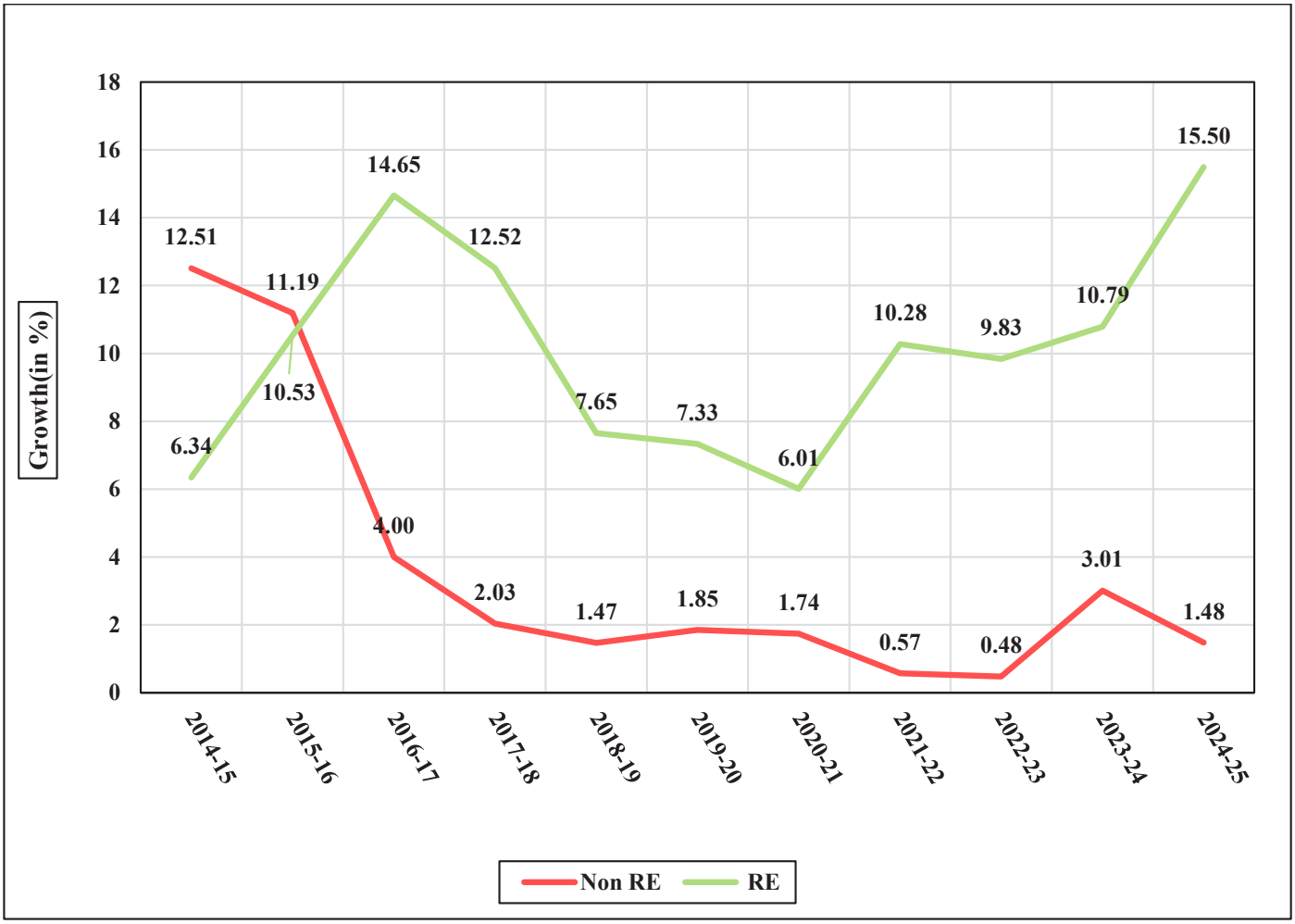
The graph illustrates the installed power generation capacity in India during the last decade under Non-Renewable Energy (Non-RE) and Renewable Energy (RE) sector. Over the years, installed capacity under Non-RE sector has shown a relatively slow and steady increase, from 194.68 GW of 2014–15 to 255.12 GW by 2024–25. Against this, installed capacity under RE has seen a more rapid and consistent growth, rising from 81.31 GW to 220.10 GW during the same period. Notably, the gap between Non-RE and RE installed capacities has narrowed significantly, shrinking from 113.37 GW of 2014–15 to just 35.02 GW by 2024–25. While installed capacity under Non-RE still holds a slight lead, RE is quickly catching up and could potentially surpass Non-RE in the near future.

Fig 1.3 Year wise capacity addition (in %).



Data shown inside the bar diagram represents the installed capacity in GW.

Fig 1.4 Year wise growth (%) in installed capacity



In terms of year-on-year capacity addition and growth rates, renewable energy (RE) sector has demonstrated impressive and sustained progress compared to non-renewable energy (non-RE) sector, which includes traditional thermal and nuclear sources. The year 2024–25 marked a significant milestone, with renewable energy installed capacity additions hitting a record of 29.53 GW far outpacing 3.72 GW added by non-renewable sources. The graph on year wise growth highlights a sharp divergence in growth trends between Renewable Energy (RE) and Non-Renewable Energy (Non-RE) from 2014–15 to 2024–25. Growth of Non-RE sector declined steadily from 12.51% to just 1.48%, reflecting a slowdown in fossil-fuel-based expansion. On the other hand, growth of installed capacity under RE sector enhance from 6.34% to a peak of 15.50%, overtaking Non-RE in 2016–17 and maintaining the lead since. After a brief dip around 2020–21, RE growth rebounded strongly, indicating renewed momentum in clean energy deployment.

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CHAPTER 2

Installed capacity - Wind, Solar, Small Hydro and Bio Energy (RES) Sector

2.1 Installed Capacity under RES: Ministry of New and Renewable Energy (MNRE), entrusted with the vital mandate of promoting sustainable energy solutions, has been at the forefront of India's transition towards a cleaner and greener energy future. As part of its comprehensive efforts, the Ministry actively supports the development and deployment of various renewable energy sources, including Wind, Solar, Bio Energy, and Small Hydro Power. Over the last decade, the impact of these initiatives has been particularly pronounced in the Solar Power sector, which has experienced an unprecedented surge in installed capacity. From a modest 3.99 GW of 2014–15, solar installed capacity shoot up to an impressive installations of 105.65 GW by 2024–25, reflecting a staggering growth rate of 2547.87%. This exponential rise highlights not only the Ministry's effective policy framework and incentives but also the rapid adoption of solar technologies across diverse regions of the country.

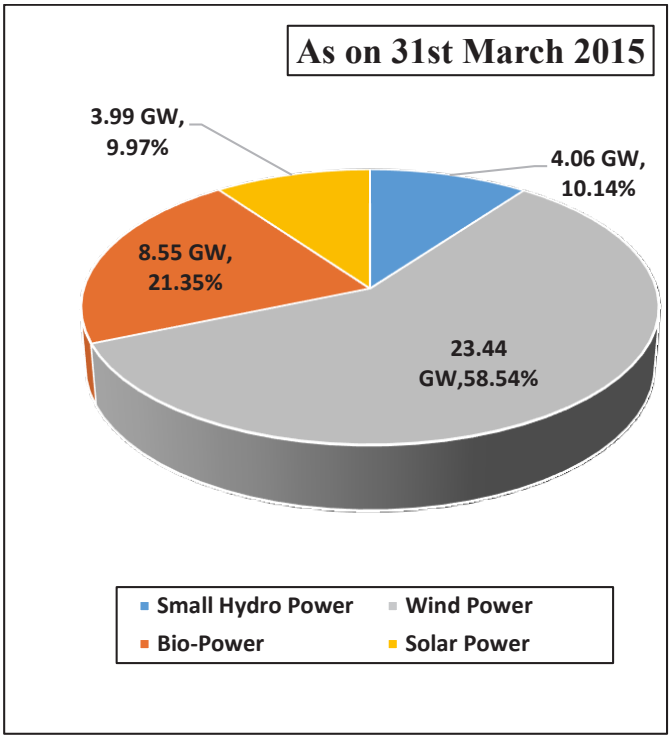
Parallelly, the Wind Power sector has also made significant strides, with installed capacity growing by 114.21% over the same ten-year period. While the growth rate in wind energy may be more moderate compared to solar, it nonetheless underscores the sustained commitment to expanding India's renewable energy installed capacity. Alongside solar and wind, other renewable segments such as Bio Power and Small Hydro Power continue to contribute to the sector's diversification and resilience. This chapter delves into a detailed analysis of installed capacity across Solar, Wind, Bio Power, and Small Hydro Power sectors, exploring trends, shares, growth etc.

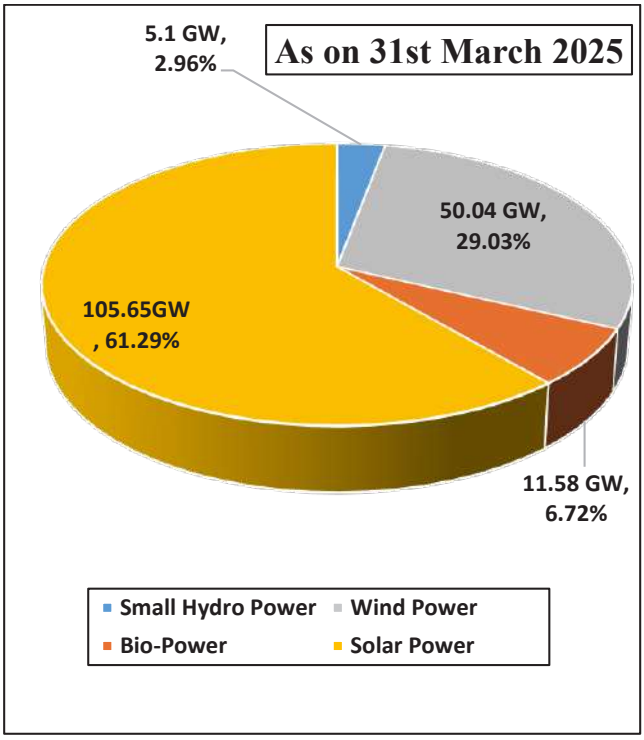
Table 2.1: Cumulative Installed Capacity under RES since 2014-15 (in GW)

Year	Small Hydro Power	Wind Power	Bio-Power		Solar Power	Total RES Capacity	Growth (%)
			BM Power/ Cogen.	Waste to Energy			
2014-15	4.06	23.44	8.31	0.24	3.99	40.04	
2015-16	4.27	26.78	8.67	0.25	7.12	47.09	17.87
2016-17	4.38	32.28	8.84	0.28	12.78	58.56	24.36
2017-18	4.49	34.15	9.36	0.31	22.35	70.65	20.65
2018-19	4.59	35.63	9.78	0.32	29.10	79.41	12.4
2019-20	4.68	37.74	9.88	0.35	35.60	88.26	11.14
2020-21	4.79	39.25	10.15	0.39	41.24	95.80	8.54
2021-22	4.85	40.36	10.21	0.48	54.00	109.89	14.71
2022-23	4.94	42.63	10.25	0.55	66.78	125.16	13.9
2023-24	5.00	45.89	10.36	0.59	81.81	143.64	14.77
2024-25	5.10	50.04	10.74	0.84	105.65	172.37	20
Gr (2014-15 to 2024-25)	**25.62%**	**114.21%**	**29.24%**	**250.00%**	**2547.87%**	**330.49%**	
CAGR (2014-15 to 2024-25)	**2.31%**	**7.92%**	**2.60%**	**13.35%**	**38.77%**	**15.72%**	

RES comprises of Solar, Wind, Small Hydro Power & Bio-Power
Gr=Growth (%)
CAGR=Compound Annual Growth Rate

Fig 2.1 Share of various sources in RES Cumulative Installed capacity





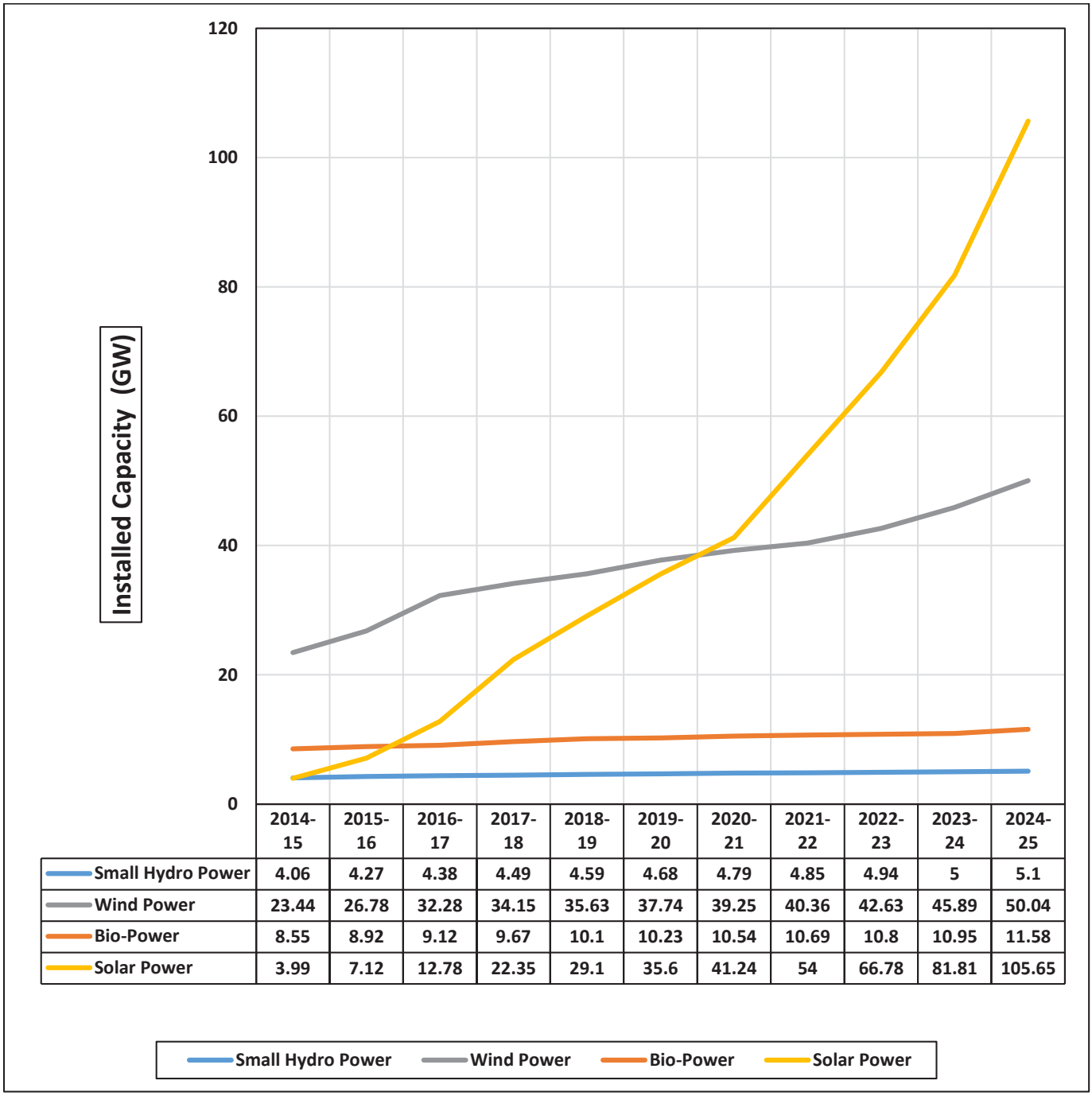
Above pie diagrams reveal a dramatic shift in the composition of India's electricity installed capacity under Solar, Wind, Bio Power and Small Hydro Power. At the end of 2014-15, Wind Power dominated the mix, accounting for 58.54% of the total installed capacity under these sources followed by Bio-Power with a share of 21.35%, Small Hydro Power having 10.14% contribution , and Solar Power with just 9.97%.

By the end of 2024-25, Solar Power emerges as the clear leader, making up 61.29% of the total installed capacity under RES. Share of Wind Power declines significantly to 29.03% though its absolute installed capacity more than doubles. Share of Bio-Power and Small Hydro Power reduced considerably to 6.72% and 2.96% respectively, indicating slower growth relative to solar power and wind power. Solar energy has experienced explosive growth, becoming the backbone of India's renewable sector, while wind power remains significant but relatively diminished in share.

2.2 Trend in cumulative installed capacity under RES

The trend in Renewable Energy Sources (RES) cumulative installed capacity from 2014-15 to 2024-25 shows a clear and dynamic growth pattern across different technologies. Solar power exhibits the most remarkable surge, growing from just 3.99 GW in 2014-15 to a substantial 105.65 GW by 2024-25, reflecting rapid adoption and technological advancement. Wind power also shows steady growth, increasing from 23.44 GW to 50.04 GW over the same period, maintaining its position as a significant contributor to the installed capacity under renewable sources. Bio-power capacity rises gradually from 8.55 GW to 11.58 GW, indicating modest but consistent expansion. Small hydro power shows the slowest growth, increasing slightly from 4.06 GW to 5.10 GW, suggesting limited new additions. Overall, the data highlights solar power as the fastest-growing renewable source, reshaping the energy landscape, while wind power remains a stable and major component, with bio-power and small hydro power contributing smaller but steady shares to the total renewable capacity**. (Ref Fig 2.2)**

Fig 2.2 Trend in RES cumulative Installed Capacity



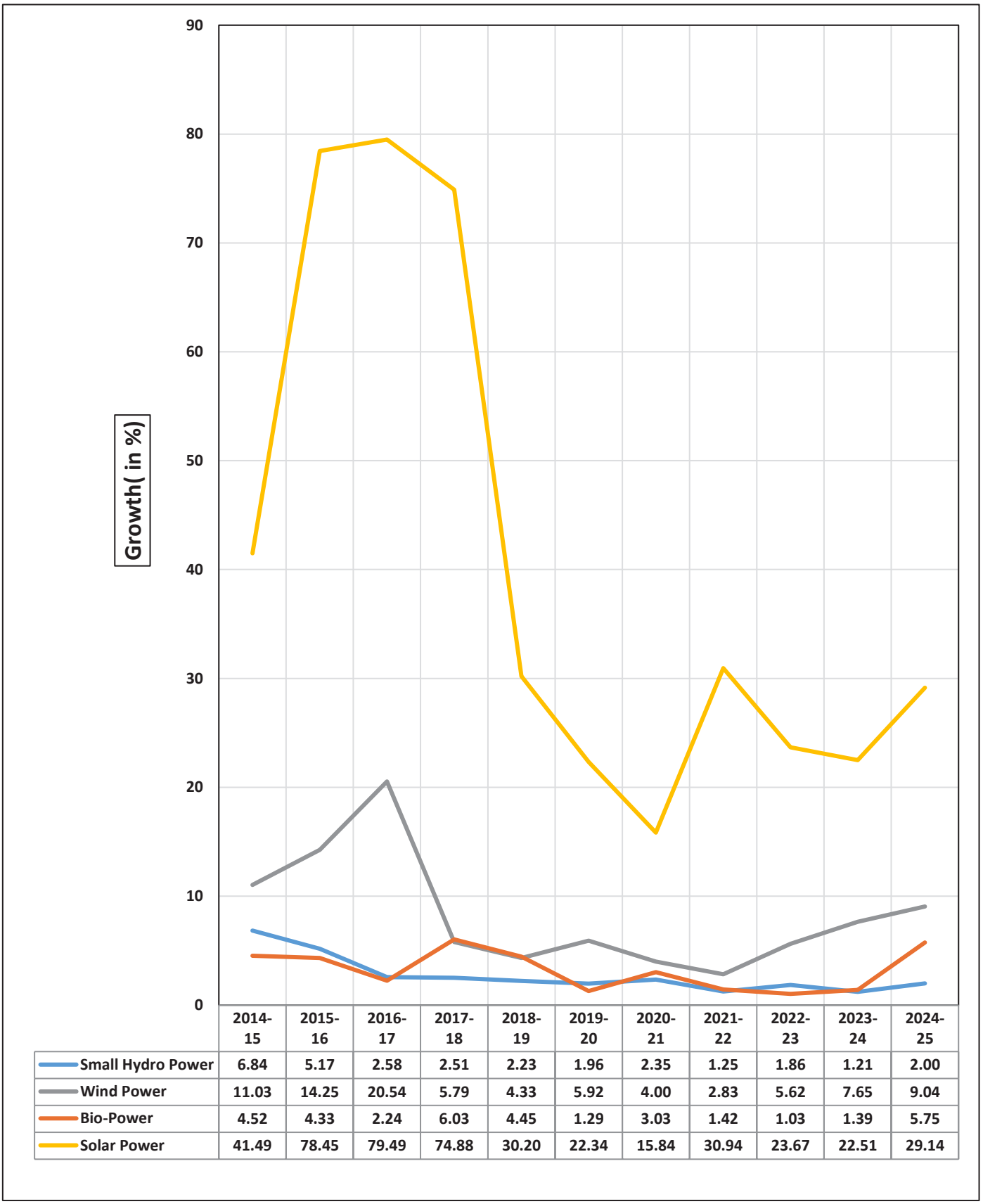
	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Small Hydro Power	4.06	4.27	4.38	4.49	4.59	4.68	4.79	4.85	4.94	5	5.1
Wind Power	23.44	26.78	32.28	34.15	35.63	37.74	39.25	40.36	42.63	45.89	50.04
Bio-Power	8.55	8.92	9.12	9.67	10.1	10.23	10.54	10.69	10.8	10.95	11.58
Solar Power	3.99	7.12	12.78	22.35	29.1	35.6	41.24	54	66.78	81.81	105.65

2.3 Year wise growth in installed capacity under RES

Year-wise growth in installed capacity of renewable energy (RE) sources under Solar, wind, Bio-Power and Small Hydro power from 2014-15 to 2024-25 shows distinct trends across different technologies. Solar power demonstrates the highest growth rates, peaking between 2015-16 and 2017-18 with growth close to 80%, before stabilizing to a more moderate range of 15% to 30% in later years, reflecting rapid initial expansion followed by steady scaling. Wind power exhibits fluctuating growth, starting strong with growth rates over 11% and peaking at 20.54% in 2016-17, then dipping to lower single digits before rising again to about 9% by 2024-25. Bio-power growth remains relatively steady but modest, generally between 1% and 6%, indicating gradual increase of installed capacity. Small hydro power shows the

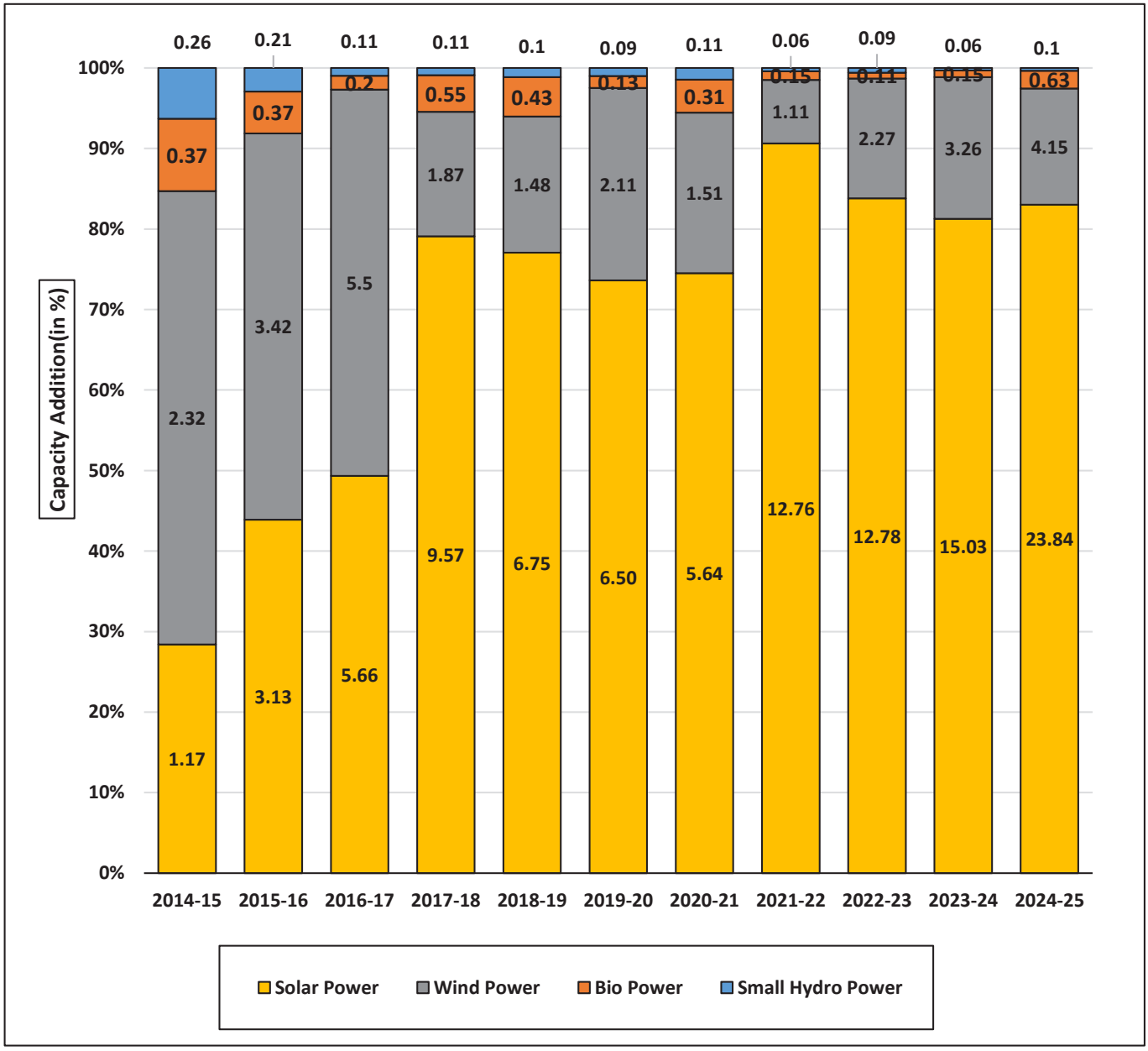
slowest and most stable growth, consistently around 1% to 7%, reflecting limited new installed capacity additions. Overall, solar power leads the growth momentum, while wind power shows variable but sustained progress, with bio-power and small hydro power growing steadily but at a slower pace.

Fig 2.3 Year wise growth (%) in installed capacity



	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Small Hydro Power	6.84	5.17	2.58	2.51	2.23	1.96	2.35	1.25	1.86	1.21	2.00
Wind Power	11.03	14.25	20.54	5.79	4.33	5.92	4.00	2.83	5.62	7.65	9.04
Bio-Power	4.52	4.33	2.24	6.03	4.45	1.29	3.03	1.42	1.03	1.39	5.75
Solar Power	41.49	78.45	79.49	74.88	30.20	22.34	15.84	30.94	23.67	22.51	29.14

Fig 2.4 Year wise installed capacity addition (in%)



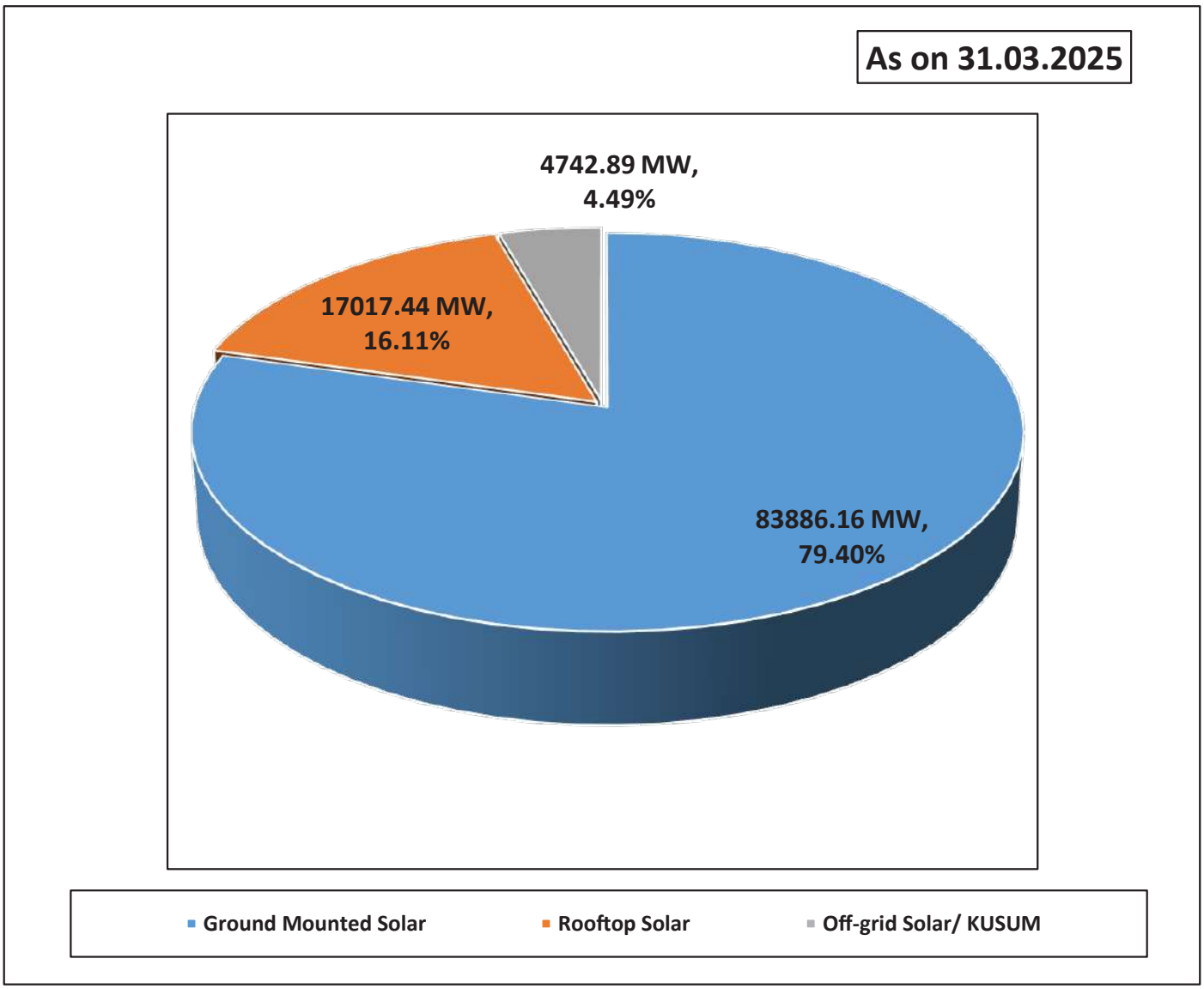
Data shown inside the bar diagram represents the installed capacity in GW.

In 2024–25, the solar sector marked a historic milestone by recording its highest-ever annual capacity addition of 23.84 GW, with total installed capacity rising from 81.81 GW of 2023–24 to 105.65 GW. Rapid annual installed capacity addition under Solar power from 1.17 GW during 2014-15 to 23.84 during 2024-25 highlights its central role in India's transition to a cleaner energy installed capacity. Wind power installations exhibited noticeable fluctuations over the years , however, continues to contribute significantly to the renewable energy landscape. Meanwhile, Small Hydro Power (SHP) and Bio Power, though holding smaller shares in the overall renewable energy capacity, also experienced inconsistent growth patterns. Their capacity additions varied year-on-year. While these sources may not match the scale of solar and wind, they play an important role in enhancing energy access and supporting regional energy needs, especially in remote and rural areas.

Various categories of Solar Power installations: Within the solar power sector, Ground-Mounted Solar systems constituted the largest share of 79.40% of the installed capacity across the country totalling an installation of 83.89 GW . This also constitutes hybrid Solar components, which integrate solar with wind or storage solutions. These utility-scale projects, often set up in solar parks and dedicated zones, have been

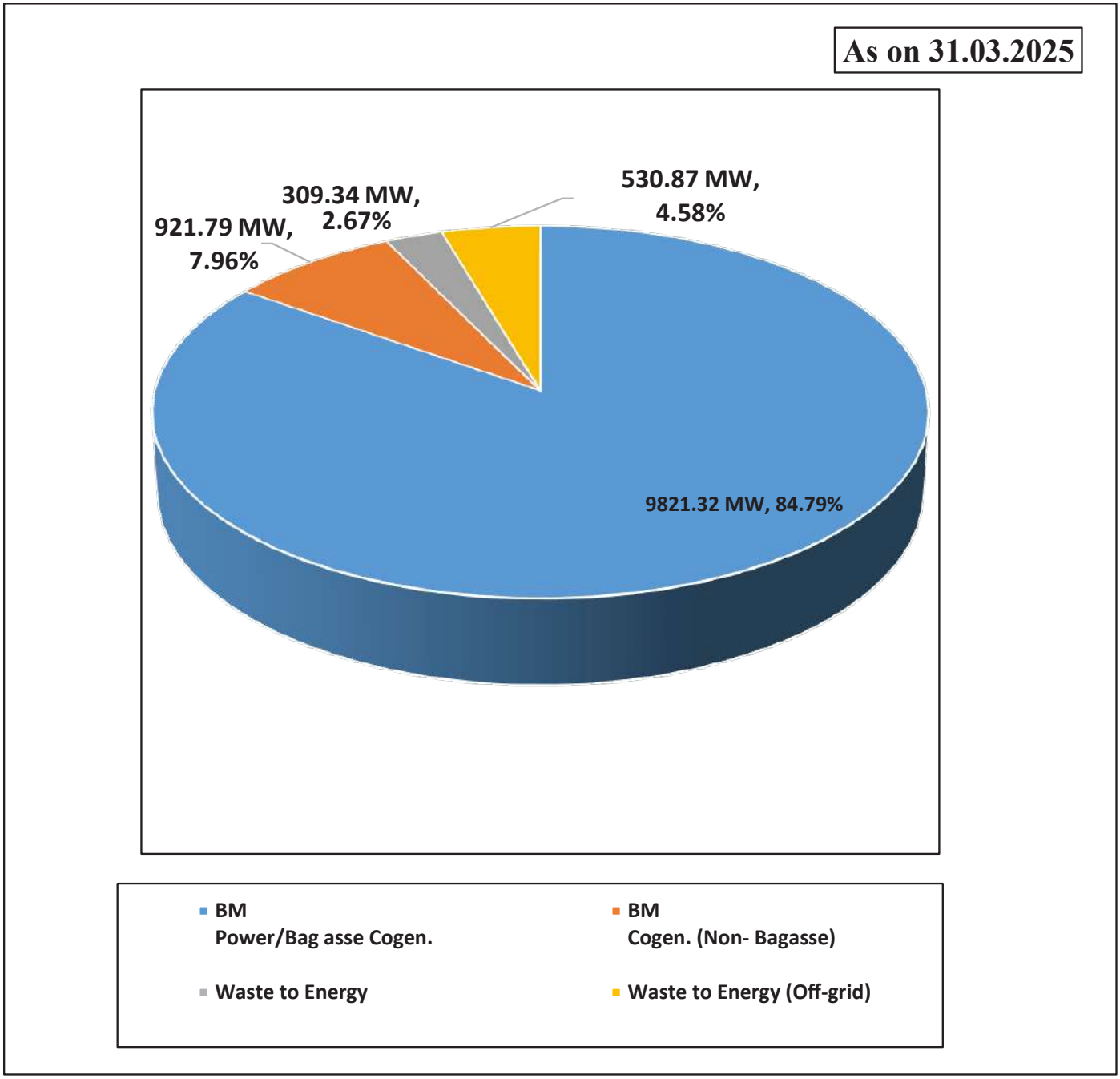
instrumental in accelerating solar deployment due to their scale, ease of integration with the grid, and policy support. Following ground-mounted systems, Rooftop Solar installations accounted for a significant portion of 16.11% with an installation of 17.02 GW. Off -grid systems including installations under the KUSUM scheme (Kisan Urja Suraksha evam Utthaan Mahabhiyan), aimed at promoting solar pumps for farmers, have also contributed 4.49% of the solar installed capacity amounting to 4.74 GW.

Fig. 2.5 ***Various categories of Solar Power installations***



Various categories of Bio Power installations: As on March 31, 2025, Bio-Power sector is predominantly led by Biomass Power and Bagasse Cogeneration, which together account for the largest share of 84.79% of the total installed capacity. Non-Bagasse Biomass Cogeneration contributes 7.96%, followed by Off-grid Waste to Energy projects with share of 4.58%, and Waste to Energy plants having share of 2.67%. These technologies leverage agricultural residues, sugarcane waste, and other organic materials to generate electricity and heat, providing a sustainable and circular energy solution, particularly in agrarian and industrial states.

Fig 2.6 Various categories of Bio Power installations



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CHAPTER 3

Energy Generation - RE and Non-RE sector

3.1 Energy generation from RE and Non-RE sector: India's total electricity generation reached 1824.12 Billion Units (BU) during 2024–25, marking a significant rise of 65.02% from 1105.38 BU of 2014–15. A notable highlight of this progress is the increasing contribution of renewable energy sources, which generated 403.64 BU in 2024–25, accounting for 22.13% of the total power generation. This represents a remarkable 111.37% increase in renewable energy generation compared to 2014–15, indicating India's firm commitment to a cleaner and more sustainable energy future.

This chapter presents a detailed year-wise analysis of India's total electricity generation from both renewable and non-renewable sources between 2014–15 to 2024–25. The trends reveal a clear shift towards renewable energy, showcasing India's strategic transition from conventional fossil-based generation to a more balanced and environmentally sustainable power system.

Table 3.1 Year-wise All India Energy Generation since 2014-15

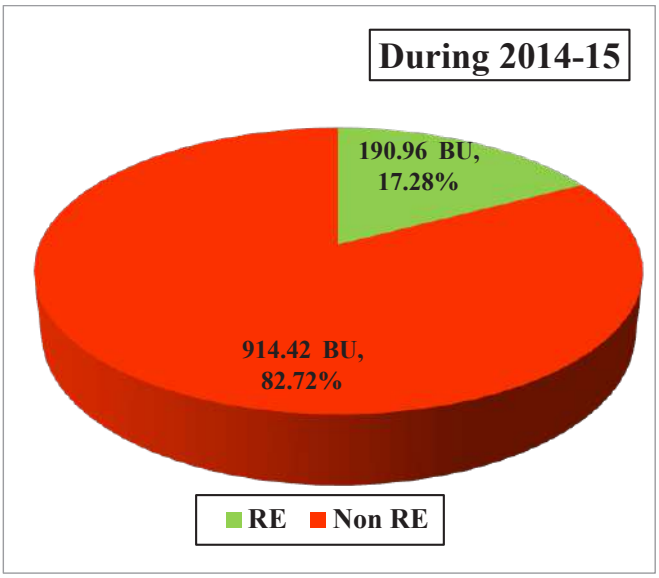
(in BU)

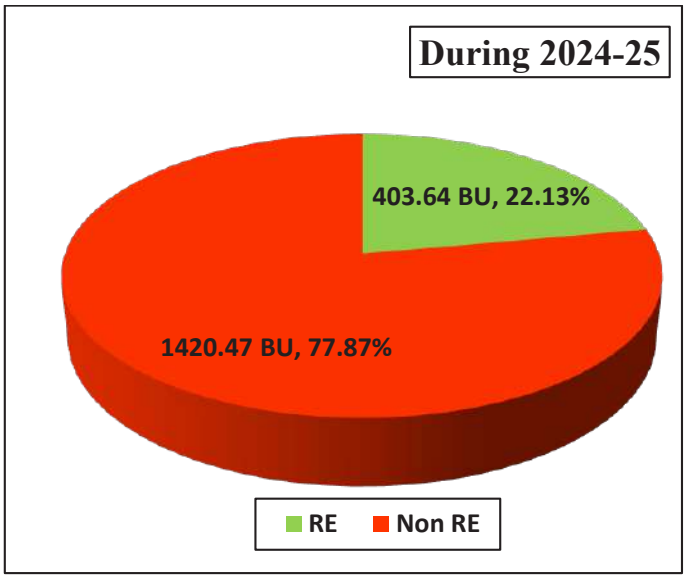
Year	Non-RE			RE			Grand Total	Share (%)		Growth	
	Thermal	Nuclear	Total	Large Hydro	RES*	Total		RE	RES*	RE	RES*
2014-15	878.32	36.10	914.42	129.24	61.72	190.96	1105.38	17.28	5.58	…	…
2015-16	943.79	37.41	981.2	121.38	65.78	187.16	1168.37	16.02	5.63	-1.99	6.58
2016-17	994.22	37.92	1032.14	122.38	81.55	203.93	1236.08	16.50	6.60	8.96	23.97
2017-18	1037.10	38.30	1075.4	126.10	101.84	227.94	1303.34	17.49	7.81	11.77	24.88
2018-19	1072.22	37.81	1110.03	134.89	126.76	261.65	1371.68	19.08	9.24	14.79	24.47
2019-20	1042.75	46.47	1089.22	155.77	138.34	294.11	1383.33	21.26	10.00	12.41	9.14
2020-21	1032.51	43.03	1075.54	150.30	147.25	297.55	1373.09	21.67	10.72	1.17	6.44
2021-22	1114.71	47.11	1161.82	151.63	170.91	322.54	1484.36	21.73	11.51	8.40	16.07
2022-23	1206.15	45.83	1251.98	162.10	203.55	365.66	1617.58	22.61	12.58	13.37	19.10
2023-24	1326.29	47.94	1374.23	134.05	225.84	359.89	1734.12	20.75	13.02	-1.58	10.95
2024-25	1363.79	56.68	1420.47	148.63	255.01	403.64	1824.12	22.13	13.98	12.16	12.92
Gr (2014-15 to 2024-25)	**55.27%**	**57.01%**	**55.34%**	**15.00%**	**313.17 %**	**111.37%**	**65.02%**				
CAGR (2014-15 to 2024-25)	**4.50%**	**4.61%**	**4.50%**	**1.41%**	**15.24%**	**7.77%**	**5.14%**				

Source: CEA, Ministry of Power (MoP)

****RES constitutes Solar, Wind, Bio-Power & Small Hydro Power***
Gr=Growth (%)
CAGR=Compound Annual Growth Rate

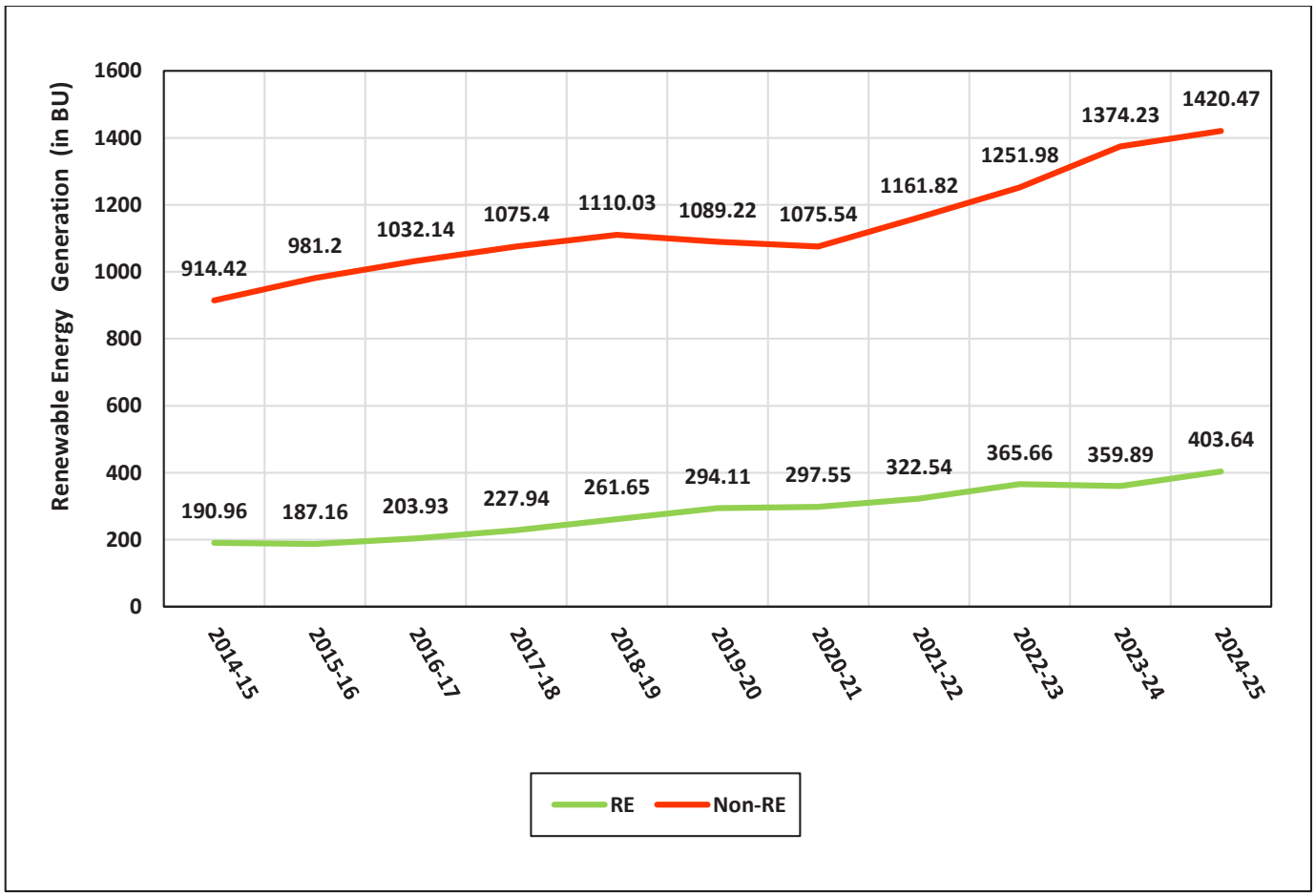
Fig 3.1 Share of Renewable Energy





India's renewable energy share in electricity generation rose from 17.28% of 2014-15 to 22.13% by 2024-25, nearly doubling in absolute terms from 190.96 BU to 403.64 BU. Meanwhile, non-renewable energy's share dropped from 82.72% to 77.87%, despite an increase in total electricity generation.

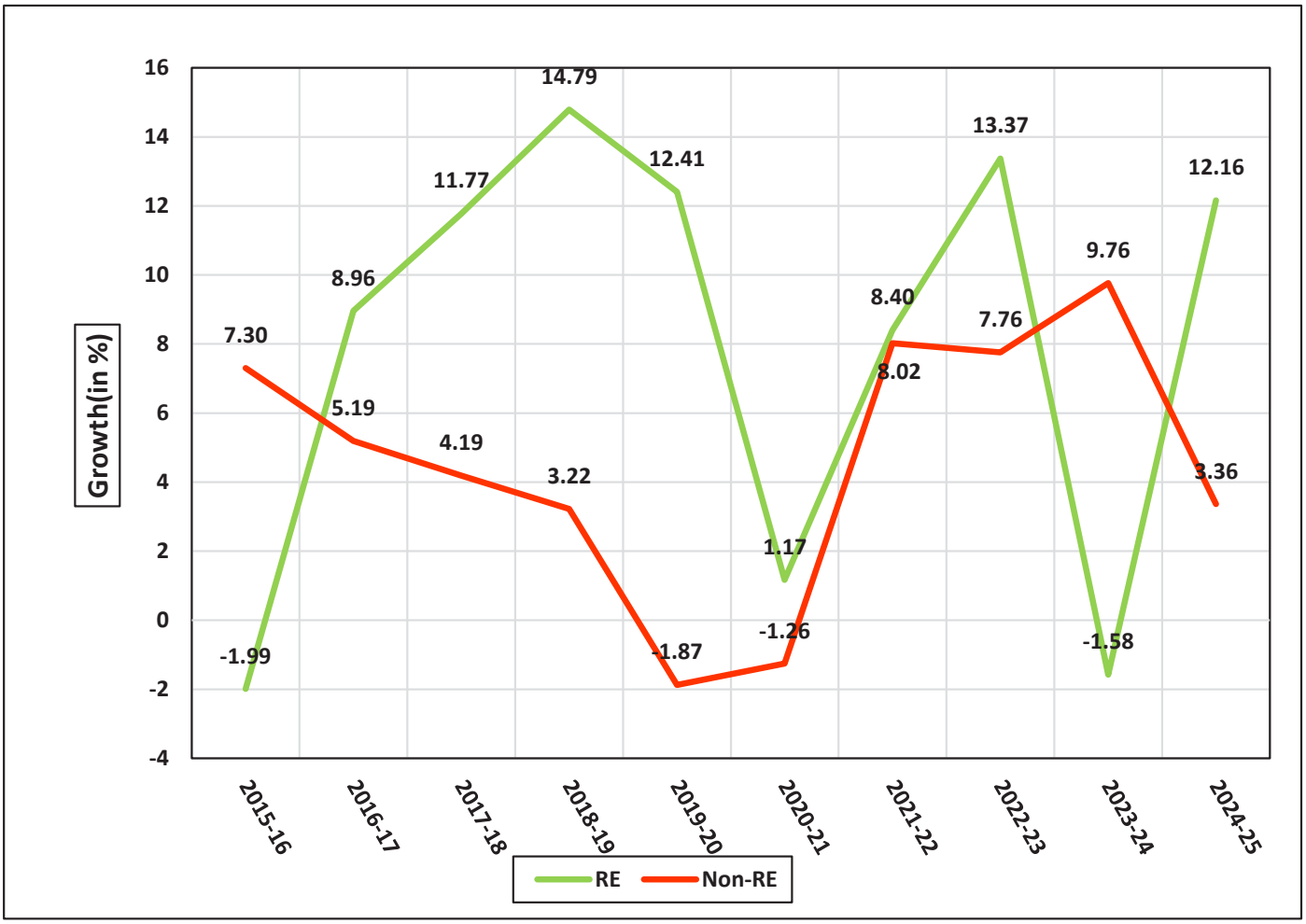
Fig 3.2 Trend in Energy Generation



The graph shows the trend in electricity generation under renewable energy (RE) and non-renewable

energy (Non-RE) sources in India during different years starting from 2014-15 to 2024-25. Electricity generation from Non-RE sources consistently remains higher, increasing from 914.42 BU of 2014-15 to 1420.47 BU by 2024-25, with some fluctuations between 2019-20 and 2020-21. Meanwhile, electricity generation from RE sources shows steady growth, rising from 190.96 BU to 403.64 BU over the same period. Despite occasional minor dips, renewable energy steadily gains ground, reflecting India's gradual shift towards cleaner energy sources, though non-renewables still dominate in electricity generation.

Fig 3.3 Year wise growth in Energy Generation (%)



The graph illustrates the annual growth rates of electricity generation from renewable energy (RE) and non-renewable energy (Non-RE) sources in India from 2015-16 to 2024-25. Renewable energy shows highly variable growth, with sharp peaks of 14.79% during 2018-19 and 13.37% during 2022-23 and some dips, including a notable decline of 1.58% during 2023-24. Overall, RE growth rates in electricity generation remain mostly positive and fluctuate significantly, reflecting dynamic expansion and occasional slowdowns. On the other hand, growth of electricity generation from non-renewable energy sources is steadier but generally declining over the period, dropping from 7.30% of 2015-16 to just 3.36% by 2024-25, with minor negative growth years around 2019-20 and 2020-21.

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CHAPTER 4

Energy Generation - Wind, Solar, Small Hydro & Bio Energy (RES) Sector

4.1 Energy generation from RES sector: In 2024–25, electricity generation from wind, solar, small hydro, and bio-energy reached 255.01 Billion Units (BU), marking a significant increase from 61.72 BU recorded in 2014–15. This reflects the substantial progress India has made in scaling up renewable energy over the past decade. The data indicates a strong upward trend in electricity generation from Renewable Energy source with solar power emerging as the dominant contributor in recent years. Since 2014–15, electricity generation from solar power has grown at a compound annual growth rate (CAGR) of 41.13%, underscoring its rapid expansion and increasing role in the national energy mix. Overall, RES has witnessed a robust CAGR of 15.24% over the past ten years. A detailed analysis of energy generation trends across various renewable energy sources is presented in this chapter.

Table 4.1 Year-wise Energy Generation under RES since 2014-15

(in BU)

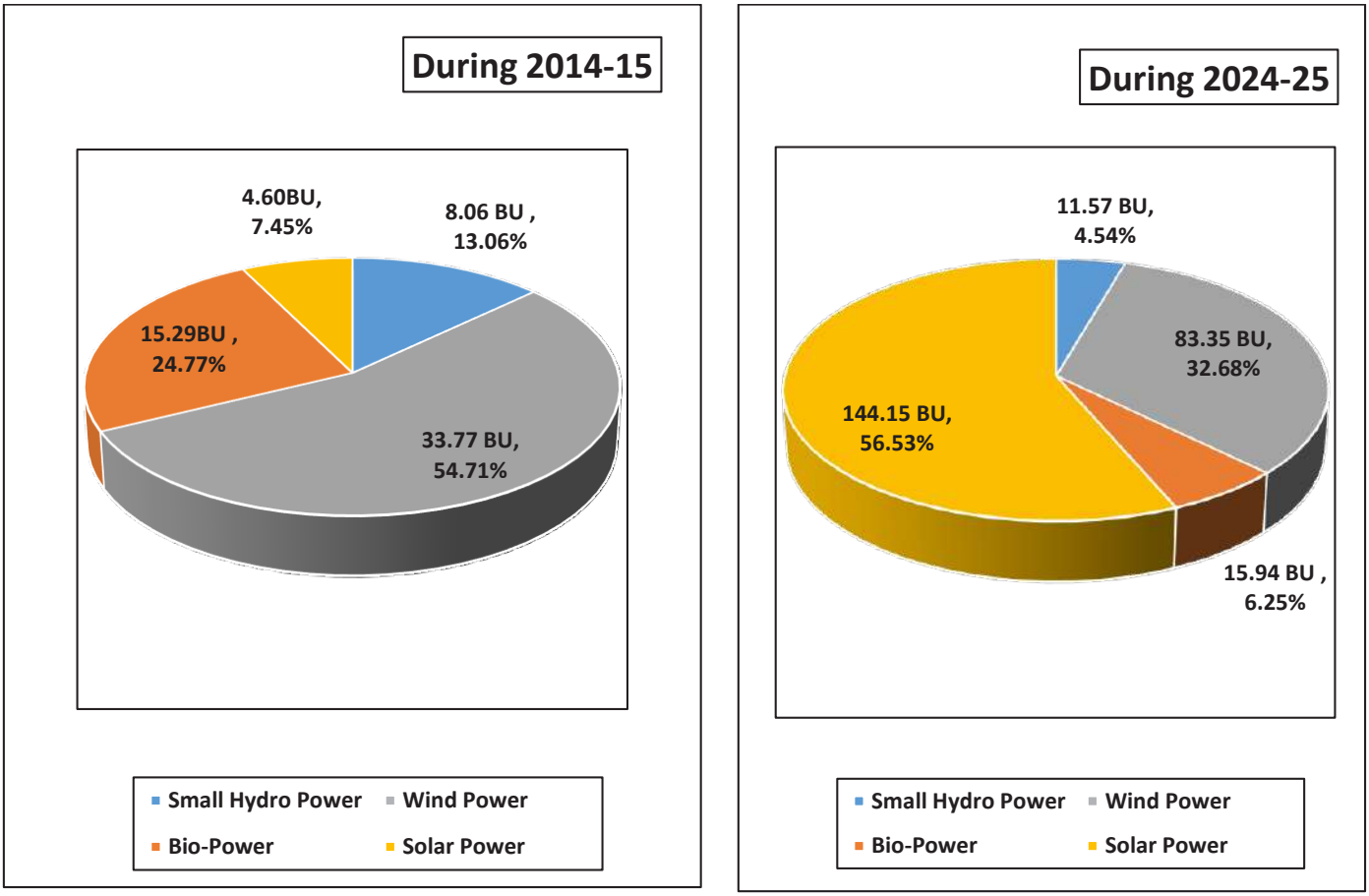
Year	Wind	Solar	Bio-Power				Small Hydro	Grand Total	Growth (%)
			Biomass	Bagasse	Waste to Energy	Total			
2014-15	33.77	4.60	3.16	11.78	0.35	15.29	8.06	61.72	…
2015-16	33.03	7.45	3.73	12.95	0.27	16.95	8.35	65.78	6.58
2016-17	46.00	13.50	4.20	9.96	0.21	14.37	7.67	81.55	23.97
2017-18	52.70	25.80	3.41	11.87	0.36	15.64	7.70	101.84	24.88
2018-19	62.04	39.27	2.76	13.56	0.43	16.75	8.70	126.76	24.47
2019-20	64.65	50.13	2.94	10.80	0.37	14.11	9.45	138.34	9.14
2020-21	60.15	60.40	3.51	11.30	1.62	16.43	10.26	147.25	6.44
2021-22	68.64	73.48	3.48	12.57	2.27	18.32	10.46	170.91	16.07
2022-23	71.81	102.01	3.16	12.86	2.53	18.55	11.17	203.55	19.10
2023-24	83.39	115.98	3.42	10.83	2.75	17.00	9.49	225.83	10.95
2024-25	83.35	144.15	3.74	9.34	2.87	15.94	11.57	255.01	12.92
Gr % (2014-15 to 2024-25)	**146.82%**	**3033.70%**	**18.35%**	**-20.71%**	**720.00%**	**4.25%**	**43.55%**	**313.17%**	
CAGR (2014-15 to 2024-25)	**9.46%**	**41.13%**	**1.70%**	**-2.29%**	**23.42%**	**0.42%**	**3.68%**	**15.24%**	

Source: CEA, MoP

Gr=Growth (%)
CAGR=Compound Annual Growth Rate

During 2014-15 to 2024-25, electricity generation from Solar, Wind, Biopower and small Hydro Power saw remarkable expansion, led overwhelmingly by solar power. Electricity generation from Solar power grew exponentially from just 4.60 BU to 144.15 BU marking a growth of 3033.7% and a staggering CAGR of 41.13% during last decade. Wind energy also expanded significantly, growing 146.82% with a CAGR of 9.46% during the same period. However, bio-power remained largely stagnant, with minimal growth in biomass and waste-to-energy by a decline in bagasse-based electricity generation. Waste-to-energy, though small in absolute terms, posted an impressive 720% growth, reflecting its rising role in the energy mix. Small hydro grew moderately by 43.55%, maintaining its position as a minor yet steady contributor. Overall, electricity generation from these sources more than quadrupled from 61.72 BU of 2014-15 to 255.01 BU by 2024-25, recording a CAGR of 15.24% .

Fig 4.1 Share of various RE sources of RES in Energy Generation



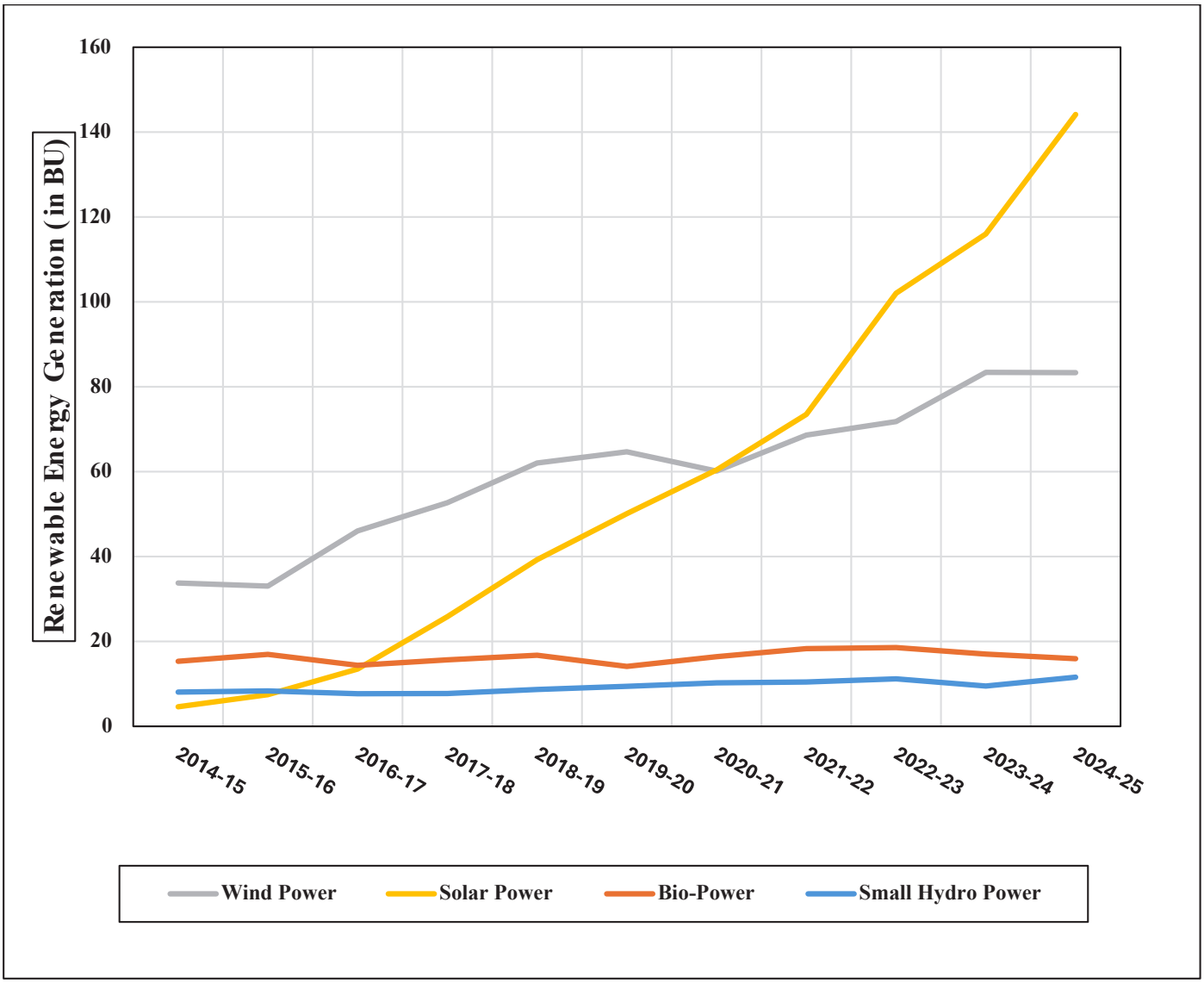
Above charts highlight a dramatic shift in India's electricity generation from Solar , Wind, Bio power and Small Hydro Power between 2014-15 and 2024-25. During 2014-15, wind power was the dominant source, contributing 54.71% among these , followed by bio-power at 24.77%. Small hydro Power and solar power accounted for 13.06% and 7.45%, respectively.

By 2024-25, solar power had surged to become the largest contributor, generating 144.15 BU, which is 56.53% of the total electricity generation from these sources from just 4.60 BU which was 7.45% during 2014-15. Share of wind power declined to 32.68% despite absolute growth. Bio-power slightly increased in electricity generation but dropped to 6.25% of the share, and small hydro declined further to 4.54% but increased in absolute terms. This comparison highlights a major transformation as solar power has now overtaken wind as the primary renewable energy source, marking a clear shift towards solar-led growth in India's renewable energy profile.

4.2 Trend in year wise electricity Generation under RES:

During 2014-15 to 2024-25, electricity generation from Solar , Wind, Bio power and Small Hydro Power underwent a notable transformation, with solar power emerging as the dominant source. Electricity generation from Solar Power surged from just 4.6 BU during 2014-15 to 144.15 BU in 2024-25, reflecting exponential growth. Wind power, which was the leading source in 2014-15 with 33.77 BU, grew steadily reaching around 83.35 BU in 2024-25. Bio-power generation, including biomass, bagasse, and waste-to-energy, remained largely stable, hovering between 15BU and 18 BU over the years. Small Hydro Power contributed modestly throughout the period, with a slight increase from 8.06 BU to 11.57 BU.

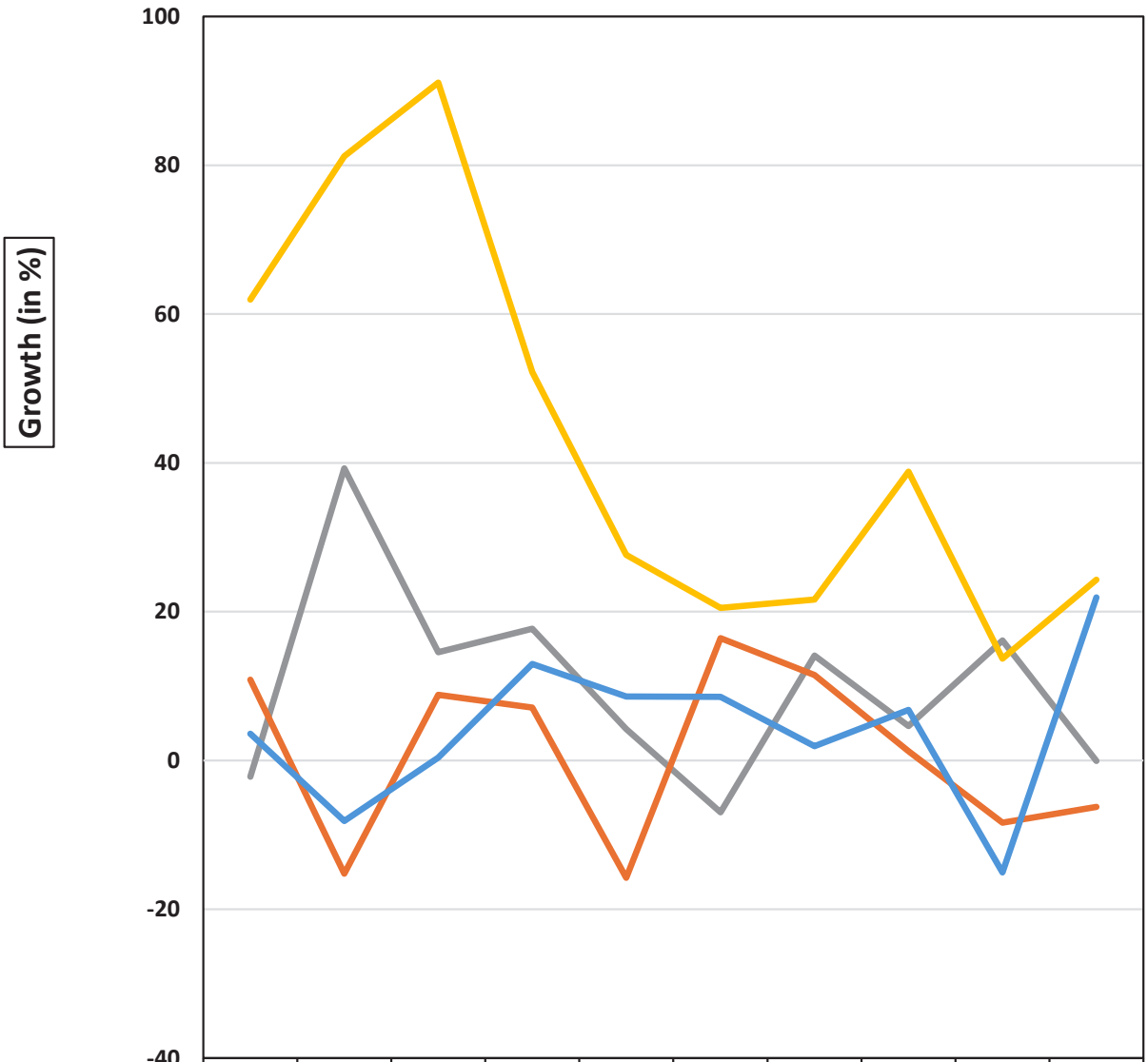
Fig 4.2 Trend in year wise energy Generation



4.3 Yearwise growth(%) in Energy Generation :

The year-wise growth trends of electricity generation from Solar , wind, Bio power and Small Hydro Power sources from 2015-16 to 2024-25 reveal a highly dynamic landscape, especially for solar power. Solar Power consistently recorded the highest growth rates, peaking at 91.11% in 2017-18, followed by strong double-digit increases in most of the years. Wind power displayed moderate and fluctuating growth, with a high of 39.27% in 2016-17 but tapering off in later years, even dipping slightly in 2020-21 and 2024-25. Bio-power showed irregular growth, with alternating years of expansion and contraction. Growth of electricity generation from Small hydro power remained volatile and modest, often dipping into negative territory, including -15.04% in 2023-24, though rebounding with 21.92% in 2024-25. Overall, the data underscores the clear leadership of solar power in growth, while other sources showed more variability (Fig 4.3).

Fig 4.3 Yearwise growth(%) in Energy Generation



	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Wind Power	-2.19	39.27	14.57	17.72	4.21	-6.96	14.11	4.62	16.13	-0.05
Solar Power	61.96	81.21	91.11	52.21	27.65	20.49	21.66	38.83	13.69	24.29
Bio-Power	10.86	-15.22	8.84	7.10	-15.76	16.44	11.50	1.26	-8.36	-6.24
Small Hydro Power	3.60	-8.14	0.39	12.99	8.62	8.57	1.95	6.79	-15.04	21.92

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Chapter 5

Monthly Installed Capacity and Electricity Generation during 2024-25

5.1 Monthly Installed Capacity and Electricity Generation during 2024-25 :

Installed capacity additions during 2024–25 were overwhelmingly led by renewable energy, with monthly additions ranging from 1.11 GW to 5.42 GW, while installed capacity under Non Renewable Energy remained negligible. Thermal capacity actually declined in April (by 0.22 GW) and March (by 0.65 GW) with only modest monthly additions of up to 1.7 GW between December and February. Nuclear capacity remained unchanged throughout the period, and installed capacity additions under large hydro sector was minimal, 0.04 GW in October and 0.76 GW in March. Renewable energy additions peaked at 5.42 GW in March, contributing to exceptional year-on-year growth rates of 596.30% in September, 402.86% in October, and 283.87% in August. Solar energy led the charge, with monthly additions reaching 3.69 GW in December and an impressive 682.35% year-on-year growth in September. Wind capacity remained volatile, adding 1.45 GW in March and registering year-on-year surges of 227.27% in October and 95.95% in March. In contrast, small hydro and bio-power made only marginal contributions. Overall, capacity growth in 2024–25 was almost entirely driven by solar, with wind playing a significant but secondary role.

During 2024–25, total monthly electricity generation ranged between 134 BU and 168 BU. Electricity generation from Non-renewable sources dominated contributing monthly generation between 107.08 BU and 132.73 BU. However, their performance remained weak, with year-on-year declines in August (-3.89%), September (-5.67%), and October (-2.33%), despite a peak growth of 15.30% in May. Monthly Electricity generation from Renewable energy (RE) sources ranged from 25.39 BU to 44.28 BU and emerged as the primary driver of overall growth. Notable year-on-year increases were recorded in January (27.49%), March (25.86%), and November (22.60%), although a slight dip occurred in August (-2.76%). Monthly Electricity generation form Solar registered consistent growth, rising from 12.02 BU in April to 16.81 BU in March, with strong year-on-year growth exceeding 36% in November, January, and March. Electricity generation from Wind power peaked at 13.63 BU in July and spiked by 38.34% in January. Large hydro reached 21.57 BU in August, supporting year-on-year gains of over 28% in October and November. Overall, renewable sources, particularly solar anchored electricity generation growth in 2024–25, while non-renewables remained largely stagnant or declined across several months.

Details of Monthly installed capacity addition as well as electricity generation from various sources during 2024-25 are stipulated in this chapter.

Table 5.1 Monthly Capacity Addition during 2024-25

(in GW)

Month	Non-RE			RE			Grand Total	Year on Year Growth (in %)	
	Thermal	Nuclear	Total	Large Hydro	RES	Total		RES	RE
Apr-24	-0.22	0	-0.22	0	1.11	1.11	0.89	109.43	109.43
May-24	0	0	0	0	1.9	1.9	1.9	75.93	75.93
Jun-24	0	0	0	0	1.43	1.43	1.43	-50.17	-50.17
Jul-24	0	0	0	0	2.2	2.19	2.19	76.00	75.20
Aug-24	0	0	0	0	2.37	2.38	2.38	282.26	283.87
Sep-24	0.06	0	0.06	0	1.88	1.88	1.93	596.30	596.30
Oct-24	0	0	0	0.04	1.72	1.76	1.76	391.43	402.86
Nov-24	0	0	0	0	2.3	2.3	2.31	303.51	283.33
Dec-24	1.32	0	1.32	0	3.92	3.92	5.24	230.25	221.31
Jan-25	1.52	0	1.52	0	2.72	2.73	4.25	121.14	120.16
Feb-25	1.69	0	1.69	0	2.51	2.51	4.2	73.10	71.92
Mar-25	-0.65	0	-0.65	0.76	4.66	5.42	4.76	-34.09	-23.34
2024-25	3.72	0	3.72	0.8	28.72	29.53	33.24		

Note : Growth '-100.00' reflects the absence of additions in 2024–25, in contrast to additions recorded in 2023–24 and '…' represents no capacity addition during 2023-24

Source: MNRE and CEA

Table 5.2 Monthly Sector Wise RE Capacity Addition during 2024-25

(in GW)

Month	RE					Year on Year Growth (in %)				
	Solar	Wind	SHP	Bio Power	Large Hydro	Solar	Wind	SHP	Bio Power	Large Hydro
Apr-24	0.83	0.27	0.01	0	0	176.67	12.50	...	...	...
May-24	1.64	0.26	0	0	0	121.62	-21.21	...	-100.00	...
Jun-24	1.19	0.24	0	0	0	-47.81	-57.89	-100.00	-100.00	...
Jul-24	1.74	0.42	0.03	0.01	0	65.71	147.06	50.00	...	...
Aug-24	2.22	0.11	0.03	0	0	382.61	-26.67	...	-100.00	...
Sep-24	1.33	0.17	0.01	0.36	0	682.35	88.89	...	...	...
Oct-24	1.36	0.36	0	0.02	0.04	466.67	227.27	-100.00	...	...
Nov-24	2.05	0.24	0	0	0	606.90	-11.11	...	...	-100.00
Dec-24	3.69	0.2	0.02	0.01	0	265.35	11.11	...	0.00	-100.00
Jan-25	2.47	0.21	0	0.05	0	149.49	-8.70	...	...	-100.00
Feb-25	2.24	0.22	0	0.05	0	76.38	22.22	...	...	...
Mar-25	3.08	1.45	0	0.13	0.76	-50.56	95.95	-100.00	18.18	...
2024-25	23.84	4.15	0.1	0.63	0.8					

Note: Growth '-100.00' reflects the absence of additions in 2024–25, in contrast to additions recorded in 2023–24 and '…' represents no capacity addition during 2023-24

Source: MNRE and CEA

Table 5.3 Monthly Electricity Generation during 2024-25

(in BU)

Month	Non-RE			RE			Grand Total	Year on Year Growth(in %)		
	Thermal	Nuclear	Total	Large Hydro	RES	Total		Non-RE	RES	RE
Apr-24	123.50	4.21	127.71	8.11	18.62	26.75	154.46	11.18	11.68	5.27
May-24	128.05	4.68	132.73	12.59	22.51	35.10	167.83	15.30	8.69	8.74
Jun-24	120.87	4.22	125.09	14.18	23.05	37.23	162.32	11.15	1.99	0.79
Jul-24	111.40	4.80	116.20	17.56	25.97	43.53	159.73	8.48	14.15	7.03
Aug-24	104.20	5.49	109.69	21.57	22.71	44.28	153.97	-3.89	-3.68	-2.76
Sep-24	102.15	4.93	107.08	20.57	22.40	42.97	150.05	-5.67	12.49	18.59
Oct-24	114.11	4.77	118.88	14.46	17.70	32.16	151.04	-2.33	14.86	20.68
Nov-24	104.23	4.81	109.04	8.63	16.76	25.39	134.43	0.71	18.95	22.60
Dec-24	107.97	5.08	113.05	7.75	19.77	27.53	140.58	3.00	17.92	20.02
Jan-25	114.38	4.82	119.20	7.39	21.18	28.57	147.77	-1.68	31.88	27.49
Feb-25	110.40	4.15	114.55	6.97	20.19	27.17	141.72	1.22	12.20	13.55
Mar-25	122.63	4.72	127.35	8.76	24.15	33.10	160.45	3.95	25.23	25.86
2024-25	1363.79	56.68	1420.47	148.63	255.01	403.64	1824.12			

Source: Central Electricity Authority (CEA)

RES- Comprising of Solar, Wind, Bio-Power and Small Hydro Power*

Table 5.4 Monthly Electricity Generation under RES during 2024-25

(in BU)

Month	RE					Year on Year Growth(in %)				
	Solar	Wind	Small Hydro	Bio Power	Large Hydro	Solar	Wind	Small Hydro	Bio Power	Large Hydro
Apr-24	12.02	4.73	0.58	1.29	8.11	16.50	11.30	-0.74	-15.11	-7.10
May-24	12.65	8.26	0.75	0.86	12.59	17.35	1.72	2.58	-20.92	8.82
Jun-24	11.45	10.13	0.78	0.70	14.18	19.13	-12.31	5.59	-0.94	-1.05
Jul-24	10.36	13.63	1.32	0.66	17.56	22.77	9.46	5.92	6.71	-2.01
Aug-24	10.16	10.27	1.60	0.68	21.57	8.92	-17.15	29.19	10.45	-1.78
Sep-24	11.30	8.87	1.61	0.61	20.57	22.58	0.22	31.97	-1.02	26.04
Oct-24	12.26	3.24	1.46	0.75	14.46	19.93	-8.74	50.95	10.56	28.65
Nov-24	11.25	3.11	0.86	1.54	8.63	43.80	-12.27	11.15	-20.94	30.36
Dec-24	10.71	5.75	0.81	2.51	7.75	24.58	12.41	37.29	1.62	25.61
Jan-25	12.29	5.64	0.63	2.64	7.39	36.38	38.34	31.25	5.60	16.38
Feb-25	12.91	4.59	0.56	2.12	6.97	23.92	-6.42	27.27	-4.93	17.54
Mar-25	16.81	5.13	0.62	1.58	8.76	37.51	12.14	31.91	-21.39	24.79
2024-25	144.15	83.35	11.57	15.94	148.63					

Source: Central Electricity Authority (CEA)

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CHAPTER 6

Sustainable Development Goal -National Indicator Framework (SDG-NIF)

6.1 SDG-NIF : India has demonstrated remarkable progress towards achieving Sustainable Development Goal-7 (SDG 7), which aims to ensure access to affordable, reliable, sustainable, and modern energy for all. One of the metrics for tracking this advancement is indicator 7.b.1/12.a.1, which measures the installed renewable energy generating capacity per capita (in watts). Over the past decade, India's per capita renewable energy capacity has more than doubled, increasing from 64.04 watts of 2014–15 to 156.31 watts by 2024–25. This significant growth reflects the expansion of the country's total installed capacity under renewable energy from around 81.2 GW to over 220 GW during the same period. Notably, the most substantial annual increase occurred between 2023–24 and 2024–25, when per capita renewable installed capacity surged by 14.5%, jumping from 136.56 watts to 156.31 watts.

Another national indicator for measuring the goal is the indicator 7.2.1 which measures the share of RE in India's total electricity generation. This indicator has shown a consistent upward trajectory over the past decade. From 16.02% of 2015-16, RE contribution in overall electricity generation rose steadily, reaching a peak of 22.61% in 2022-23. Despite a marginal dip to 20.75% in 2023-24, the share recovered to 22.13% in 2024-25, with renewable generation increasing to 403.64 BU out of the total 1824.22 BU. This progress highlights India's ongoing commitment to building a sustainable energy future and enhancing energy access for its growing population. Details of these indicators are stipulated in this chapter.

Table 6.1 SDG – NIF Indicators 7.b.1/12. a.1- Installed renewable energy generating capacity in the country (in watts per capita)

Year	Installed electricity generation capacity in renewable energy (in Watt)	Watts per capita
2014-15	81217520000	64.04
2015-16	89874800000	69.98
2016-17	103036610000	79.29
2017-18	115944860000	88.25
2018-19	124811220000	93.97
2019-20	133954520000	99.77
2020-21	142012610000	104.65
2021-22	156607900000	114.29
2022-23	172009980000	124.38
2023-24	190572680000	136.56
2024-25	220096350000	156.31

Fig 6.1 Installed renewable energy generating capacity in the country (in watts per capita)

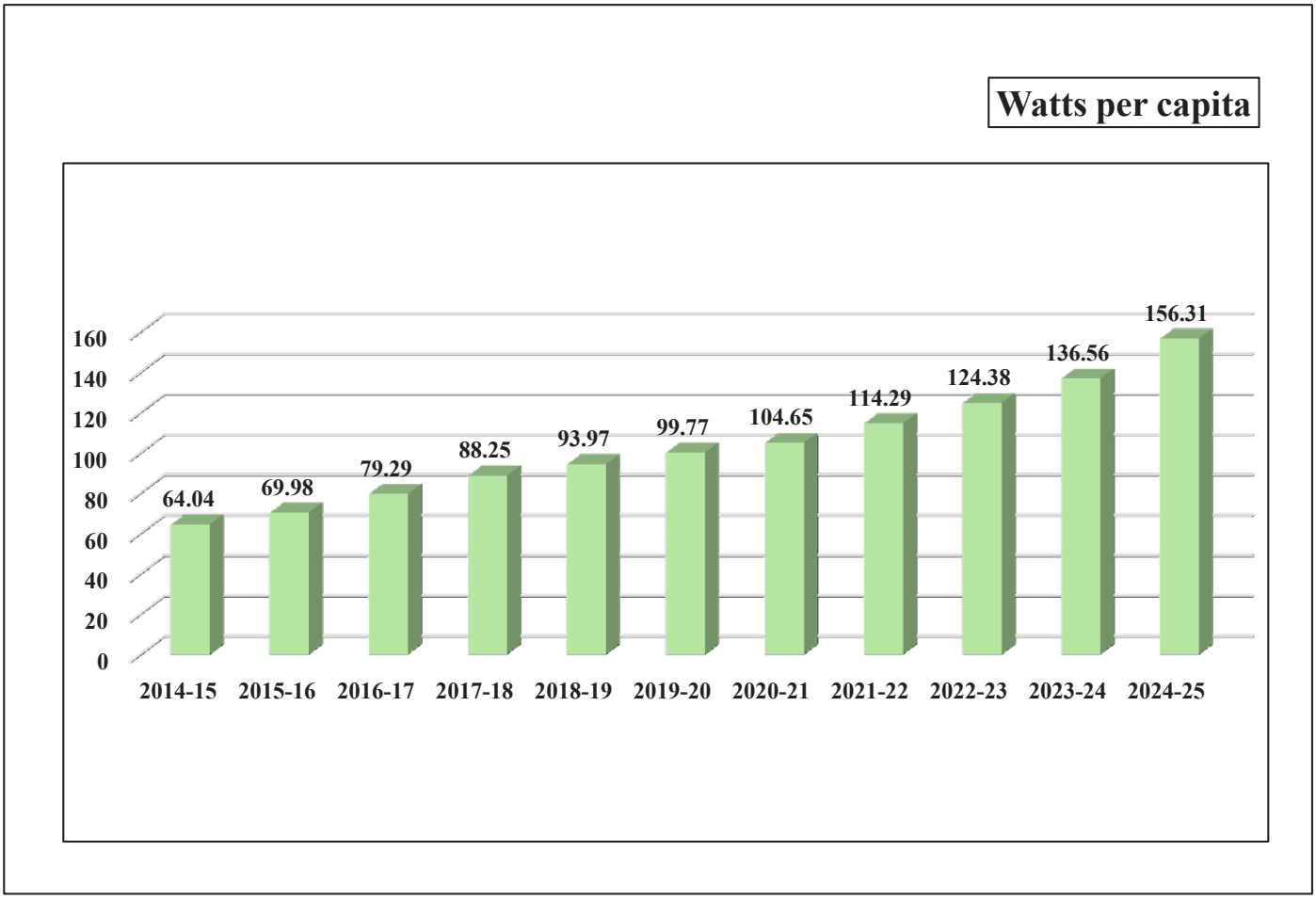
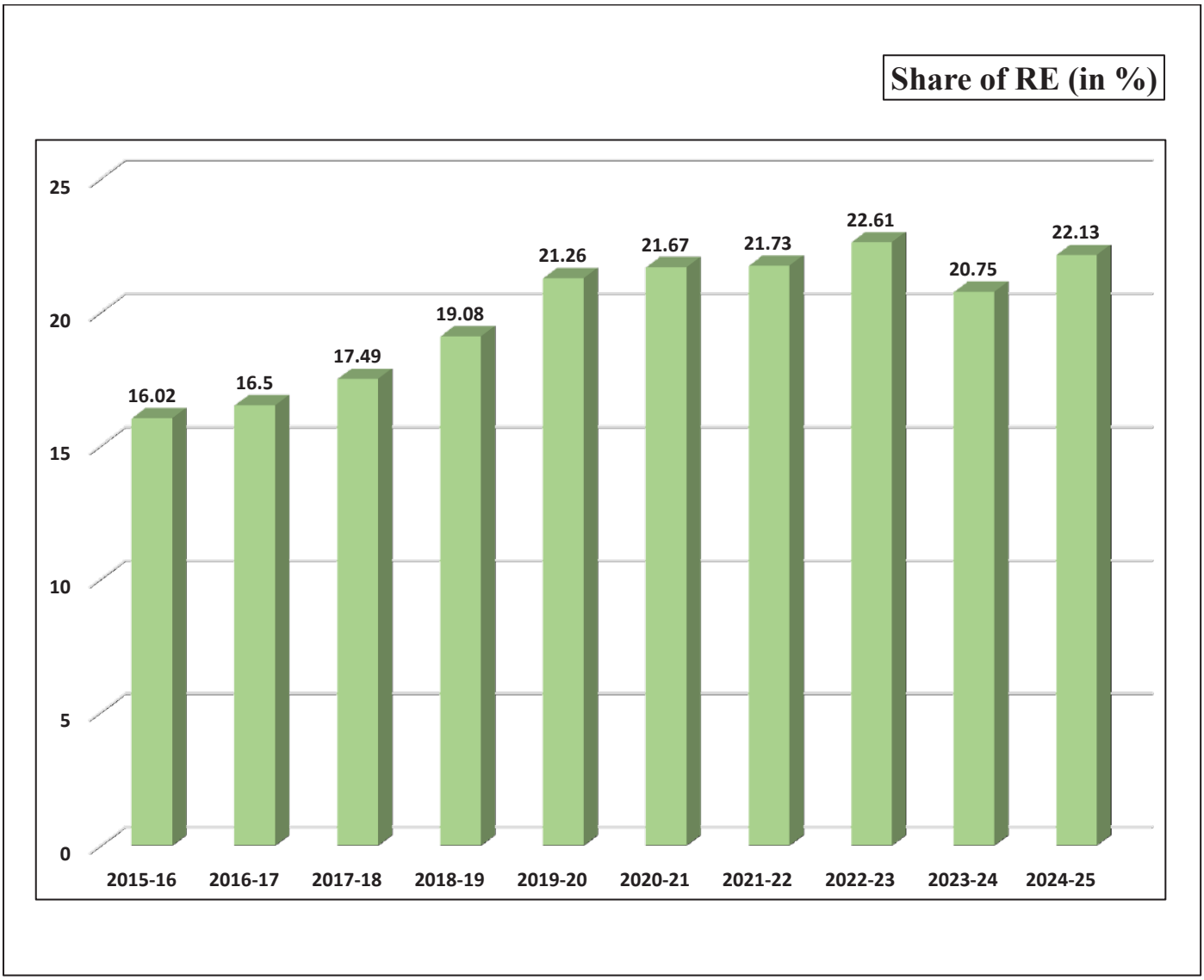


Table 6.2 SDG Indicators 7.2.1 RE share in the total installed electricity generation

Year	Overall generation (in BU)	Generation through RE (in BU)	Share of RE (in %)
2015-16	1168.37	187.16	16.02
2016-17	1236.08	203.93	16.50
2017-18	1303.34	227.94	17.49
2018-19	1371.68	261.65	19.08
2019-20	1383.33	294.11	21.26
2020-21	1373.09	297.55	21.67
2021-22	1484.36	322.54	21.73
2022-23	1617.58	365.66	22.61
2023-24	1734.12	359.89	20.75
2024-25	1824.22	403.64	22.13

Fig 6.2 RE share in the total installed electricity generation



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STATE WISE STATUS

POTENTIAL AND INSTALLED CAPACITY

CHAPTER 7

Estimated RE potential and Installed Capacity in RE and Non-RE sector

7.1 Estimated Renewable Energy Potential: India possesses substantial renewable energy potential across diverse sources such as solar, wind, hydro, and bioenergy. Government of India consistently undertakes initiatives to evaluate and update the estimated capacities of these resources. As per the latest assessments, the country's estimated potential for Solar Power, Wind Power, Hydro Power, and Bio Power is as follows:

Solar Power:

As per the report "Solar PV Potential of India (Ground Mounted)" published by National Institute of Solar Energy (NISE), in September 2025 estimated country's solar power potential is 3343.37 GW. The country has been actively working to harness this potential, achieving 3rd rank globally in installed solar capacity as well as electricity generation from solar power.

Wind Power:

National Institute of Wind Energy (NIWE) in 2023, India's wind power potential has been estimated at 1163.86 GW at 150 meters above ground level. India ranks 4th in the world for wind installed capacity, reflecting significant progress in harnessing its wind energy potential.

Hydro Power:

- **Large Hydro Power:** India possesses substantial hydro power potential due to its numerous rivers and dams. According to Exploitable capacity identified by Central Electricity Authority, Ministry of Power, Large Hydro Power has the estimated potential of 133.41 GW in the country.
- **Small Hydro Power:** As per the assessment done by IIT Roorkee in 2016, India's estimated potential for small hydro power (up to 25 MW) is 21.13 GW.

Biomass Power:

Administrative Staff College of India, in 2021 estimated country's bio-energy power potential as 42.27 GW. India ranks 3rd globally in bioenergy installed capacity. State wise Renewable Energy estimated potential has been described **in Table 7.1.**

Table 7.1 Estimated potential in RE Sector

(in MW)

STATES / UTs	Wind Power	Small Hydro Power	Bio-energy		Solar Power*	Large Hydro
			Biomass Power	Bagasse Cogeneration		
Andhra Pradesh	123336	409.32	1999.49	279.6	299312.12	2596
Arunachal Pradesh	246	2064.92	18.46		467.52	50394
Assam	459	201.99	321.89		19173.13	643
Bihar	4023	526.98	964.37	346.6	32991.49	130.1
Chhattisgarh	2749	1098.2	353.68		126484.29	1311
Goa	14	4.7	32.97		6752.35	
Gujarat	180790	201.97	2637.84	554.7	243219.9	550
Haryana	593	107.4	1353.35	362.1	6468.1	
Himachal Pradesh	239	3460.34	69.71		21501.61	18305
UT of Jammu & Kashmir		1707.45	82.82		8588.94	12971.5
Ladakh	1				8556.64	
Jharkhand	16	227.96	146.31		51831.29	300
Karnataka	169251	3726.49	1793.88	1762.1	223278.99	4414.4
Kerala	2621	647.15	778.41		12404.71	2472.75
Madhya Pradesh	55423	820.44	2516.42		318972.16	2819
Maharashtra	173868	786.46	2629.55	3917	486678.68	3144
Manipur		99.95	62.31		2293.92	615
Meghalaya	55	230.05	68.54		14674.1	2026
Mizoram		168.9	2.90		612.21	1926.7
Nagaland		182.18	53.90		190.96	325
Orissa	12129	286.22	298.72		139474.33	2824.5
Punjab	428	578.28	3022.11	414.4	9210.19	1300.73
Rajasthan	284250	51.67	1299.55		828781.44	411
Sikkim		266.64	4.73		254.46	6051
Tamil Nadu	95107	604.46	1560.08	639.3	204765.06	1785.2
Telangana	54717	102.25	1678.36	117.4	140451.26	1302
Tripura		46.86	34.35		9105.85	
Uttar Pradesh	510	460.75	2800.31	4925.7	97842.99	501.6
Uttarakhand	49	1664.31	93.34	215.1	4436.24	13481.35
West Bengal	1281	392.06	1741.74		22742.39	809.2
Andaman & Nicobar	1245	7.27	18.13		594.22	
Chandigarh			0.15		22.42	
Dadar & Nagar Haveli & Daman and Diu	17		2.16		498.31	
Delhi					550.22	
Lakshadweep	31		1.39			
Pondicherry	408		5.00		195.9	
Others				284.4		
Total	**1163856**	**21133.62**	**28446.91**	**13818.4**	**3343378.39**	**133410.03**

** Ground Mounted*

Source: MNRE & CEA

7.2 State wise Installed Capacity under RE and Non -RE sector:

During 2018-19 to 2024-25, India's renewable energy (RE) installed capacity increased from 116 GW to 220 GW, registering an impressive growth of over 89.8%. Installed capacity under Non-renewable energy (Non-RE) rose modestly by about 11%, from around 230 GW to 255GW indicating a significant policy and investment shift towards clean energy.

Among states, Rajasthan witnessed the most dramatic RE growth in installed capacity, leaping from 7,289 MW to 34,136 MW, an addition of nearly 27,000 MW , making it the top RE state in 2024-25. Gujarat followed with a rise from 9,339 MW to 33,393 MW. Tamil Nadu retained its strong position, expanding from 13,452 MW to 25,241 MW. Karnataka and Maharashtra rounded out the top five, reaching 23,917 MW and 22,401 MW respectively.

States like Madhya Pradesh, Andhra Pradesh, and Himachal Pradesh also posted considerable gain in RE installed capacity. Himachal Pradesh's installed capacity was entirely renewable and grew from 10,514 MW to 12,196 MW, driven by hydro resources. Smaller states and UTs such as Goa, Delhi, and Chandigarh showed noteworthy percentage increases, albeit from a smaller base. Table 7.2 provides detailed data on installed capacity across various states and Union Territories as on 31st March 2018 and 31st March 2025.

Table 7.2 State wise Non-RE and RE Cumulative Installed Capacity as on 31.03.2018 and 31.03.2025 (in MW)

Sr. No.	Year	Up to 31st March,2018		Up to 31st March,2025	
	States/UTs	Non-RE	RE	Non-RE	RE
1	Andhra Pradesh	16507.20	8060.58	17905.34	12114.48
2	Arunachal Pradesh	0.00	517.00	0.00	1270.46
3	Assam	1103.95	378.39	1347.36	582.65
4	Bihar	5480.00	346.18	9060.00	539.26
5	Chhattisgarh	22968.00	785.42	23688.00	1828.46
6	Goa	48.00	1.08	48.00	58.43
7	Gujarat	23483.41	9339.45	24828.41	33393.03
8	Haryana	5971.59	510.49	5761.59	2449.94
9	Himachal Pradesh	0.00	10514.30	0.00	12196.19
10	Jammu & Kashmir	175.00	3650.22	175.00	3624.42
11	Jharkhand	4590.00	320.14	5570.00	434.06
12	Karnataka	10513.12	16241.59	10755.25	23917.64
13	Kerala	693.54	2282.06	693.54	3853.38
14	Ladakh	0.00	0	0.00	142.59
15	Madhya Pradesh	17065.00	6445.13	22000.00	10827.70
16	Maharashtra	29833.08	11519.21	29273.09	22401.46
17	Manipur	36.00	115.28	36.00	124.24
18	Meghalaya	0.00	418.85	0.00	395.11
19	Mizoram	0.00	100.16	0.00	135.86
20	Nagaland	0.00	108.51	0.00	110.84

Table 7.2 contd.

Sr. No.	Year	Up to March,2018		Up to March,2025	
	States/UTs	Non-RE	RE	Non-RE	RE
21	Odisha	7680.00	2364.94	9600.00	2958.84
22	Punjab	6540.00	2626.98	5680.00	3270.42
23	Rajasthan	10703.10	7289.36	12982.83	34136.34
24	Sikkim	0.00	2222.98	0.00	2344.67
25	Tamil Nadu	16638.90	13451.7	17841.38	25241.36
26	Telangana	6682.50	6507.48	10242.50	7688.34
27	Tripura	1132.10	24.53	1067.60	37.25
28	Uttar Pradesh	23776.10	3447.25	29968.14	6223.91
29	Uttarakhand	450.00	4379.83	664.00	5010.77
30	West Bengal	14495.00	1747.46	13567.00	2112.18
31	Andaman & Nicobar	40.05	12.05	92.71	35.16
32	Chandigarh	0.00	26.01	0.00	78.85
33	Dadar & Nagar Haveli/Daman & Diu	0.00	16.07	0.00	51.87
34	Delhi	3048.40	123.03	2208.40	397.40
35	Lakshadweep	0.00	3.14	26.83	4.97
36	Pondicherry	32.50	0.34	32.50	54.51
	Others		47.66		49.31
	Grand Total	**229687.00**	**115945.00**	**255115.46**	**220096.35**

Source: National Power Portal (NPP), MoP & MNRE

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CHAPTER 8

Installed capacity in RE sector

8.1 Region wise /state wise installed capacity in RE sector

Between 2017–18 and 2024–25, India witnessed a remarkable transformation in its electricity installed capacity, nearly doubling from 116 GW to over 220GW. This growth was predominantly concentrated in the Western, Northern, and Southern regions, driven by strong contributions from states like Gujarat, Maharashtra ,Rajasthan, Karnataka, Tamil Nadu, and Andhra Pradesh. The Southern Region leads India's renewable energy capacity with over 33%, followed by the Western and Northern Regions, while the Eastern and North-Eastern regions lag behind. Solar energy dominates India's renewable mix, complemented by wind, large hydro, bio-power, and small hydro power. States like Rajasthan and Karnataka demonstrate high shares of installed capacity exceeding 60%, while some northeastern states achieve 100% renewable capacity, mainly through hydro power. For detailed state-wise and region-wise data on RE installed capacity from 2017–18 to 2024–25, please refer to **Table 8.1**.

Table 8.1 Region wise / State wise RE Cumulative Installed Capacity from 2017-18 to 2024-25

(in MW)

STATES / UTs	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
NORTHERN REGION								
Haryana	510.49	519.11	547.19	762.51	1242.13	1362.09	1832.92	2449.94
Himachal Pradesh	10514.30	10707.75	10768.91	10916.61	11303.49	11330.42	11356.16	12196.18
Jammu & Kashmir	3650.22	3664.10	3581.11	3588.11	3551.61	3556.12	3595.37	3624.42
Ladakh	0.00	0.00	89.00	89.00	136.44	137.79	139.79	142.59
Punjab	2626.98	2522.38	2566.86	2743.80	2864.12	2961.93	3163.92	3270.42
Rajasthan	7289.36	8223.73	10134.97	10812.35	17451.62	22809.05	27103.89	34136.34
Uttar Pradesh	3447.25	3739.46	3900.97	4563.07	4985.12	5282.65	5697.17	6223.91
Uttarakhand	4379.83	4426.88	4437.96	4589.24	4787.15	4909.14	4971.94	5010.77
Chandigarh	26.01	35.52	41.36	45.97	55.17	58.69	65.52	78.85
Delhi	123.03	180.35	218.62	246.43	270.12	302.26	340.51	397.4
Total	**32567.47**	**34019.28**	**36286.95**	**38357.09**	**46646.97**	**52710.14**	**58267.19**	**67530.82**
NORTH-EASTERN REGION								
Arunachal Pradesh	517.00	655.69	955.98	1256.27	1257.34	1259.75	1259.90	1270.46
Assam	378.39	414.58	433.86	437.67	504.05	534.04	542.29	582.65
Manipur	115.28	118.66	120.43	121.84	122.70	122.73	123.49	124.24
Meghalaya	418.85	372.18	372.18	372.18	372.48	372.48	395.07	395.11
Mizoram	100.16	101.20	102.52	103.45	104.37	133.49	135.78	135.86
Nagaland	108.51	108.51	108.51	108.58	108.71	110.71	110.84	110.84
Tripura	24.53	24.53	28.91	29.57	30.9	33.61	34.47	37.25
Total	**1662.72**	**1795.35**	**2122.39**	**2429.56**	**2500.55**	**2566.81**	**2601.84**	**2656.41**

Table 8.1 Contd

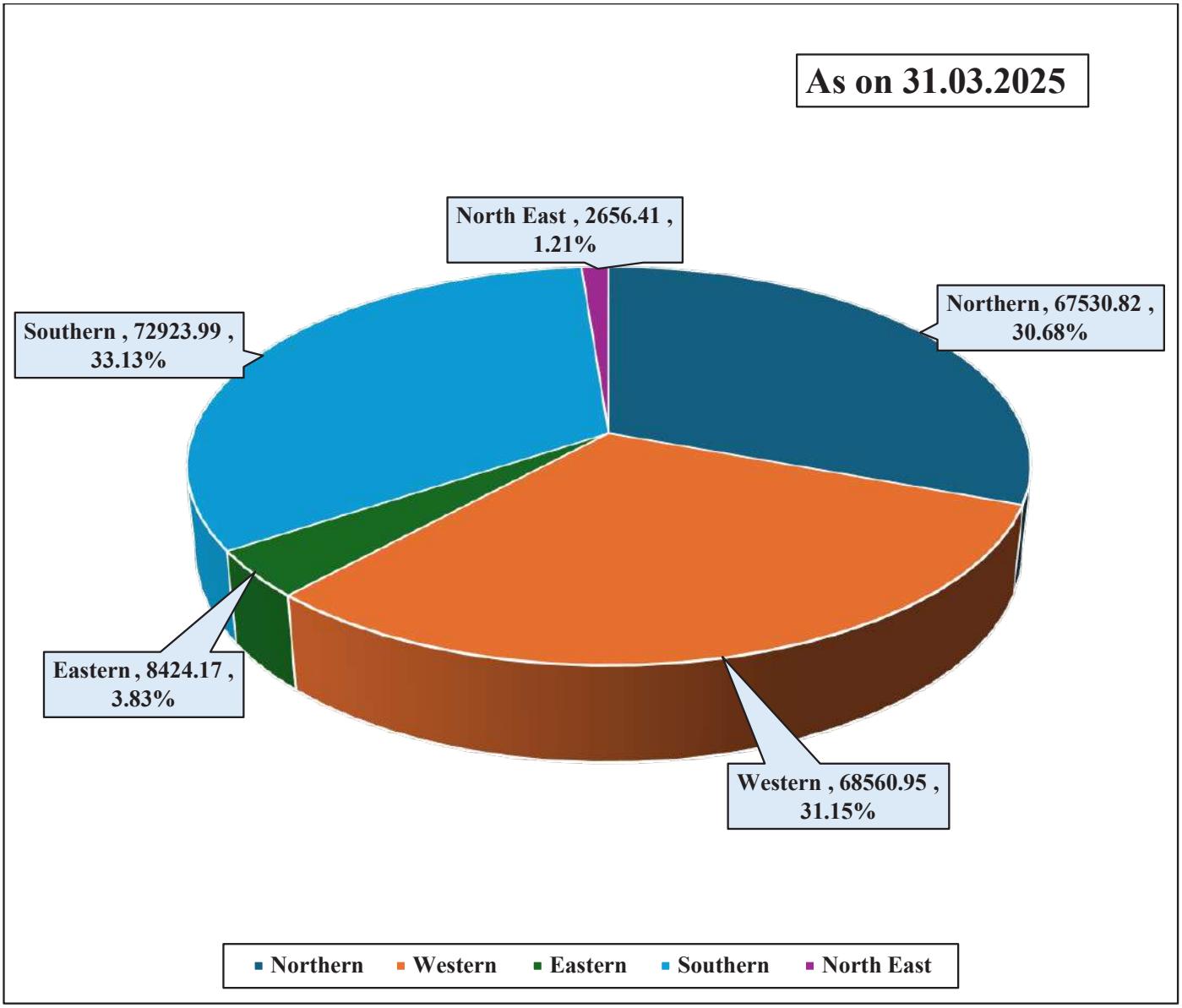
STATES / UT's	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
WESTERN REGION								
Chhattisgarh	785.42	850.77	864.89	886.52	989.08	1419.82	1683.39	1828.46
Goa	1.08	4.09	5.29	7.95	20.34	26.88	45.47	58.43
Gujarat	9339.45	10697.72	12683.77	15204.25	18577.90	21425.85	27461.72	33393.03
Madhya Pradesh	6445.13	6864.87	7285.75	7526.97	7703.88	8140.08	9333.37	10827.7
Maharashtra	11519.21	12421.69	12822.27	13382.85	13704.08	15804.50	17530.12	22401.46
Dadar & Nagar Haveli/Daman & Diu	16.07	19.93	25.32	46.01	46.18	46.47	46.47	51.87
Total	**28106.36**	**30859.07**	**33687.29**	**37054.55**	**41041.46**	**46863.6**	**56100.54**	**68560.95**
EASTERN REGION								
Bihar	346.18	352.23	365.09	376.63	387.35	389.60	450.15	539.26
Jharkhand	320.14	267.87	273.80	288.21	307.14	324.19	395.55	434.06
Odisha	2364.94	2681.68	2686.38	2715.63	2771.64	2782.57	2825.03	2958.84
Sikkim	2222.98	2222.99	2223.05	2223.05	2338.79	2341.80	2344.15	2344.67
West Bengal	1747.46	1849.29	1888.03	1923.44	1928.15	1962.77	1982.13	2112.18
Andaman & Nicobar	12.05	17.22	17.68	34.71	34.74	35.16	35.16	35.16
Total	**7013.75**	**7391.28**	**7454.03**	**7561.67**	**7767.81**	**7836.09**	**8032.17**	**8424.17**
SOUTHERN REGION								
Andhra Pradesh	8060.58	9560.02	10091.40	10696.10	10821.6	10970.20	11029.30	12114.48
Karnataka	16241.60	17524.40	18918.10	19149.30	19593.8	20408.40	21441.90	23917.64
Kerala	2282.06	2290.71	2304.35	2428.92	2527.2	2957.10	3229.46	3853.38
Tamil Nadu	13451.7	14909.40	16588.8	17476.70	18277.5	20098.60	22161.60	25241.36
Telangana	6507.48	6405.96	6442.85	6796.59	7364.79	7510.97	7604.40	7688.34
Lakshadweep	3.14	3.14	3.27	3.27	3.27	3.27	4.97	4.97
Pondicherry	0.34	3.32	5.69	9.51	13.69	35.53	49.91	54.51
Total	**46546.9**	**50696.95**	**54354.46**	**56560.39**	**58601.85**	**61984.07**	**65521.54**	**72874.68**
Others	47.66	49.31	49.31	49.31	49.31	49.31	49.31	49.31
Grand Total	**115944.90**	**124811.20**	**133954.50**	**142012.60**	**156607.90**	**172010.00**	**190572.70**	**220096.35**

Source: MNRE & NPP, MoP

8.2 Share of various regions in the installed capacity as on 31.03.2025:

As on 31st March 2025, Southern Region leads India's renewable energy installed capacity, contributing the highest share at 33.13%, reflecting strong growth in states like Karnataka, Tamil Nadu, and Andhra Pradesh. Western Region follows closely with 31.15%, driven by major contributions from Gujarat and Maharashtra. Northern Region holds a 30.68% share, with Rajasthan playing a dominant role in the region's rise. On the other hand, Eastern Region accounts for only 3.83%. North Eastern Region contributes the least at just 1.21%, indicating minimal capacity expansion and limited renewable infrastructure in the area. The chart highlights the regional imbalance in renewable energy growth, with southern and western states leading the transition (**Ref Fig 8.1**).

Fig 8.1 Region wise RE Installed Capacity *(in MW)*



8.3 Installed Capacity under RE as on 31.03.2025:

As on 31st March, 2025, Rajasthan, Gujarat, Tamil Nadu, Karnataka, and Maharashtra emerged as the leading contributors to India's renewable energy (RE) installed capacity. Collectively, these states accounted for a substantial share of 63.19% of the country's total installed renewable energy capacity. In the solar energy sector, the top five contributing states were Rajasthan, Gujarat, Maharashtra, Tamil Nadu, and Karnataka. These states together accounted for an impressive share of 73.17% of the total solar power capacity installed in the country. Wind energy segment continued to be concentrated in a few key states, with Gujarat, Tamil Nadu, Karnataka, Maharashtra, Rajasthan, Andhra Pradesh & Madhya Pradesh contributing approximately 99.59% of the total installed wind power capacity. This indicates the high regional concentration of wind energy potential and development in coastal and high-wind corridor states. Bioenergy sector also experienced significant growth, primarily driven by Maharashtra, Uttar Pradesh, Karnataka, and Tamil Nadu. These four states together contributed about 71.37% of the country's total installed bioenergy capacity, benefiting from agricultural and industrial biomass availability. In the case of large hydro power, the contribution was led by

Himachal Pradesh, Uttarakhand, Karnataka, Jammu & Kashmir, Maharashtra, and Telangana, which together accounted for 57.66% of the country's total large hydro installed capacity. This reflects the geographical advantage of these states, particularly in the Himalayan and Western Ghats regions, which offer significant hydroelectric potential. This distribution highlights both the geographical concentration and the regional strengths in different RE segments, reflecting how state-specific natural resources and policies shape India's renewable energy landscape. (**Refer table 8.2**)

8.4 State wise installed capacity of Various categories of Solar and Bio Power as on 31.03.2025:

India's renewable energy installed under bio-power and solar power shows diverse contributions across states. Bagasse cogeneration dominates bio-power, with Maharashtra, Uttar Pradesh, and Karnataka leading. Solar power is heavily concentrated in ground-mounted installations, led by Rajasthan, Gujarat, and Tamil Nadu. Rooftop solar is significant in Gujarat, Maharashtra, Rajasthan and Kerala. Smaller states and UTs like Chandigarh, Delhi, and Andaman & Nicobar focus on rooftop and off-grid solar. Overall, this mixes highlights India's robust bio-energy base alongside a rapid expansion of solar, supporting its clean energy transition with a balance of centralized and distributed generation **(Refer Table 8.3)**

8.5 Installation of Off-grid / Decentralized Renewable Energy Systems / Devices as on 31.03.2025:

The data showcases India's extensive deployment of decentralized renewable energy systems across states and UTs, highlighting biogas plants, solar photovoltaic (SPV) pumps, and various SPV systems. Biogas plants are widely installed, with Maharashtra, Karnataka, and Uttar Pradesh leading in numbers, supporting rural energy needs. SPV pumps, crucial for sustainable agriculture, have significant adoption in Maharashtra, Haryana and Rajasthan. Details of Off-Grid / Decentralized Renewable Energy Systems / Devices installed under schemes of MNRE are stipulated in **table 8.4**

8.6 Renewable energy share in the total installed capacity within the state:

The penetration of renewable energy (RE) in the overall power generation capacity varies significantly across states and Union Territories (UTs). As on 31st March, 2025, 100% of the total installed power capacity comes from renewable energy sources in respect of the States/UTs of Arunachal Pradesh, Himachal Pradesh, Meghalaya, Mizoram, Nagaland, Sikkim, Ladakh, Chandigarh, Dadar & Nagar Haveli and Daman & Diu..

In addition, Uttarakhand, Kerala, Manipur, Rajasthan, Karnataka, Jammu & Kashmir and Puducherry report a renewable energy share ranging between 60% and 100% of their total installed capacity. **(Refer table 8.5).**

Table 8.2 RE cumulative installed capacity as on 31.03.2025

(in MW)

States /UTs	Small Hydro Power	Wind Power	Bio Power	Solar Power	Large Hydro	Total Capacity
Andhra Pradesh	163.31	4377.15	594.02	5370.00	1610.00	12114.48
Arunachal Pradesh	140.61		0.00	14.85	1115.00	1270.46
Assam	34.11		2.00	196.54	350.00	582.65
Bihar	70.70		140.22	328.34		539.26
Chhattisgarh	76.00		285.42	1347.04	120.00	1828.46
Goa	0.05		1.94	56.44		58.43
Gujarat	106.64	12677.48	122.25	18496.66	1990.00	33393.03
Haryana	73.50		311.47	2064.97		2449.94
Himachal Pradesh	1000.71		10.20	204.26	10981.02	12196.19
Jammu & Kashmir	189.93		0.00	74.49	3360.00	3624.42
Jharkhand	4.05		20.14	199.87	210.00	434.06
Karnataka	1284.73	7351.10	1912.95	9679.66	3689.20	23917.64
Kerala	276.52	71.27	2.50	1538.94	1964.15	3853.38
Ladakh	45.79		0.00	7.80	89.00	142.59
Madhya Pradesh	123.71	3195.15	155.46	5118.38	2235.00	10827.70
Maharashtra	384.28	5284.61	2998.30	10687.27	3047.00	22401.46
Manipur	5.45		0.00	13.79	105.00	124.24
Meghalaya	55.03		13.80	4.28	322.00	395.11
Mizoram	45.47		0.00	30.39	60.00	135.86
Nagaland	32.67		0.00	3.17	75.00	110.84
Odisha	115.63		64.22	624.44	2154.55	2958.84
Punjab	176.10		576.59	1421.43	1096.30	3270.42
Rajasthan	23.85	5208.75	206.27	28286.47	411.00	34136.34
Sikkim	55.11		0.00	7.56	2282.00	2344.67
Tamil Nadu	123.05	11739.91	1046.62	10153.58	2178.20	25241.36
Telangana	90.87	128.10	221.67	4842.10	2405.60	7688.34
Tripura	16.01		0.00	21.24		37.25
Uttar Pradesh	49.10		2309.14	3364.07	501.60	6223.91
Uttarakhand	233.82		148.53	593.07	4035.35	5010.77
West Bengal	98.50		351.86	320.62	1341.20	2112.18
Andaman & Nicobar Islands	5.25		0.00	29.91		35.16
Chandigarh			0.00	78.85		78.85
"Dadar & Nagar Haveli/ Daman & Diu"			3.75	48.12		51.87
Delhi			84.00	313.40		397.40
Lakshadweep			0.00	4.97		4.97
Pondicherry			0.00	54.51		54.51
Others		4.30	0.00	45.01		49.31
Total	**5100.55**	**50037.82**	**11583.32**	**105646.49**	**47728.17**	**220096.35**

Table 8.3 Cumulative installed capacity of bio-power and solar power as on 31.03.2025.

(in MW)

States/Uts	Bio-Power				Solar Power			
	BM Power/ Bagasse Cogen.	BM Cogen. (Non Baggasse)	Waste to Energy	Waste to Energy (Off-grid)	Ground Mounted Solar	Rooftop Solar	Hybrid Solar Comp.	Off-grid Solar/ KUSUM
Andhra Pradesh	378.10	113.57	53.16	49.19	4990.86	290.80	0.00	88.34
Arunachal Pradesh					1.27	6.68	0.00	6.90
Assam		2.00			126.00	61.10	0.00	9.44
Bihar	112.50	26.40		1.32	196.06	111.00	0.00	21.28
Chhattisgarh	272.09	2.50		10.83	848.91	107.40	0.00	390.73
Goa			1.94		1.95	53.00	0.00	1.49
Gujarat	65.30	12.00	7.50	37.45	12482.93	5105.20	813.50	95.03
Haryana	151.40	111.26	11.20	37.61	266.80	828.50	0.00	969.67
Himachal Pradesh		9.20		1.00	145.05	24.63	0.00	34.58
Jammu & Kashmir					2.49	42.20	0.00	29.80
Jharkhand		19.10		1.04	21.00	93.04	0.00	85.83
Karnataka	1868.91	20.20	1.00	22.84	8862.80	696.70	81.00	39.16
Kerala		2.27		0.23	323.21	1190.80	0.00	24.93
Ladakh					6.00	1.80	0.00	0.00
Madhya Pradesh	92.50	14.85	15.40	32.71	4503.24	513.10	0.00	102.04
Maharashtra	2907.30	16.40	12.59	62.01	5994.70	3298.20	0.00	1394.37
Manipur					0.60	7.11	0.00	6.08
Meghalaya		13.80			0.00	0.21	0.00	4.07
Mizoram					22.00	2.00	0.00	6.39
Nagaland					0.00	1.00	0.00	2.17
Odisha	50.40	8.82		5.00	512.00	70.10	0.00	42.34
Punjab	299.50	231.79	10.75	34.55	886.27	453.80	0.00	81.36
Rajasthan	134.15	2.00	59.60	10.52	23985.22	1515.80	1980.00	805.45
Sikkim					0.52	5.12	0.00	1.92
Tamil Nadu	969.10	43.55	6.40	27.57	9150.98	932.20	0.00	70.40
Telangana	158.10	3.30	45.80	14.47	4360.49	472.90	0.00	8.71
Tripura					5.10	4.80	0.00	11.34
Uttar Pradesh	1985.50	165.26		158.38	2717.45	321.90	0.00	324.72
Uttarakhand	72.72	60.00		15.81	298.40	273.71	0.00	20.96
West Bengal	300.00	43.52		8.34	240.35	67.13	0.00	13.14
Andaman & Nicobar Islands					25.05	4.59	0.00	0.27
Chandigarh					6.34	71.70	0.00	0.81
Dadra & Nagar Haveli / Daman & Diu	3.75				14.30	33.82	0.00	0.00
Delhi			84.00		9.84	302.10	0.00	1.46
Lakshadweep					2.45	0.00	0.00	2.52
Pondicherry					1.03	53.30	0.00	0.18
Others					0.00	0.00	0.00	45.01
Total (MW)	**9821.32**	**921.79**	**309.34**	**530.87**	**81011.66**	**17017.44**	**2874.50**	**4742.89**

Table 8.4 Installation of Off-grid / Decentralized Renewable Energy Systems / Devices as on 31.03.2025

State/UT	Biogas Plants (Nos)	SPV Pumps (Nos.)	Solar Photovoltaic (SPV) Systems			
			SLS (Nos.)	HLS (Nos.)	SL (Nos.)	PP (KWP)
Andhra Pradesh	268652	34045	16,460	22,972	77,803	3,816
Arunachal Pradesh	3621	473	25,008	35,065	218,551	963
Assam	139485	45	29,538	46,879	647,761	1,605
Bihar	130440	2813	54,147	12,303	1,735,227	6,905
Chhattisgarh	60738	119282	4,538	42,232	3,311	31,373
Goa	4245	145	707	393	1,093	33
Gujarat	439402	21745	5,004	9,253	31,603	13,577
Haryana	64366	155664	34,625	56,727	93,853	4,571
Himachal Pradesh	47718	881	98,800	22,592	33,909	21,606
Jammu & Kashmir	3201	2327	39,076	144,316	51,224	8,130
Jharkhand	7890	36953	14,344	9,450	790,515	3,770
Karnataka	515386	9402	5,694	52,638	7,781	7,854
Kerala	154462	826	1,735	41,912	54,367	16,268
Ladakh	0	0	-	-	-	-
Madhya Pradesh	388333	25138	16,808	7,920	529,101	7,654
Maharashtra	945345	332122	10,420	3,497	239,297	3,858
Manipur	2178	118	32,767	24,583	69,722	1,581
Meghalaya	11156	117	5,800	14,874	97,360	2,004
Mizoram	5857	77	20,325	12,060	155,217	3,895
Nagaland	7953	68	16,045.0	1,045.0	30,766.0	1,506.0
Odisha	271980	15233	19,109.0	5,274.0	99,843.0	2,321.5
Punjab	191157	17605	43,758	8,626	17,495	2,066
Rajasthan	73597	152497	8,934.0	187,968.0	225,851.0	1,04,449.0
Sikkim	9044	0	504	15,059	45,200	850
Tamil Nadu	224129	55491	41,419	298,641	16,818	13,053
Telangana	316749	424	2,458	-	142,000	7,450
Tripura	4052	4389	15,517	32,723	364,012	867
Uttar Pradesh	441845	91995	302,532	235,909	2,351,205	10,638
Uttarakhand	367169	1056	43,803	91,595	165,071	4,060
West Bengal	1293	653	18,203	145,332	17,662	1,730
Andaman & Nicobar	97	5	1,490	468	6,296	167
Chandigarh	169	12	901	275	1,675	730
Dadar & Nagar Haveli	681	0	-	-	-	-
Daman & Diu	0	0	-	-	-	-
Delhi	578	90	301	-	4,807	1,269
Lakshadweep	0	0	4,465	600	5,289	2,190
Puducherry	17541	21	417	25	1,637	121
Others*		4621	9,150	140,273	125,797	23,885
Total	**5120509**	**10,86,333**	**944,802**	**1,723,479**	**8,459,119**	**3,16,816**

SLS =Street Lightening System, HLS=Home Lightening System, SL=Solar Lantern, PP= Power Plants, SPV=Solar Photo Voltaic

Table 8.5 Share of RE in Cumulative Installed Capacity as on 31.03.2025

(in MW)

STATES / Uts	Non RE	RE			Grand Total	Share (%)	
		RES	Hydro	Total		RES	RE
Andhra Pradesh	17905.34	10504.48	1610.00	12114.48	30019.82	34.99	40.35
Arunachal Pradesh	0.00	155.46	1115.00	1270.46	1270.46	12.24	100.00
Assam	1347.36	232.65	350.00	582.65	1930.01	12.05	30.19
Bihar	9060.00	539.26	0.00	539.26	9599.26	5.62	5.62
Chhattisgarh	23688.00	1708.46	120.00	1828.46	25516.46	6.70	7.17
Goa	48.00	58.43	0.00	58.43	106.43	54.90	54.90
Gujarat	24828.41	31403.03	1990.00	33393.03	58221.44	53.94	57.36
Haryana	5761.59	2449.94	0.00	2449.94	8211.53	29.84	29.84
Himachal Pradesh	0.00	1215.17	10981.01	12196.18	12196.18	9.96	100.00
Jammu & Kashmir	175.00	264.42	3360.00	3624.42	3799.42	6.96	95.39
Jharkhand	5570.00	224.06	210.00	434.06	6004.06	3.73	7.23
Karnataka	10755.25	20228.44	3689.20	23917.64	34672.89	58.34	68.98
Kerala	693.54	1889.23	1964.15	3853.38	4546.92	41.55	84.75
Ladakh	0.00	53.59	89.00	142.59	142.59	37.58	100.00
Madhya Pradesh	22000.00	8592.70	2235.00	10827.70	32827.70	26.18	32.98
Maharashtra	29273.09	19354.46	3047.00	22401.46	51674.55	37.45	43.35
Manipur	36.00	19.24	105.00	124.24	160.24	12.01	77.53
Meghalaya	0.00	73.11	322.00	395.11	395.11	18.50	100.00
Mizoram	0.00	75.86	60.00	135.86	135.86	55.84	100.00
Nagaland	0.00	35.84	75.00	110.84	110.84	32.33	100.00
Odisha	9600.00	804.29	2154.55	2958.84	12558.84	6.40	23.56
Punjab	5680.00	2174.12	1096.30	3270.42	8950.42	24.29	36.54
Rajasthan	12982.83	33725.34	411.00	34136.34	47119.17	71.57	72.45
Sikkim	0.00	62.67	2282.00	2344.67	2344.67	2.67	100.00
Tamil Nadu	17841.38	23063.16	2178.20	25241.36	43082.74	53.53	58.59
Telangana	10242.50	5282.74	2405.60	7688.34	17930.84	29.46	42.88
Tripura	1067.60	37.25	0.00	37.25	1104.85	3.37	3.37
Uttar Pradesh	29968.14	5722.31	501.60	6223.91	36192.05	15.81	17.20
Uttarakhand	664.00	975.42	4035.35	5010.77	5674.77	17.19	88.30
West Bengal	13567.00	770.98	1341.20	2112.18	15679.18	4.92	13.47
Andaman & Nicobar	92.71	35.16	0.00	35.16	127.87	27.50	27.50
Chandigarh	0.00	78.85	0.00	78.85	78.85	100.00	100.00
Dadar & Nagar Haveli/Daman & Diu	0.00	51.87	0.00	51.87	51.87	100.00	100.00
Delhi	2208.40	397.40	0.00	397.40	2605.80	15.25	15.25
Lakshadweep	26.83	4.97	0.00	4.97	31.80	15.63	15.63
Pondicherry	32.50	54.51	0.00	54.51	87.01	62.65	62.65
Others		49.31		49.31	49.31		
Total	**255115.46**	**172368.18**	**47728.16**	**220096.34**	**475211.80**	**36.27**	**46.32**

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CHAPTER 9

Energy generation - RE and Non-RE Sector

9.1 Share of Renewable Energy in total electricity generation during 2024-25:

India's renewable energy landscape in 2024–25 reflects strong regional leadership in various sectors. States like Rajasthan, Gujarat, and Karnataka have emerged as multi-sector leaders, while others contribute significantly within specialized domains like large hydro or bioenergy. This regional diversification is vital for achieving national renewable energy targets and ensuring energy security through sustainable means. During 2024–25, Rajasthan, Gujarat, Karnataka, Himachal Pradesh, and Tamil Nadu emerged as the top five states in renewable energy generation. Together, they accounted for approximately 59% of the country's total renewable energy generation. **(Refer table 9.1)**

9.2 Generation of electricity from various Renewable Energy Sources:

Data on electricity generation from renewable energy (RE) sources reflects a well-diversified mix of sources, with total electricity generation from RE sources reaching 403.64 BU. Solar energy leads with 144.15 BU, driven by states like Rajasthan, Gujarat, Tamil Nadu, and Karnataka. Rajasthan tops the list with over 49 BU, making it India's solar powerhouse. Wind power generation, at 83.35 BU, is concentrated in coastal and high-wind regions such as Gujarat, Tamil Nadu, and Karnataka. Electricity generation from Large hydro contributes 148.63 BU predominantly from hilly states like Himachal Pradesh, Uttarakhand, and Jammu & Kashmir, where natural terrain favours hydroelectric generation. Electricity generation from Bio power sees significant generation in Maharashtra, Uttar Pradesh, and Karnataka, supporting rural energy and waste management. **(Refer Table 9.2)**

State wise electricity generation during 2024-25 from RE and Non RE sector , Solar Power, Wind power, Large Hydro Power, Small Hydro Power, Bio Power is described in this chapter.

Table 9.1 Share (%) of RE generation in Total Energy Generation during 2024-25

(in MU)

STATES / UTs	Non-RE	RE			Grand Total	Share (%)	
		RES	Hydro	Total		RES	RE
Andhra Pradesh	72866.98	15902.23	3303.08	19205.31	92072.29	17.27	20.86
Arunachal Pradesh	0.00	1.88	4205.16	4207.04	4207.04	0.04	100.00
Assam	8195.19	514.36	998.75	1513.11	9708.30	5.30	15.59
Bihar	60757.75	445.10	0.00	445.10	61202.85	0.73	0.73
Chhattisgarh	166431.38	3225.93	419.42	3645.35	170076.73	1.90	2.14
Goa	0.00	65.24	0.00	65.24	65.24	100.0	100.00
Gujarat	105728.84	45973.98	6028.52	52002.50	157731.34	29.15	32.97
Haryana	30443.93	2237.62	0.00	2237.62	32681.55	6.85	6.85
Himachal Pradesh	0.00	3148.14	39386.29	42534.43	42534.43	7.40	100.00
Jammu & Kashmir	0.00	395.17	15200.65	15595.82	15595.82	2.53	100.00
Jharkhand	38812.21	23.89	269.12	293.01	39105.22	0.06	0.75
Karnataka	51948.33	34085.85	14056.00	48141.85	100090.18	34.06	48.10
Kerala	1.53	2723.14	6733.99	9457.13	9458.66	28.79	99.98
Ladakh	0.00	0.00	413.06	413.06	413.06	0.00	100.00
Madhya Pradesh	146116.76	12567.32	7606.73	20174.05	166290.81	7.56	12.13
Maharashtra	145015.63	19591.19	5635.24	25226.43	170242.06	11.51	14.82
Manipur	0.00	8.68	706.37	715.05	715.05	1.21	100.00
Meghalaya	0.00	116.65	905.58	1022.23	1022.23	11.41	100.00
Mizoram	0.00	77.49	240.30	317.79	317.79	24.38	100.00
Nagaland	0.00	98.62	215.02	313.64	313.64	31.44	100.00
Odisha	68638.78	1297.75	6285.36	7583.11	76221.89	1.70	9.95
Punjab	33575.21	3146.91	4126.11	7273.02	40848.23	7.70	17.80
Rajasthan	73418.10	56447.88	905.80	57353.68	130771.78	43.17	43.86
Sikkim	0.00	12.35	2012.67	2025.02	2025.02	0.61	100.00
Tamil Nadu	91714.75	33807.45	4602.73	38410.18	130124.93	25.98	29.52
Telangana	56969.20	7641.70	5270.78	12912.48	69881.68	10.94	18.48
Tripura	5099.65	5.97	0.00	5.97	5105.62	0.12	0.12
Uttar Pradesh	166214.34	7708.76	1273.74	8982.50	175196.84	4.40	5.13
Uttarakhand	837.76	933.72	15183.82	16117.54	16955.30	5.51	95.06
West Bengal	93168.16	1966.51	2649.70	4616.21	97784.37	2.01	4.72
Andaman & Nicobar	374.18	39.00	0.00	39.00	413.18	9.44	9.44
Chandigarh	0.00	8.79	0.00	8.79	8.79	100.00	100.00
Dadar & Nagar Haveli/Daman & Diu	0.00	28.63	0.00	28.63	28.63	100.00	100.00
Delhi	3878.01	748.95	0.00	748.95	4626.96	16.19	16.19
Lakshadweep	66.94	0.09	0.00	0.09	67.03	0.13	0.13
Pondicherry	204.95	12.24	0.00	12.24	217.19	5.64	5.64
Total	**1420478.56**	**255009.18**	**148633.99**	**403643.17**	**1824121.73**	**13.98**	**22.13**

Source: CEA, MoP

Table 9.2 State-wise Renewable Energy generation during 2024-25.

(in MU)

States /UTs	Small Hydro Power	Wind Power	Bio Power	Solar Power	Large Hydro	Total
Andhra Pradesh	294.36	7235.04	379.35	7993.48	3303.07	19205.31
Arunachal Pradesh	0.58	0.00	0.00	1.30	4205.16	4207.04
Assam	208.55	0.00	0.30	305.52	998.75	1513.11
Bihar	14.54	0.00	104.70	325.86	0.00	445.10
Chhattisgarh	139.34	0.00	1563.31	1523.27	419.42	3645.35
Goa	0.00	0.00	8.14	57.11	0.00	65.24
Gujarat	205.98	25440.90	107.62	20219.48	6028.52	52002.50
Haryana	314.64	0.00	452.96	1470.02	0.00	2237.62
Himachal Pradesh	3040.90	0.00	0.00	107.24	39386.29	42534.43
Jammu & Kashmir	395.17	0.00	0.00	0.00	15200.65	15595.82
Jharkhand	6.25	0.00	0.00	17.64	269.12	293.01
Karnataka	2259.49	13620.33	2506.40	15699.63	14056.00	48141.85
Kerala	814.29	119.85	77.17	1711.83	6733.99	9457.13
Ladakh	0.00	0.00	0.00	0.00	413.06	413.06
Madhya Pradesh	482.19	4712.84	248.56	7123.73	7606.73	20174.05
Maharashtra	855.48	7659.71	3350.80	7725.20	5635.24	25226.43
Manipur	0.00	0.00	0.00	8.68	706.37	715.05
Meghalaya	116.65	0.00	0.00	0.00	905.58	1022.23
Mizoram	52.11	0.00	0.00	25.38	240.30	317.79
Nagaland	98.62	0.00	0.00	0.00	215.02	313.64
Odisha	457.20	0.00	53.80	786.75	6285.36	7583.11
Punjab	734.01	0.00	1040.17	1372.73	4126.11	7273.02
Rajasthan	4.15	6941.26	400.85	49101.62	905.80	57353.68
Sikkim	12.35	0.00	0.00	0.00	2012.67	2025.02
Tamil Nadu	256.60	17326.66	484.89	15739.30	4602.73	38410.18
Telangana	74.48	290.60	334.85	6941.75	5270.78	12912.48
Tripura	0.00	0.00	0.00	5.97	0.00	5.97
Uttar Pradesh	179.00	0.00	2563.71	4966.06	1273.74	8982.50
Uttarakhand	353.40	0.00	248.52	331.80	15183.82	16117.54
West Bengal	183.30	0.00	1462.46	320.75	2649.70	4616.21
Andaman & Nicobar	14.40	0.00	0.00	24.59	0.00	39.00
Chandigarh	0.00	0.00	0.00	8.79	0.00	8.79
Dadar & Nagar Haveli/Daman & Diu	0.00	0.00	12.76	15.87	0.00	28.63
Delhi	0.00	0.00	542.41	206.53	0.00	748.95
Lakshadweep	0.00	0.00	0.00	0.09	0.00	0.09
Pondicherry	0.00	0.00	0.00	12.24	0.00	12.24
Total	**11568.03**	**83347.19**	**15943.73**	**144150.21**	**148633.98**	**403643.17**

Source: CEA, MoP

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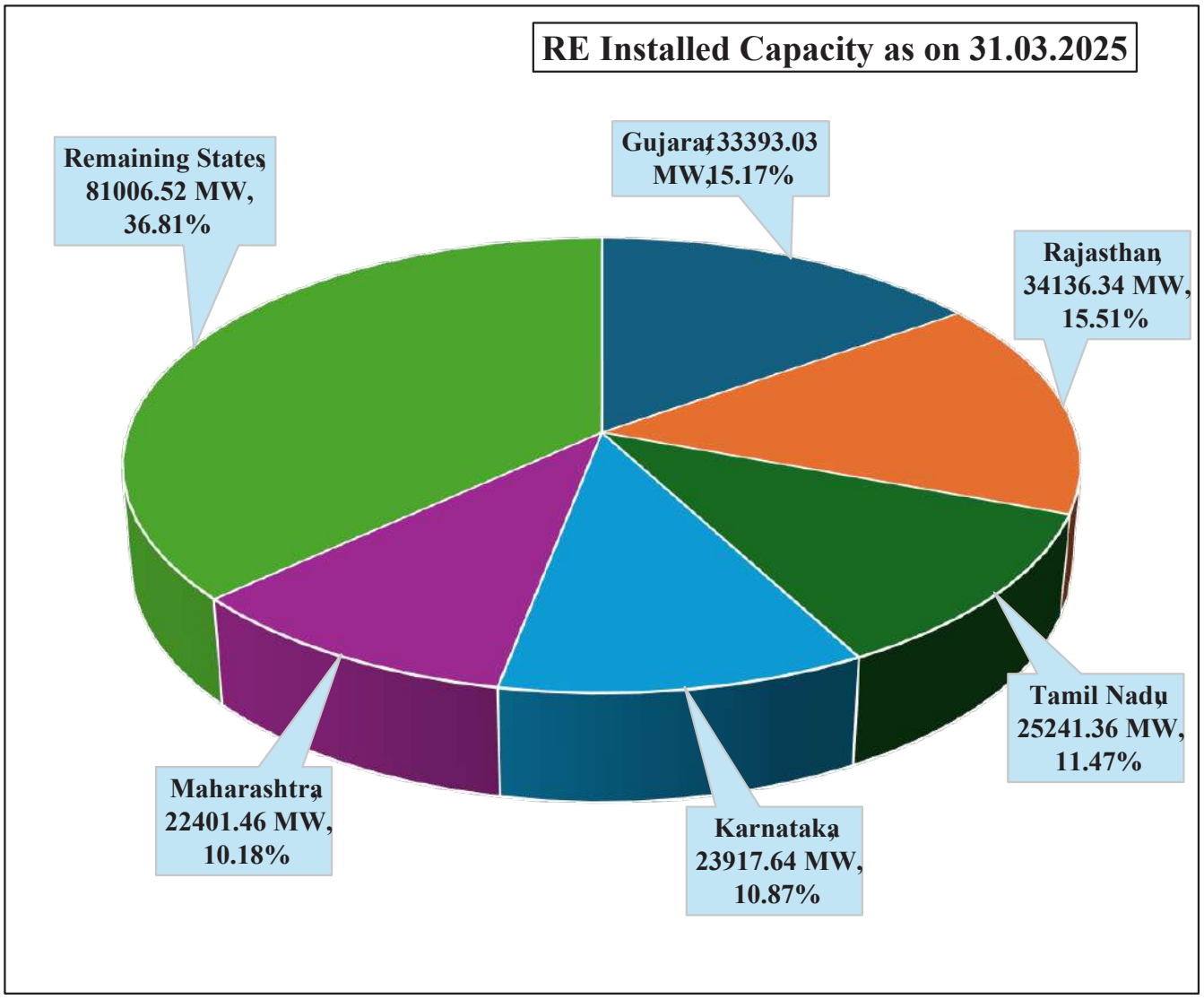
CHAPTER 10

Top 5 states in Renewable Energy Installed Capacity

10.1 Top 5 states in RE installed capacity and their contribution in the country's cumulative RE Installed Capacity: Rajasthan, Gujarat, Tamil Nadu, Karnataka and Maharashtra were the top 5 states in terms of their installed capacity under Renewable energy sector in the country. Total share of renewable energy in installed capacity as on 31.03.2025 shows that Rajasthan emerges as the frontrunner with the largest share, standing at approximately 15.51%, followed closely by Gujarat with 15.17% share. States of Tamil Nadu, Karnataka and Maharashtra contributes with shares of 11.47%, 10.87% and 10.18% respectively. Remarkably, these five states collectively command a significant portion, accounting for around 63% of India's total installed capacity under renewable energy sector driven largely by solar and wind energy initiatives. (**Refer Fig 10.1**)

Fig 10.1 Top 5 states in RE installed capacity and its share (%)

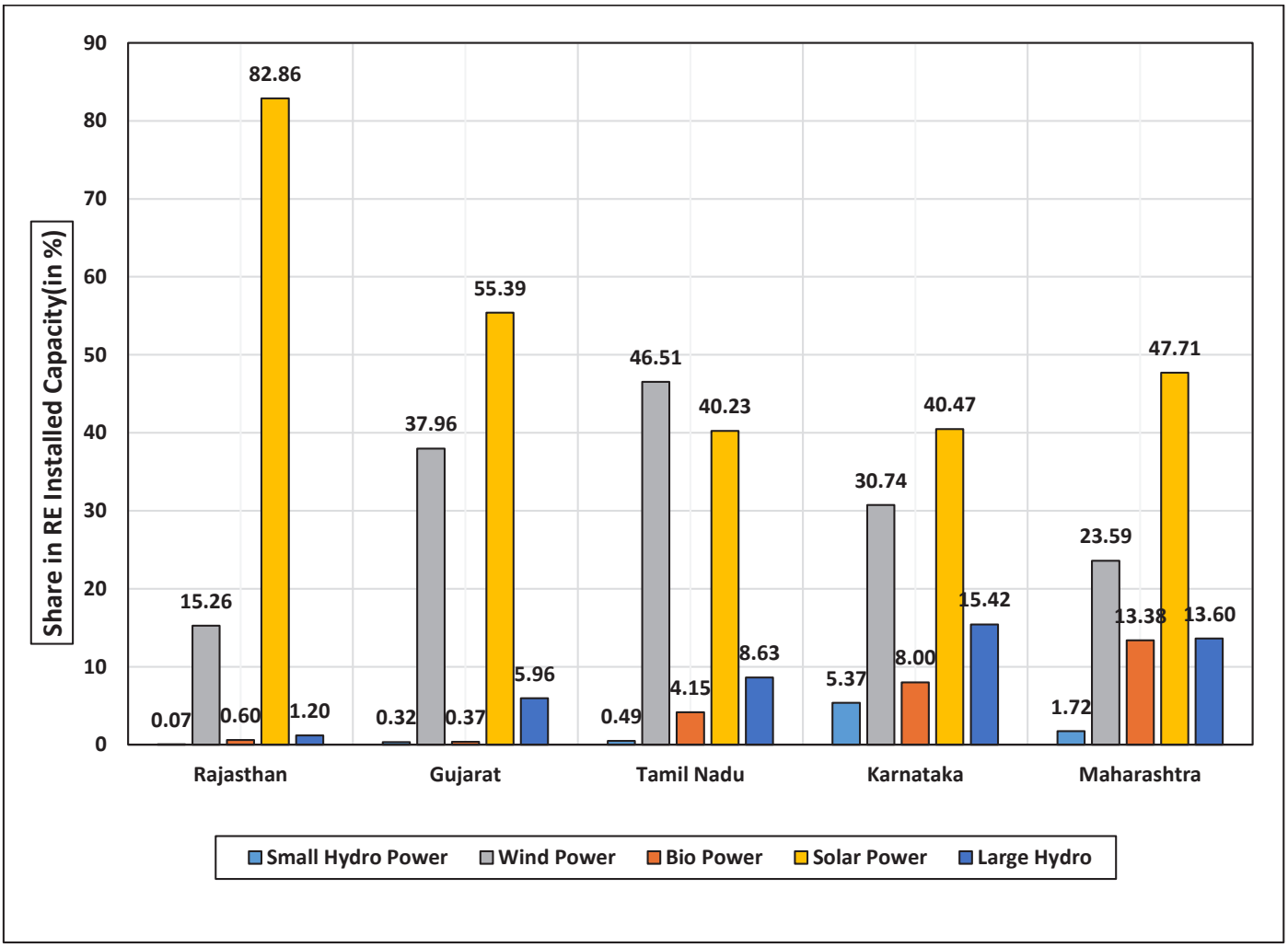
(in MW)



10.2 Contribution of various RE sources of top 5 RE installed capacity states within the respective state's RE installed Capacity: Analysis of the contribution of various renewable energy sources of the top 5 states within their respective RE installed capacity as on 31st March 2025, revealed that solar power had the largest share in all the states except Tamil Nadu. Rajasthan exhibits the highest reliance on solar power, with 82.86% of its RE installed capacity coming from solar, followed by 15.26% from wind; other sources are minimal. Gujarat also prioritizes solar energy (55.39%), but maintains a substantial share of wind power at 37.96%, with small contributions from bio power and hydro power sources. Tamil Nadu presents a more balanced installed capacity mix, with wind energy dominating by 46.51%, closely followed by solar (40.23%), and smaller yet notable shares from bio energy (4.15%) and large hydro power (8.63%). Karnataka leads in diversification, with solar accounting for 40.47%, wind 30.74%, and appreciable inputs from bio power (8.0%), large hydro power (15.42%), and small hydro (5.37%). Maharashtra also has a mixed portfolio, with solar (47.71%), wind (23.59%), bio power (13.38%), and large hydro power (13.60%) all contributing significantly. This analysis highlights how states like Karnataka and Maharashtra adopt a more balanced RE strategy, while Rajasthan and Gujarat emphasize solar dominance **(Refer Fig 10.2).**

Fig 10.2 Share of various RE sources of top 5 RE installed capacity states within the state's RE installed capacity

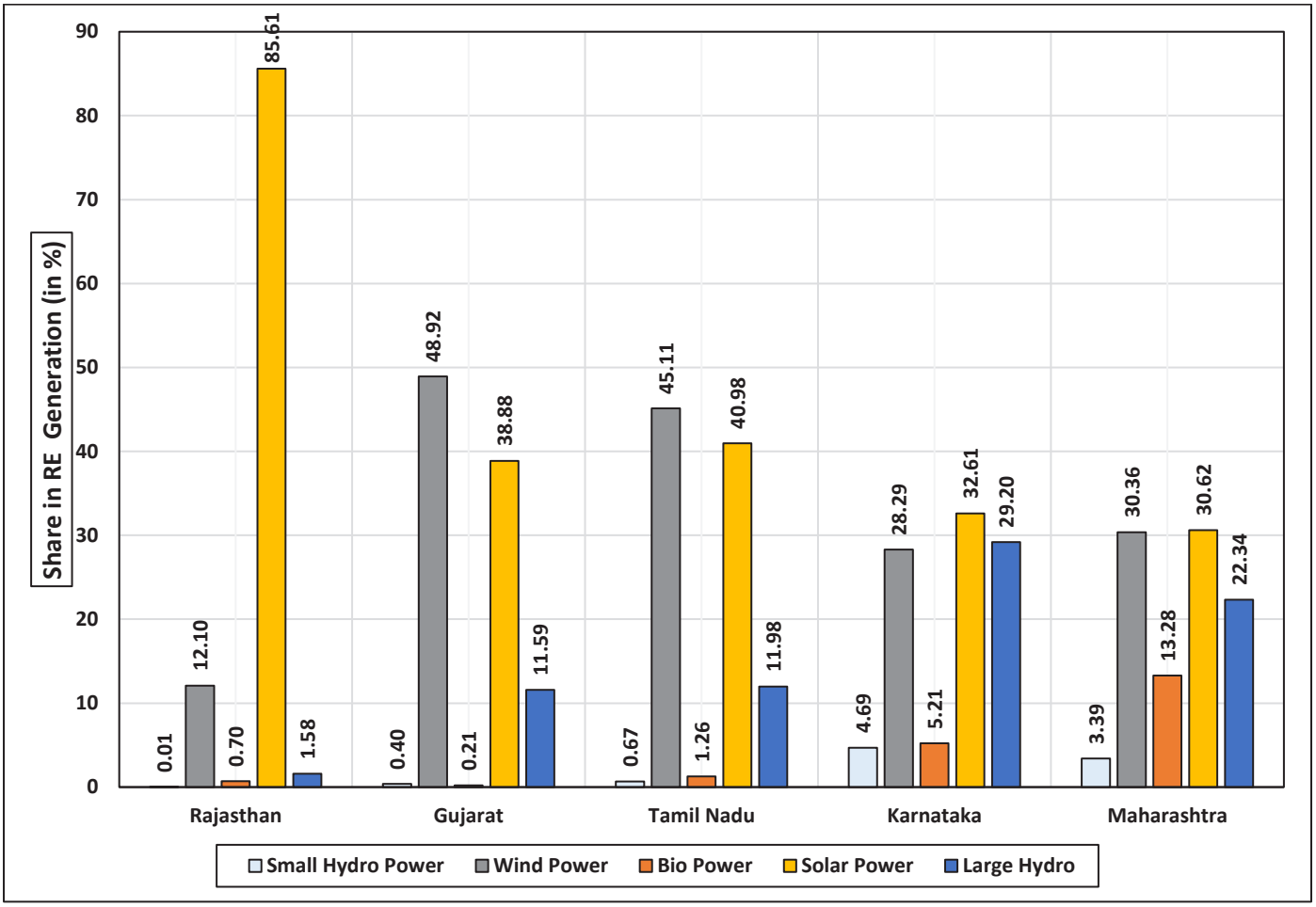
(As on 31.03.2025)



10.3 Contribution of various RE sources of top 5 RE installed capacity states in RE generation within the respective states: Share of various renewable energy (RE) sources within the total electricity generation from RE sources of the top five states reflects distinct energy profiles shaped by regional resources. Rajasthan dominates with solar power contributing a massive 85.61% of its total RE generation, while wind power plays a smaller role having share of 12.10%. Other sources like Bio Power, Small Hydro Power, and Large Hydro Power have minimal shares. Gujarat shows a more balanced approach, with wind power leading with a share of 48.92%, followed by solar power having share of 38.88%, and large hydro contributing 11.59%. Tamil Nadu relies heavily on wind power (45.11%) and solar power (40.98%), with moderate contributions from large hydro (11.98%) and minor bio power and small hydro power shares. Karnataka presents a diverse mix with solar power (32.61%), wind power (28.29%), and large hydro (29.20%) contribute nearly equally, complemented by Bio Power (5.21%) and Small Hydro Power(4.69%). Maharashtra has a similar spread with solar power (30.62%), wind power (30.36%), and Large Hydro (22.34%), alongside Bio Power (13.28%) and Small Hydro Power(3.39%). **(Refer Fig. 10.3)**

Fig 10.3 Share of the various RE sources of top 5 RE installed capacity states within their respective total RE generation

(During 2024-25)



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CHAPTER 11

RAJASTHAN

11.1 Status of RE and Non-RE Sector in Rajasthan:

Rajasthan has emerged as a leading state in India's renewable energy transition, driven by a sharp rise in its installed capacity in recent years. As on 31st March 2025, the state's total installed power capacity was at 47.12 GW, with renewable energy accounting for a dominant 72.45% share, up from 40.51% of 2017–18. During this seven-year period, Rajasthan's renewable energy installed capacity grew from 7.29 GW to 34.14 GW, registering a remarkable growth of 368.30% which far surpassed the overall capacity increase of 161.88% and the modest 21.30% rise in installed capacity under Non RE. The state contributed 15.51% to the country's total renewable installed capacity. The year-on-year growth in RE has consistently remained above 12.82%, except in 2020–21, while non-RE installed capacity witnessed either no growth or annual growth rates below 6.17%. A significant milestone was achieved in 2021–22 when, for the first time, the installed RE capacity in the state exceeded non-RE installed capacity, supported by a record annual growth of 61.40%. Rajasthan's renewable energy landscape is predominantly shaped by solar power, which expanded exponentially from 1000.23 MW of 2014–15 to 28286.47 MW by 2024–25, reflecting a 2728% growth with a CAGR of 39.68%. Wind energy installed capacity also increased from 3308.58 MW to 5208.75 MW, marking a growth of 57.43% with a CAGR of 4.64% while bio power installations enhanced from 119.97 MW to 206.27 MW during the same period. The technology composition has shifted dramatically over the decade from wind power accounting for 74.31% of RE installed capacity in 2014–15 to solar occupying a dominant share of 83.87% by 2024–25.

Transformation in installed capacity is mirrored in energy generation as well. During 2024–25, the state generated a total of 130.77 Billion Units (BU) of electricity, out of which 57.35 BU amounting to 43.86% was generated from renewable sources. Rajasthan was the highest electricity generating state from RE sources in the country during the year, contributing 14.21% of India's total renewable generation. For energy generated from solar, wind, bio power, and small hydro power, Rajasthan maintained its top position, producing 56.45 BU accounting for 22.14 % of the total generation of electricity of the country from Renewable Energy sources.

Details of installed capacity under RE and Non-RE sector since 2017-18 , installed capacity under Solar Power, Wind Power, Small Hydro Power since 2014-15, electricity generation from various sources of Renewable Energy sector and their analysis in respect of the state of Rajasthan is elaborated in this chapter.

INSTALLED CAPACITY

Table 11.1.1: Installed Capacity IN RE and Non-RE sector since 2014-15

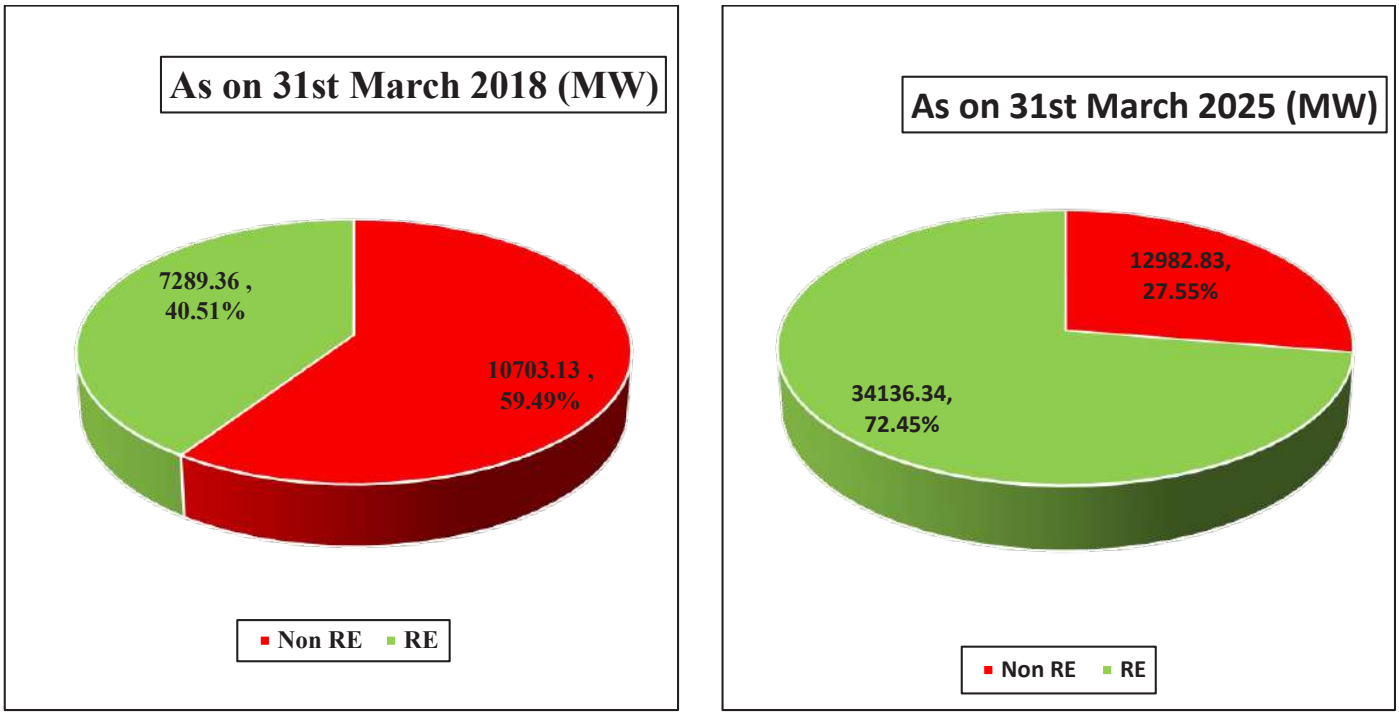
(in MW)

Year	RE	Non-RE	Total	Share (%)		Growth (%)	
				RE	Non-RE	RE	Non-RE
2017-18	7289.36	10703.13	17992.49	40.51	59.49		
2018-19	8223.73	11363.13	19586.86	41.99	58.01	12.82	6.17
2019-20	10134.97	12023.13	22158.10	45.74	54.26	23.24	5.81
2020-21	10812.35	12023.13	22835.48	47.35	52.65	6.68	0.00
2021-22	17451.62	12683.13	30134.75	57.91	42.09	61.40	5.49
2022-23	22809.05	12682.83	35491.88	64.27	35.73	30.70	0.00
2023-24	27103.89	12982.83	40086.72	67.61	32.39	18.83	2.37
2024-25	34136.34	12982.83	47119.17	72.45	27.55	25.95	0.00
Gr (2017-18 to 2024-25)	**368.30%**	**21.30%**	**161.88%**				
CAGR (2017-18 to 2024-25)	**24.68%**	**2.80%**	**14.74%**				

Source: NPP, MoP & MNRE

Gr=Growth (%) ,CAGR=Compound Annual Growth Rate

Fig. 11.1.1 Share of RE in Installed Capacity (in MW)



Over the last seven years, Rajasthan's energy sector has undergone a major transformation, with a clear and important move away from traditional non-renewable energy sources towards renewable energy sources like solar and wind. As on 31st March 2018, renewable energy contributed 40.51% of the state's total installed power capacity, while non-renewable sources dominated with a share of 59.49%. By 31st March 2025, this scenario had reversed dramatically, renewable energy capacity commanding a share of 72.45% , whereas share of non-renewable reduced to 27.55% of the total.

Fig 11.1.2 Trend in installed Capacity

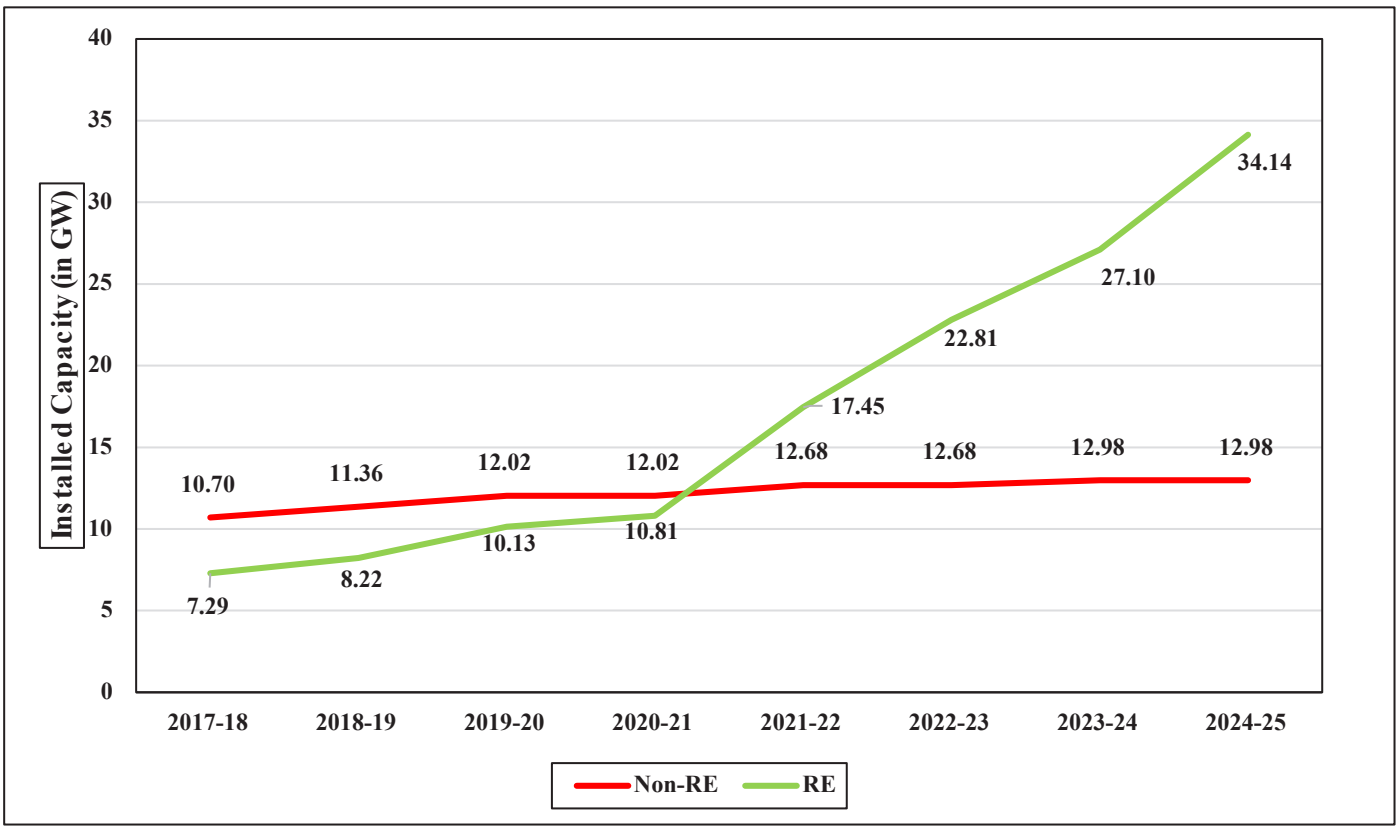


Fig 11.1.3 Growth (%) in installed Capacity

Rajasthan has demonstrated remarkable growth in installed RE capacity between 2017–18 and 2024–25. The installed capacity under RE sector expanded from 7,289.36 MW of 2017–18 to 34,136.34 MW by 2024–25, registering a phenomenal overall growth of 368.30% and a Compound Annual Growth Rate (CAGR) of 24.68%. The most significant annual increase occurred in 2021–22, when the state added over 61% more installed capacity than the previous year.

On the other hand, the installed capacity of Non-RE sector in the state has remained largely stagnant over the same period. It increased only slightly from 10,703.13 MW of 2017–18 to 12,982.83 MW by 2024–25, representing a modest 21.30% overall growth with a CAGR of just 2.80%. Notably, Non-RE installed capacity saw no addition in multiple years. The widening gap between RE and Non-RE growth underscores Rajasthan's strategic transition towards a cleaner energy and its critical role in achieving India's national renewable energy targets.

11.2 Installed Capacity under Wind, Solar, Small Hydro & Bio Energy (RES):

Renewable energy landscape of Rajasthan has transformed significantly over the past decade, with solar power leading the growth. Installation of Solar power capacity has registered a Compound Annual growth rate of 39.68% and that of wind power was 4.64%. Details of installed capacity under RES is given in the **Table 11.2.1.**

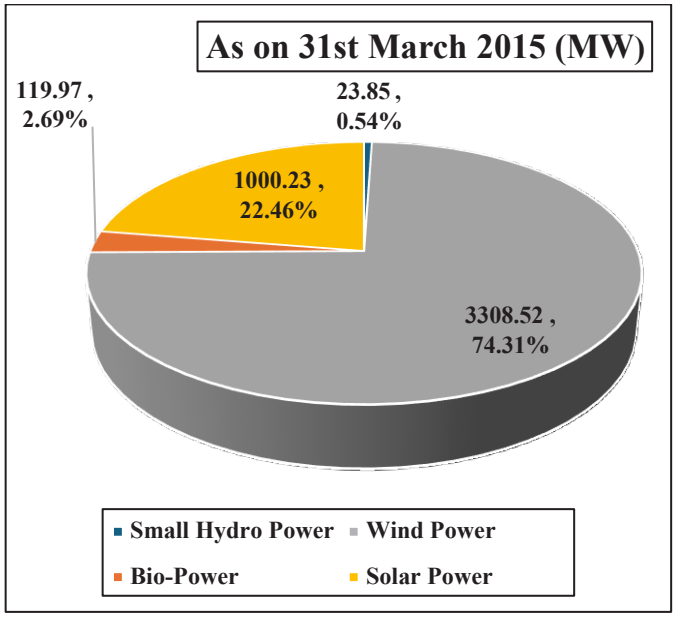
Table 11.2.1: Installed Capacity under Solar, wind, Bio Power and Small Hydro Power (RES) since 2014-15

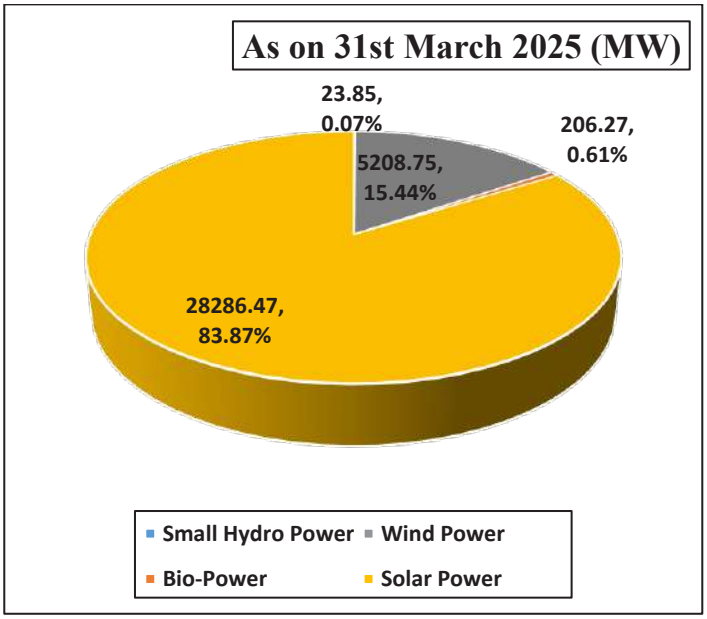
(in MW)

Year	Small Hydro Power	Wind Power	Bio-Power	Solar Power	Total	Growth (%)
2014-15	23.85	3308.52	119.97	1000.23	4452.57	20.83
2015-16	23.85	3994.02	119.97	1346.09	5483.93	23.16
2016-17	23.85	4281.72	125.13	1907.99	6338.69	15.59
2017-18	23.85	4297.72	125.13	2431.66	6878.36	8.51
2018-19	23.85	4299.72	125.13	3364.03	7812.73	13.58
2019-20	23.85	4299.72	125.13	5275.27	9723.97	24.46
2020-21	23.85	4326.82	125.08	5925.6	10401.35	6.97
2021-22	23.85	4326.82	125.08	12564.87	17040.62	63.83
2022-23	23.85	5193.42	125.08	17055.7	22398.05	31.44
2023-24	23.85	5195.82	125.64	21347.58	26692.89	19.18
2024-25	23.85	5208.75	206.27	28286.47	33725.34	26.35
Gr (2014-15 to 2024-25)	**0.00%**	**57.43%**	**71.93%**	**2728.00%**	**657.44%**	
CAGR (201415 to 2024-25)	**0.00%**	**4.64%**	**5.57%**	**39.68%**	**22.44%**	

Gr=Growth (%)
CAGR=Compound Annual Growth Rate

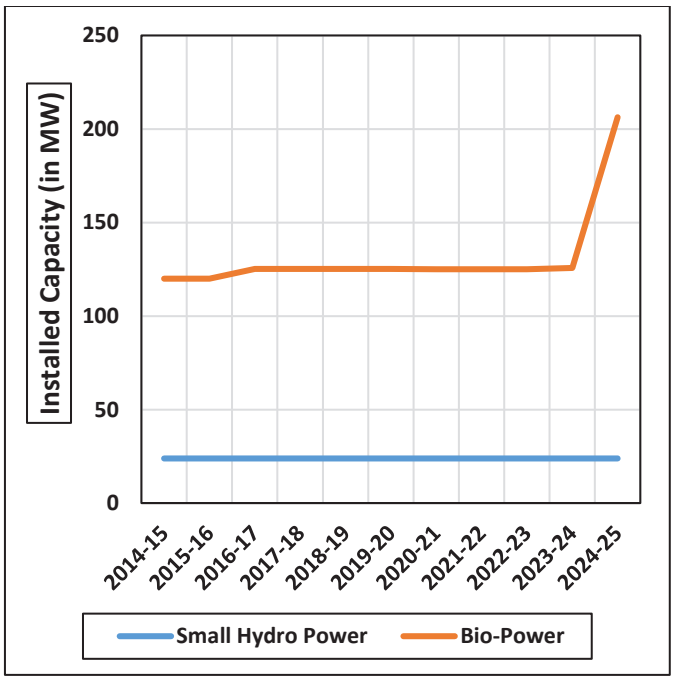
Fig **11.2.1** *Share (%) in Cumulative Installed capacity*

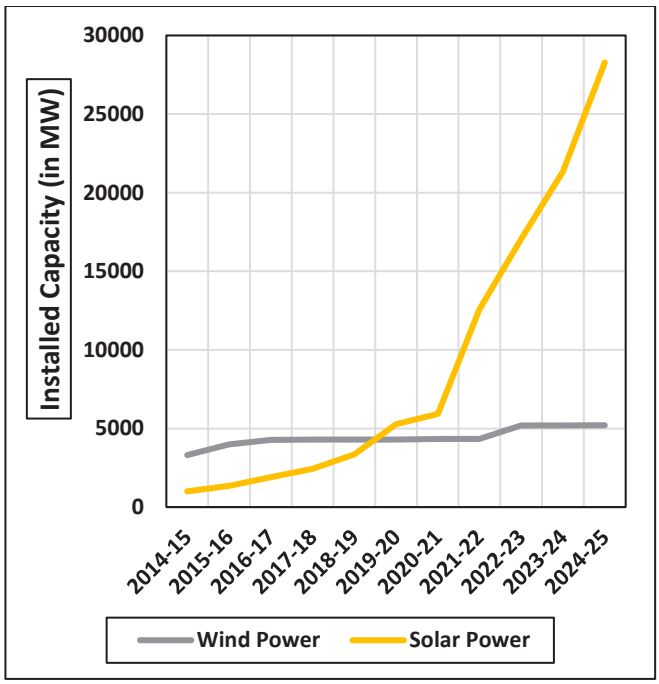




While comparing the renewable energy installed capacity under Solar Power , Wind power, Small Hydro Power and Bio Power as on 31st March 2015 and 31st March 2025, it is observed a clear and significant shift towards solar power. As on 31st March 2015 , wind power dominated with 74.31%, followed by solar power with a share of 22.46%. By 31st March 2025, share of solar power has surged dramatically to 83.87%, becoming the dominant source while share of wind power reduced to 15.44%.

Fig **11.2.2** *Trend in cumulative Installed Capacity*

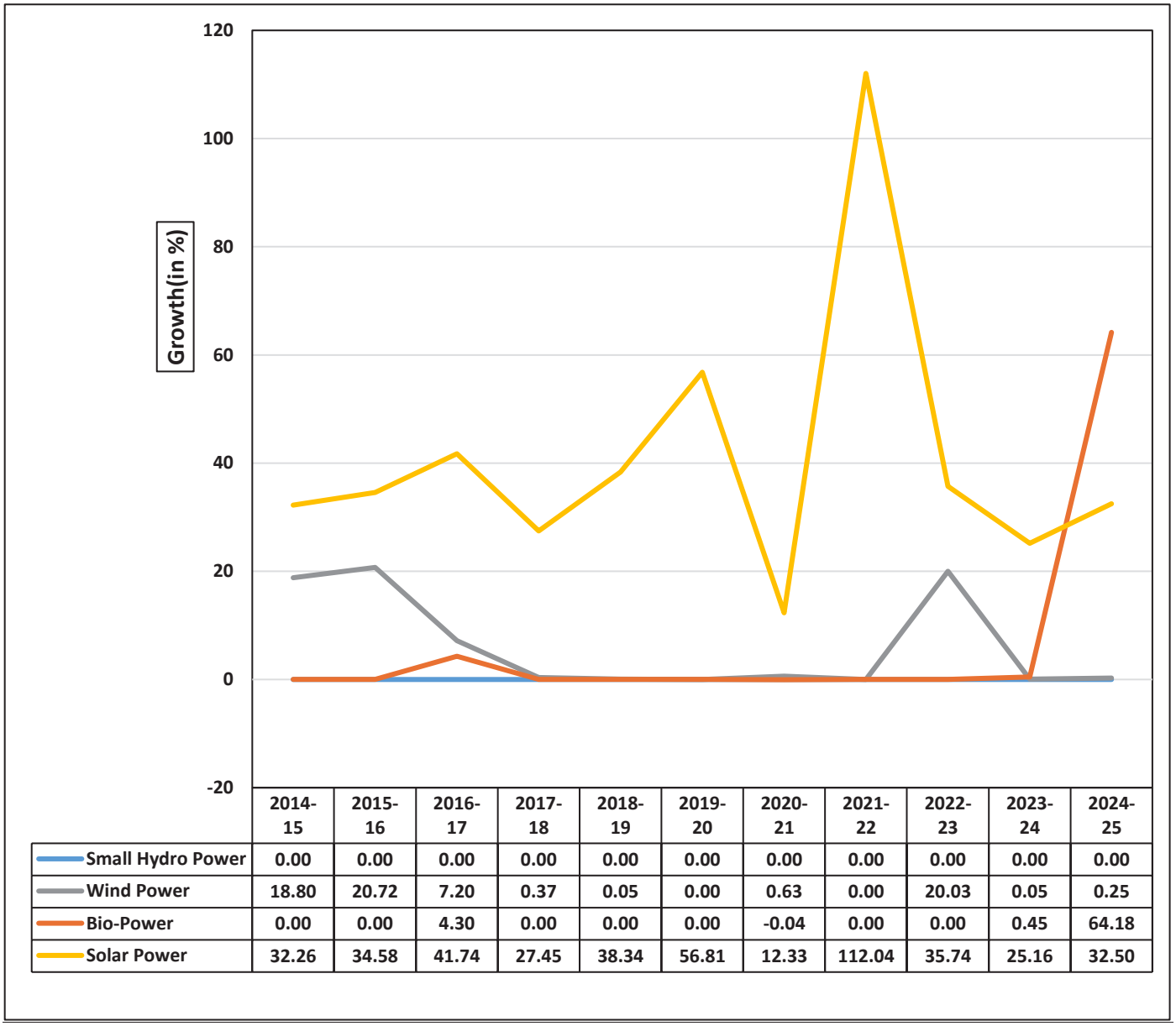




Graphs show the installed capacity for small hydro power remained nearly constant at around 23.85 MW from 2014-15 to 2024-25, showing no significant growth. Bio-power installed capacity stayed stable at approximately 125 MW until 2023-24, after which it saw a sharp increase to about 206 MW in 2024-25. In

contrast, wind power capacity experienced moderate growth from 3308.52 MW of 2014-15 to 5208.75 MW by 2024-25. The most dramatic change occurred in solar power installed capacity, which grew exponentially from 1000.23 MW of 2014-15 to a staggering 28,286.47 MW by 2024-25, highlighting solar energy's rapid expansion and dominance in the renewable energy sector in the state of Rajasthan.

Fig 11.2.3 Year wise growth (%) in installed capacity



	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Small Hydro Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wind Power	18.80	20.72	7.20	0.37	0.05	0.00	0.63	0.00	20.03	0.05	0.25
Bio-Power	0.00	0.00	4.30	0.00	0.00	0.00	-0.04	0.00	0.00	0.45	64.18
Solar Power	32.26	34.58	41.74	27.45	38.34	56.81	12.33	112.04	35.74	25.16	32.50

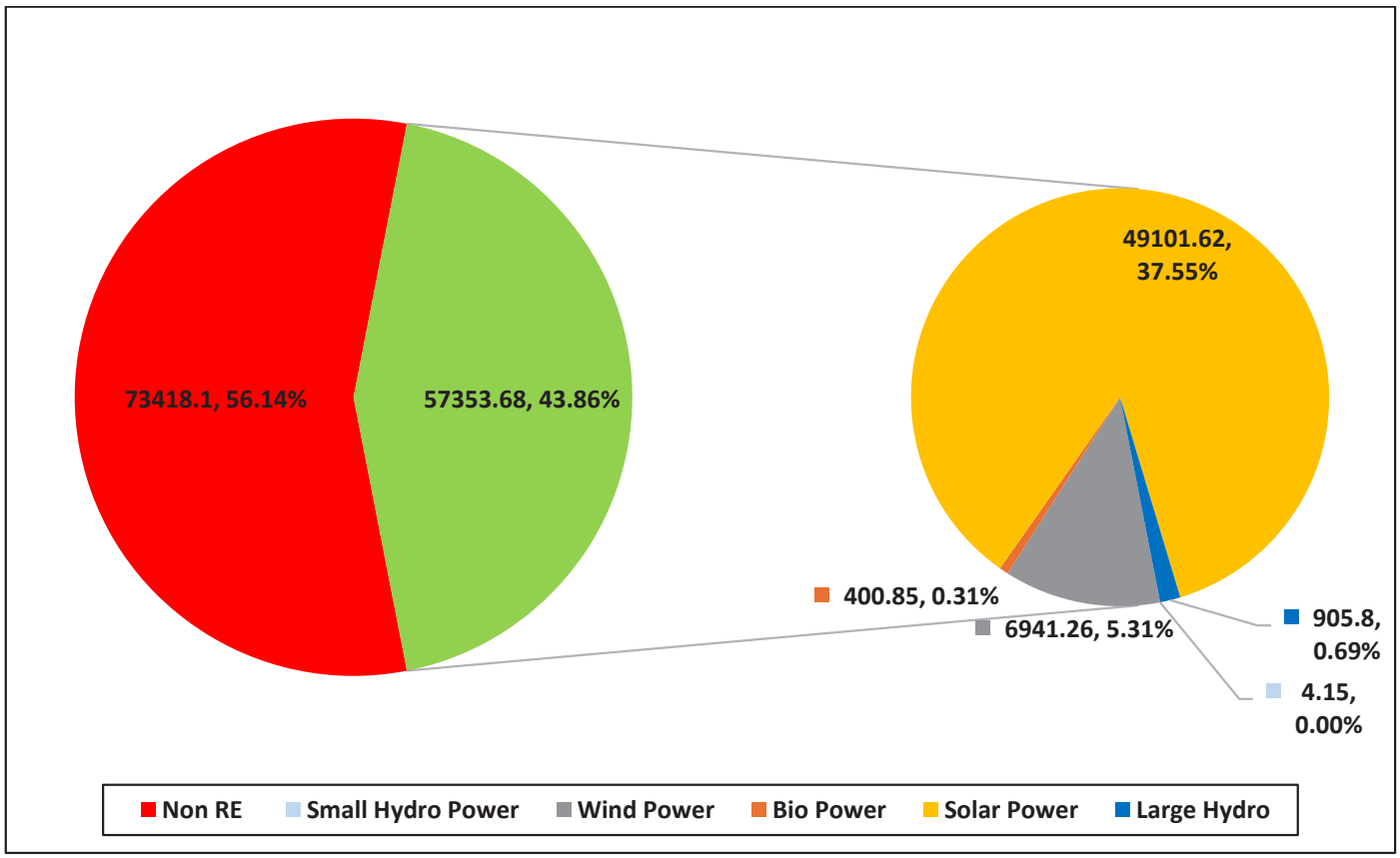
The growth rates highlight significant variation among renewable energy sources between 2014-15 and 2024-25. Small Hydro Power remained stagnant with zero growth throughout the period. Wind Power experienced fluctuating growth, with peaks in 2015-16 (20.72%) and 2022-23 (20.03%), but mostly remained under 10% in other years. Solar Power demonstrated the most dynamic growth, with consistently high rates, peaking at 112.04% in 2021-22. Although growth slowed in some years, solar energy maintained robust expansion, underscoring its emerging dominance in renewable installed capacity growth.

11.3 Energy generation during 2024-25:

During 2024–25, Rajasthan generated a total of 130.77 Billion Units (BU) of electricity, out of which 57.35 BU amounting to 43.86% was generated from renewable sources. Rajasthan was the highest electricity generation state from RE sources in the country during the year, contributing 14.21% of India's total electricity generation from RE sources. In the case of electricity generation from solar, wind, bio power, and small hydro power, Rajasthan maintained its top position, producing 56.45 BU accounting for 22.14 % of the total electricity generation. Solar power was the major contributor from RE sector with 49.10 BU, representing 37.55% of the total electricity generation of the state. Wind power followed with 6.94 BU (5.31%), while bio-power and small hydro power contributed marginally with 0.40 BU (0.31%) and 0.004 BU (0.0032%), respectively. Additionally, large hydro power accounted for 0.91 BU, comprising 0.69% of total generation from RE sources in the state.

Fig 11.3.1 RE share in total energy generation during 2024-25

(in MU)



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CHAPTER 12

GUJARAT

12.1 Status of RE and Non-RE sector in Gujarat:

As on 31st March 2025, Gujarat emerged as the second-largest contributor to India's electricity installed capacity under RE sector, following Rajasthan, with a total RE installation of 33.39 GW, representing 15.17% of the national installed capacity under RE sector. Over the seven-year period from 2018-19 to 2024–25, Gujarat's RE installed capacity expanded significantly from 9.34 GW to 33.39 GW, registering a 257.55% growth and reflecting a CAGR of approximately 19.96%. Electricity installed capacity under Non-RE sector increased only marginally, from 23.49 GW to 24.83 GW, a modest 5.73% growth with a CAGR of 0.80%. Share of RE in the state's total installed capacity enhanced from 28.45% of 2017–18 to 57.36% by 2024–25, indicating a structural transformation in its installed capacity. The year 2024–25 marked a notable milestone with an annual RE capacity addition of around 6000 MW driven largely by solar energy installed capacity. Solar energy remained the backbone of Gujarat's RE portfolio, accounting for 18.50 GW covering 58.90% of the total RE installed capacity in the state , followed by wind energy with installed capacity of 12.68 GW covering share of 40.37%.

However, in terms of electricity generation from RE sources , wind energy took the lead, contributing 48.92% of the total RE generation in the state, while solar power accounted for 38.88%. During 2024–25, Gujarat generated 52 BU of electricity from renewable sources, which constituted 32.97% of its total electricity generation. This performance positioned Gujarat as the second -highest state in the country in terms of electricity generation from Renewable Energy Sources, contributing 12.88% to India's total renewable energy generation. Furthermore, Gujarat ranked second in combined electricity generation from solar, wind, bio power , and small hydro power, producing 45.97 BU of electricity, which amounted to 18.03% of the national total from these technologies.

Details of installed capacity under RE and Non-RE sector since 2017-18 , installed capacity under Solar Power, Wind Power, Small Hydro Power since 2014-15, electricity generation from various sources of Renewable Energy sector and their analysis in respect of the state of Gujarat is elaborated in this chapter.

INSTALLED CAPACITY

Table 12.1.1 Installed Capacity under RE and Non-RE sector since 2017-18

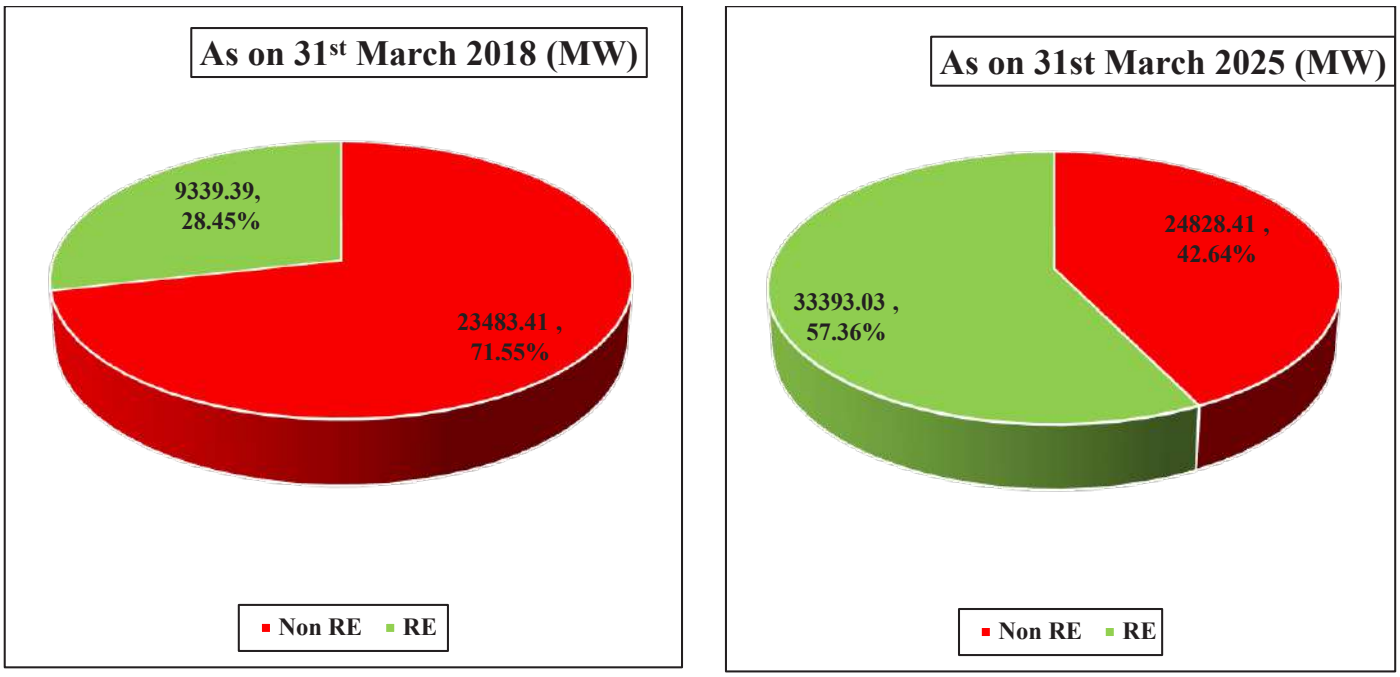
(in MW)

Year	RE	Non-RE	Total	Share (%)		Growth (%)	
				RE	Non-RE	RE	Non-RE
2017-18	9339.39	23483.41	32822.00	28.45	71.55		
2018-19	10697.72	23483.41	34181.13	31.30	68.70	14.54	0.00
2019-20	12683.77	24223.41	36907.18	34.37	65.63	18.57	3.15
2020-21	15204.25	24083.41	39287.66	38.70	61.30	19.87	-0.58
2021-22	18577.90	24083.41	42661.31	43.55	56.45	22.19	0.00
2022-23	21425.85	24083.41	45509.26	47.08	52.92	15.33	0.00
2023-24	27461.72	25483.41	52945.13	51.87	48.13	28.17	5.81
2024-25	33393.03	24828.41	58221.44	57.36	42.37	21.60	-2.57
Gr (2017-18 to 2024-25)	**257.55%**	**5.73%**	**77.39%**				
CAGR (2017-18 to 2024-25)	**19.96%**	**0.80%**	**8.53%**				

Source: NPP, MoP & MNRE

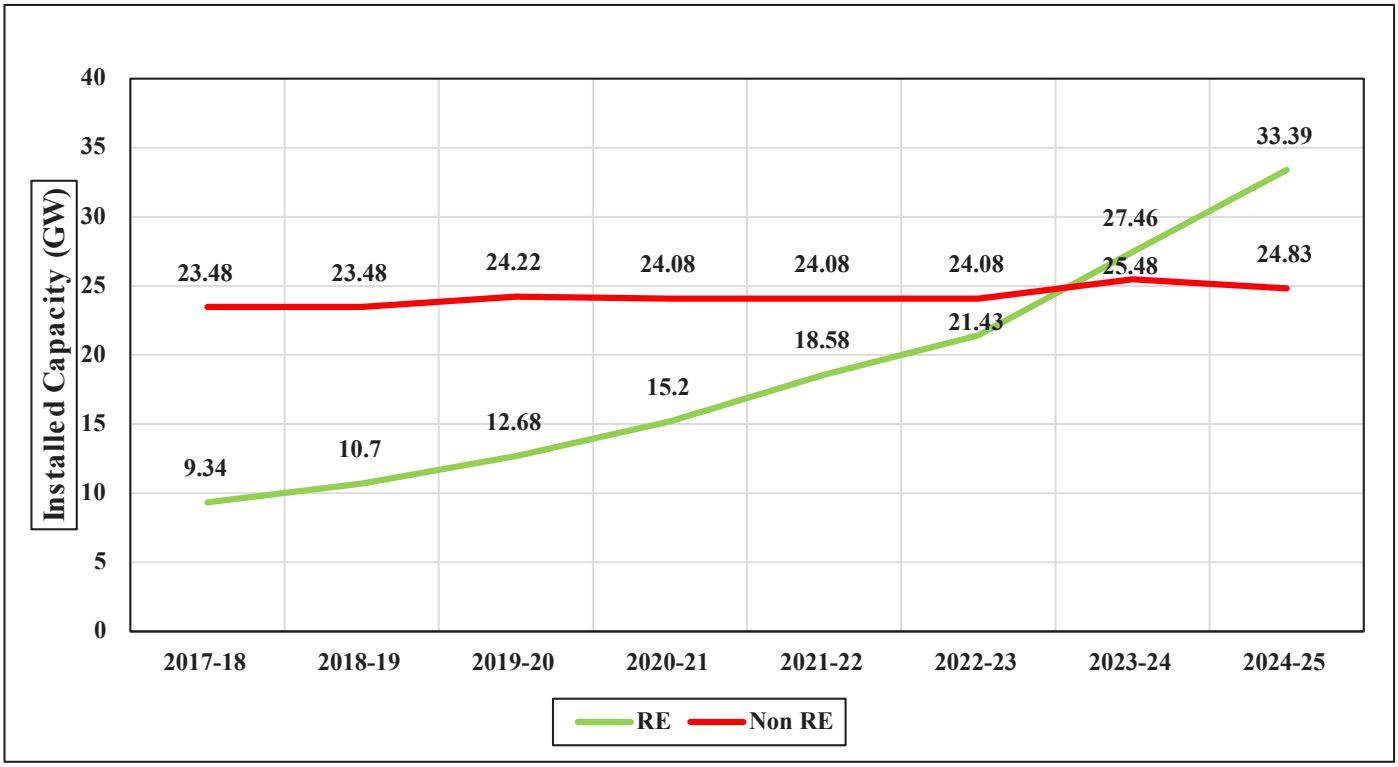
Gr=Growth (%)
CAGR=Compound Annual Growth Rate

Fig. 12.1.1 Share of RE Installed Capacity



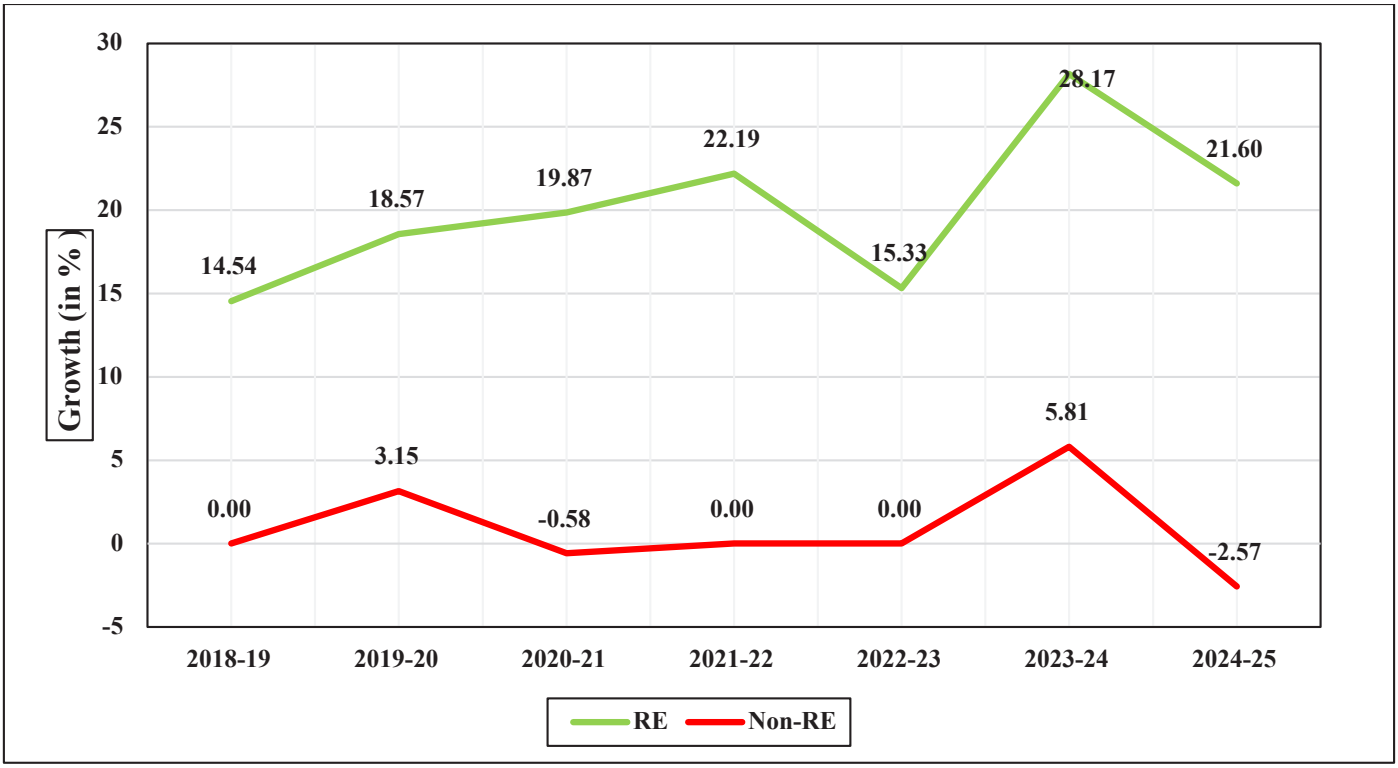
The pie charts compare the installed capacity under RE sector and Non- RE sector in Gujarat as on 31st March 2018 and 31st March 2025. As on 31st March 2018, Non-Renewable Energy (Non-RE) dominated with 71.55% while Renewable Energy (RE) contributed 28.45%. By 31st March 2025, this balance shifts significantly, with RE installed capacity rising to 57.36% and Non-RE installed capacity declining to 42.64%.

Fig12.1.2 Trend in installed Capacity



The graph shows the trend of installed capacity under Renewable Energy (RE) and Non-Renewable Energy (Non-RE) sources from 2017-18 to 2024-25. RE installed capacity exhibits a steady and significant increase from 9.34 GW of 2017-18 to 33.39 GW by 2024-25, reflecting strong growth. On the contrary, installed capacity under Non-RE remains almost flat, fluctuating slightly around 24 GW throughout the period. Notably, RE installed capacity surpasses Non-RE installed capacity around 2023-24, marking a pivotal shift towards cleaner energy sources.

Fig 12.1.3 Year wise Growth (%) in installed Capacity



Year-wise growth in capacity installation reveals a clear contrast between renewable energy (RE) and non-renewable energy (Non-RE) sectors from 2018-19 to 2024-25. Renewable energy shows consistent and strong growth throughout this period, starting at 14.54% in 2018-19 and reaching a peak of 28.17% in 2023-24, before slightly declining to 21.60% in 2024-25. This indicates a steady expansion and increasing focus on renewable sources whereas non-renewable energy growth remains largely stagnant, fluctuating near zero with occasional small positive growth, such as 3.15% in 2019-20 and 5.81% in 2023-24, but also experiencing declines in installed capacity by 2.57% during 2024-25.

12.2 Installed capacity under Solar, Wind, Bio Power and Small Hydro Power (RES):

Gujarat's renewable energy landscape has transformed significantly over the past decade, marked by robust growth across all major clean energy technologies. Solar power has emerged as the leading driver of this transformation, registering a remarkable increase of 1728.29% from 2014–15 to 2024–25, with a high CAGR of 33.72%. Wind power, a traditional strength of Gujarat, also saw steady growth of 256.49% over same period, with a CAGR of 13.55%. A key milestone was achieved in 2023–24, when installed capacity under solar power surpassed that of wind power for the first time and the trend has continued during 2024-25 also. Meanwhile, bio-power and small hydro power grew by 54.98% and 544.74% respectively during the period with consistent capacity additions over the years. Details of installed capacity under Solar power, Wind Power, Bio Power and Small Hydro Power is given in **Table 12.2.1.**

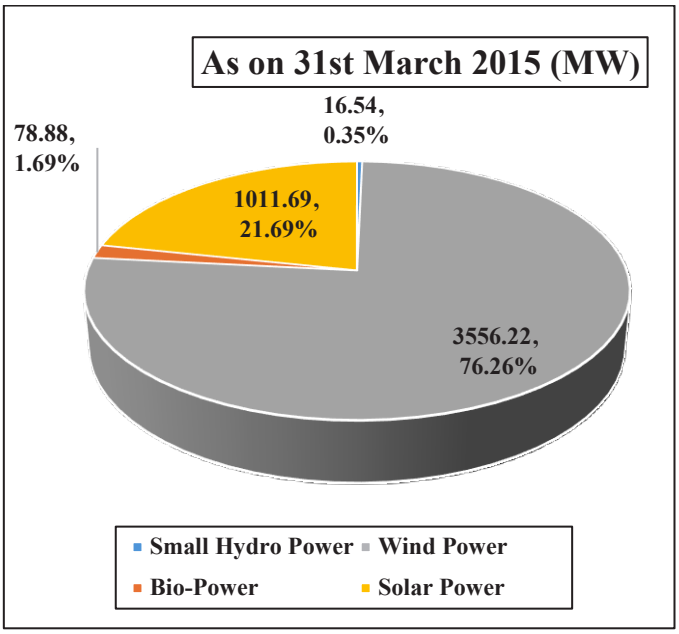
Table 12.2.1: Installed Capacity under solar, wind, bio power and small hydro power (RES) since 2014-15

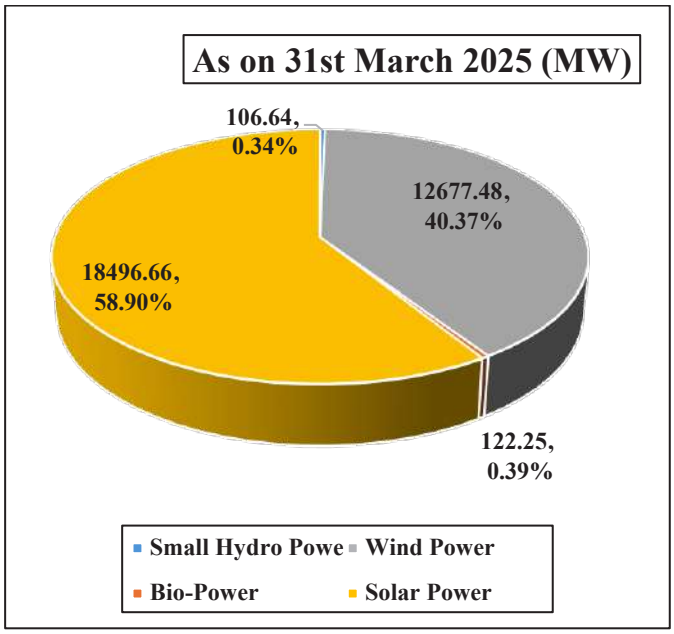
(in MW)

Year	Small Hydro Power	Wind Power	Bio-Power	Solar Power	Total	Growth (%)
2014-15	16.54	3556.22	78.88	1011.69	4663.33	6.55
2015-16	16.54	3948.62	78.92	1137.82	5181.9	11.12
2016-17	16.54	5340.62	79.99	1278.19	6715.34	29.59
2017-18	28.54	5613.42	81.24	1626.19	7349.39	9.44
2018-19	61.24	6073.07	95.03	2478.32	8707.66	18.48
2019-20	68.95	7541.52	96.53	2986.77	10693.77	22.81
2020-21	82.69	8561.82	99.87	4469.87	13214.25	23.57
2021-22	89.39	9209.22	109.26	7180.03	16587.90	25.53
2022-23	91.64	9978.92	110.73	9254.56	19435.85	17.17
2023-24	91.64	11722.72	112.48	13544.88	25471.72	31.06
2024-25	106.64	12677.48	122.25	18496.66	31403.03	23.29
Gr (2014-15 to 2024-25)	**544.74%**	**256.49%**	**54.98%**	**1728.29%**	**573.40%**	
CAGR (2014-15 to 2024-25)	20.49%	13.55%	4.48%	33.72%	21.01%	

Gr=Growth (%)
CAGR=Compound Annual Growth Rate(%)

Fig 12.2.1 Share of various sources in RES Cumulative Installed capacity

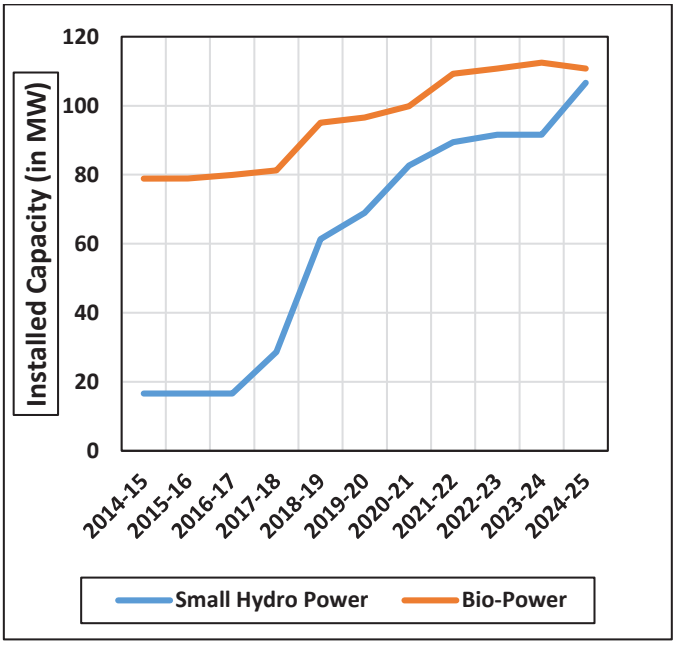


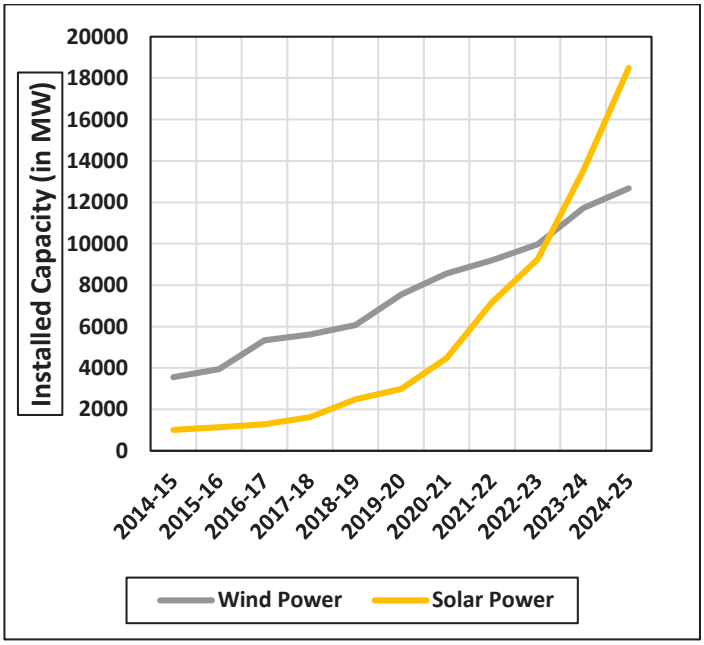


As on March 2015, Gujarat's renewable energy landscape was primarily driven by wind power, which held a dominant share of 76.26% followed by Solar power accounting for 21.69% of the total renewable energy installed capacity. Bio-power contributed a modest 1.69% while Small Hydro Power had the least presence with a share of 0.35%.

A decade later, as on 31st March 2025, renewable energy profile of the state underwent a significant transformation. Installed capacity under solar power emerged as the leading source, commanding a share of 58.90% . Wind power, although still significant, had a reduced share of 40.37%. Bio-power and Small Hydro Power maintained marginal shares of 0.39% and 0.34% respectively.

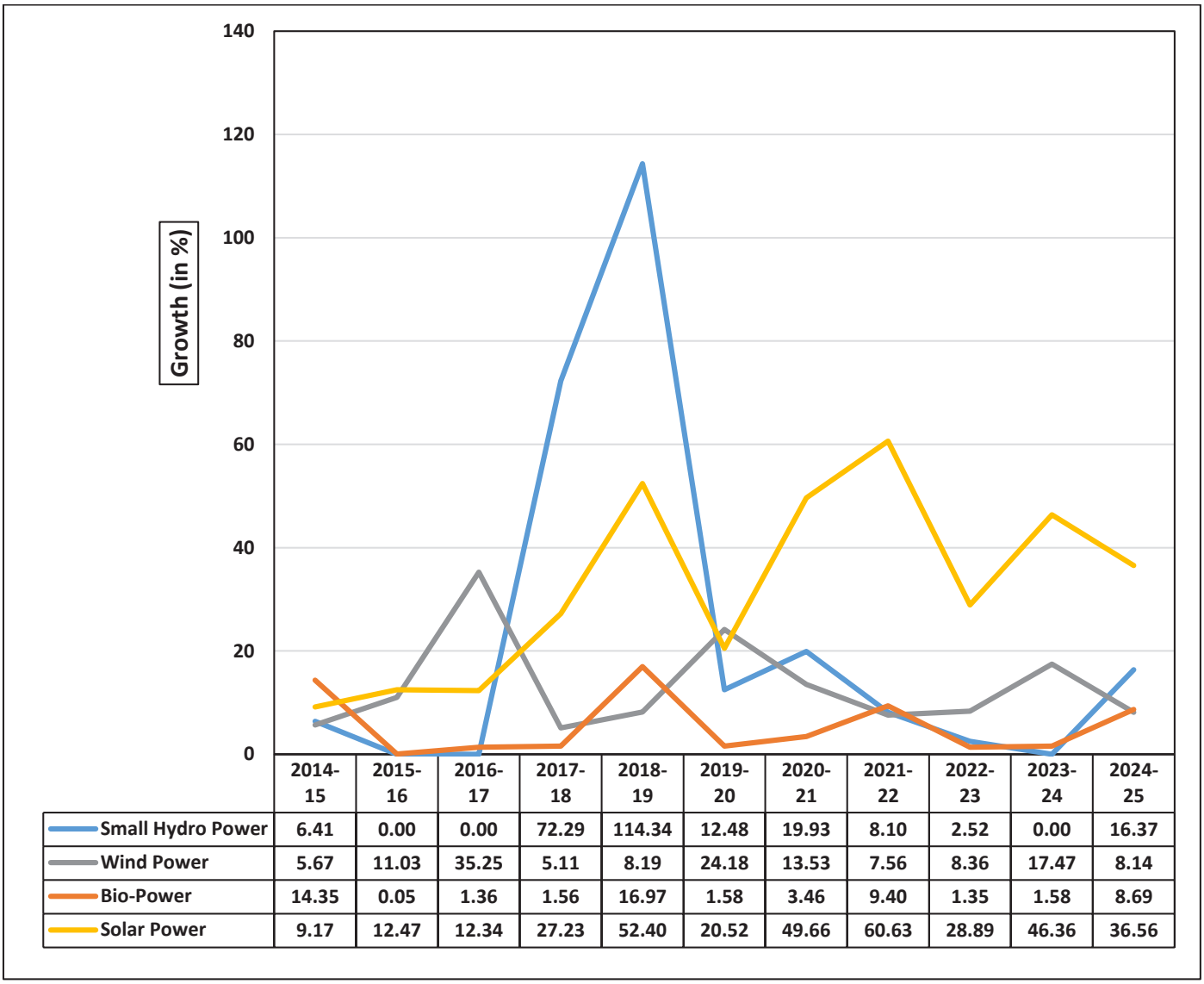
Fig 12.2.2 Trend in cumulative Installed Capacity





The cumulative installed capacity trends from 2014-15 to 2024-25 show varied growth patterns across renewable energy sources. Small Hydro Power steadily increases, particularly after 2017-18, reaching over 100 MW by 2024-25. Bio-Power capacity remains relatively stable, with only slight growth. Wind Power experiences consistent growth, rising from around 3,500 MW to nearly 12700 MW, though its pace slows after 2022-23. Solar Power shows the most significant surge, starting at about 1,000 MW and accelerating sharply after 2018-19 to reach around 18,500 MW by 2024-25, overtaking wind power. This highlights solar energy as the fastest-growing renewable source, driving the overall expansion in renewable installed capacity.

Fig 12.2.3 Year wise growth (%) in installed capacity



	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Small Hydro Power	6.41	0.00	0.00	72.29	114.34	12.48	19.93	8.10	2.52	0.00	16.37
Wind Power	5.67	11.03	35.25	5.11	8.19	24.18	13.53	7.56	8.36	17.47	8.14
Bio-Power	14.35	0.05	1.36	1.56	16.97	1.58	3.46	9.40	1.35	1.58	8.69
Solar Power	9.17	12.47	12.34	27.23	52.40	20.52	49.66	60.63	28.89	46.36	36.56

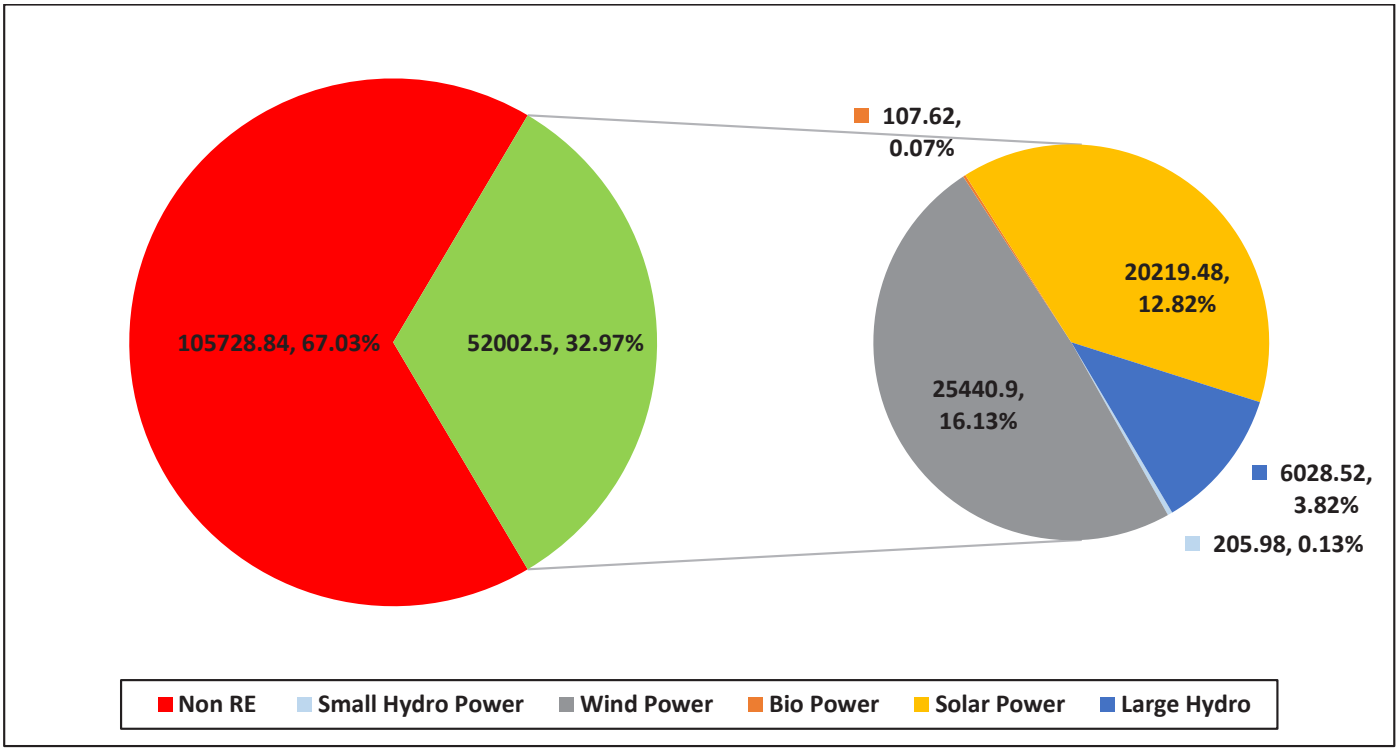
Year-wise growth (%) in installed capacity across renewable energy sources from 2014-15 to 2024-25 reveals distinct patterns. Small Hydro Power saw its most significant surge between 2017-18 and 2018-19, peaking at 114.34%, followed by a sharp decline and more modest growth in later years. Wind Power experienced fluctuating growth, with a peak of 35.25% in 2016-17, but growth slowed considerably in the following years, showing intermittent increases. Growth in installed capacity under Bio-Power remained largely stagnant, with minor spikes in 2014-15 and 2018-19, indicating limited expansion. In contrast, Solar Power displayed consistent and robust growth, especially from 2016-17 to 2021-22, with a high of 60.63% in 2021-22. Despite minor dips, it remained the leading contributor to renewable energy capacity expansion. Overall, the data highlights solar energy as the primary growth driver, while other sources showed slower or inconsistent increases.

12.3 Energy Generation during 2024-25:

During 2024–25, Gujarat recorded a total electricity generation of 157.73 BU, of which 52 BU equivalent to 32.97%, was generated from renewable energy (RE) sources. Among the renewable sources, wind power emerged as the leading contributor with 25.44 BU, followed closely by solar power, which generated 20.22 BU. Together, wind and solar accounted for over 87.80% of the total electricity generation from RE sources in the state. Large hydro power contributed 6.03 BU, while small hydro power and bio-power added 0.21 BU and 0.11 BU, respectively.

Importantly, Gujarat held the second position nationally in electricity generation from renewable energy sources during the year, with its 52 BU of electricity generation accounting for 12.88% of India's total electricity generation from renewable energy sources. Gujarat also ranked second in electricity generation from solar, wind, bio-power, and small hydro power combined with a total of 45.97 BU, contributing 18.03% to the country's cumulative electricity generation from these technologies. Fig 10.3 depicts the detailed share of electricity generation from RE and Non-RE sources in the total energy generation in the state of Gujarat.

Fig 12.3.1 RE share in total electricity generation during 2024-25 ***(in MU)***



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CHAPTER 13

TAMIL NADU

13.1 Status of RE and Non-RE sector in Tamil Nadu: Tamil Nadu continues to play a leading role in India's renewable energy landscape, demonstrating consistent growth in both electricity installed capacity and electricity generation. As on 31st March 2025, total installed electricity capacity in the state reached at 43.08 GW, out of which 25.24 GW was from renewable energy sources. This translates to a 58.59 % share of renewable energy in the total installed capacity, up from 44.70 % of 2017–18. Over this period, renewable energy installed capacity in the state has grown by 87.64 %, with a CAGR of 9.41 %, significantly outpacing the growth of non-renewable energy installed capacity. With this achievement, Tamil Nadu secured the third position nationally in terms of renewable energy installed capacity, contributing 11.47 % to the country's total as on 31st March 2025. Wind power continues to be the leading source in Tamil Nadu's renewable energy installed capacity reaching 11.74 GW by 2024–25, a growth of over 57 % since 2014–15. The most striking increase has been observed in solar energy, which surged from 0.16 GW of 2014–15 to 10.15 GW by 2024–25, reflecting a growth of over 6,374 % and a CAGR of 51.75%.

In terms of electricity generation, Tamil Nadu recorded a total of 130.12 BU during 2024–25, of which 38.41 BU having share of 29.52 % was generated from renewable energy sources. Wind power was the largest contributor within the renewable segment, followed by solar power. At the national level, Tamil Nadu ranked fifth in total renewable energy generation, accounting for 9.52% of the country's electricity generation from Renewable energy sources. The state also ranked fourth in electricity generation from solar, wind, bio-power, and small hydro power combined, with a total of 33.81 BU, representing 13.26 % of the national total from these technologies. The next sections present an in-depth review of Tamil Nadu's electricity profile, emphasizing the growth of Renewable Energy sector.

Details of installed capacity under RE and Non-RE sector since 2017-18, installed capacity under Solar Power, Wind Power, Small Hydro Power since 2014-15, electricity generation from various sources of Renewable Energy sector and their analysis in respect of the state of Tamil Nadu is elaborated in this chapter.

INSTALLED CAPACITY

Table 13.1.1 Installed Capacity in RE and Non-RE sector since 2017-18

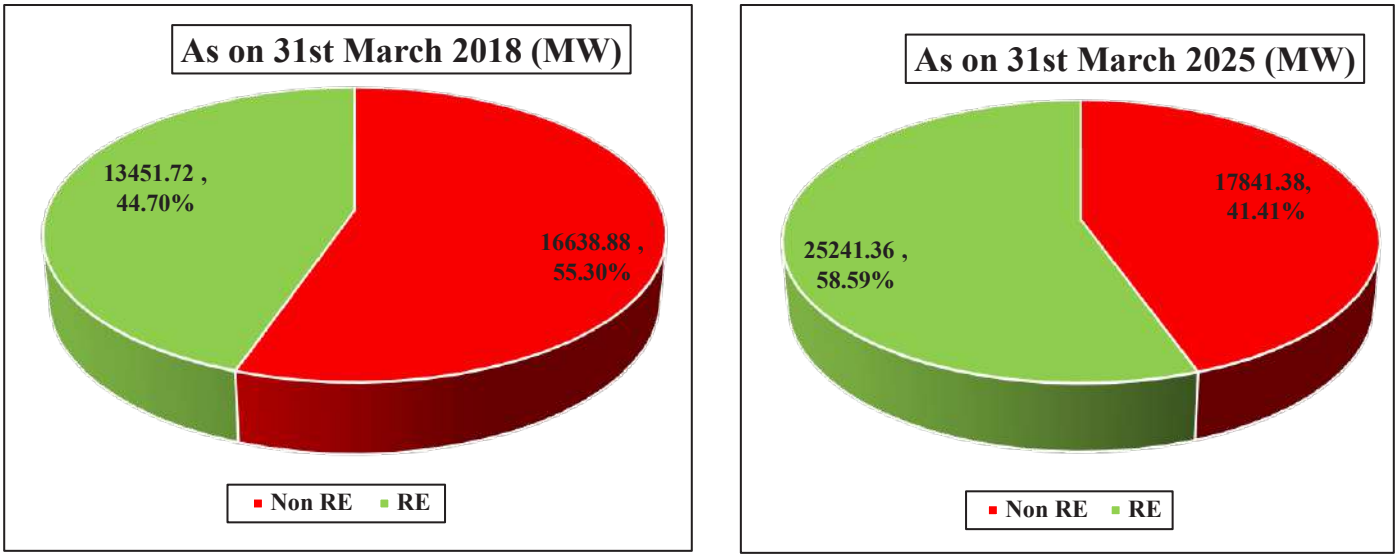
(in MW)

Year	RE	Non-RE	Total	Share (%)		Growth (%)	
				RE	Non-RE	RE	Non-RE
2017-18	13451.72	16638.88	30090.60	44.70	55.30		
2018-19	14909.39	16338.88	31248.27	47.71	52.29	10.84	-1.80
2019-20	16588.84	16688.88	33277.72	49.85	50.15	11.26	2.14
2020-21	17476.67	16838.88	34315.55	50.93	49.07	5.35	0.90
2021-22	18277.50	17363.88	35641.38	51.28	48.72	4.58	3.12
2022-23	20098.55	17363.88	37462.43	53.65	46.35	9.96	0.00
2023-24	22161.62	17778.00	39939.62	55.49	44.51	10.26	2.38
2024-25	25241.36	17841.38	43082.74	58.59	41.41	13.90	0.36
Gr (2017-18 to 2024-25)	**87.64%**	**7.23%**	**43.18%**				
CAGR (2017-18 to 2024-25)	**9.41%**	**1.00%**	**5.26%**				

Source : NPP, MoP and MNRE

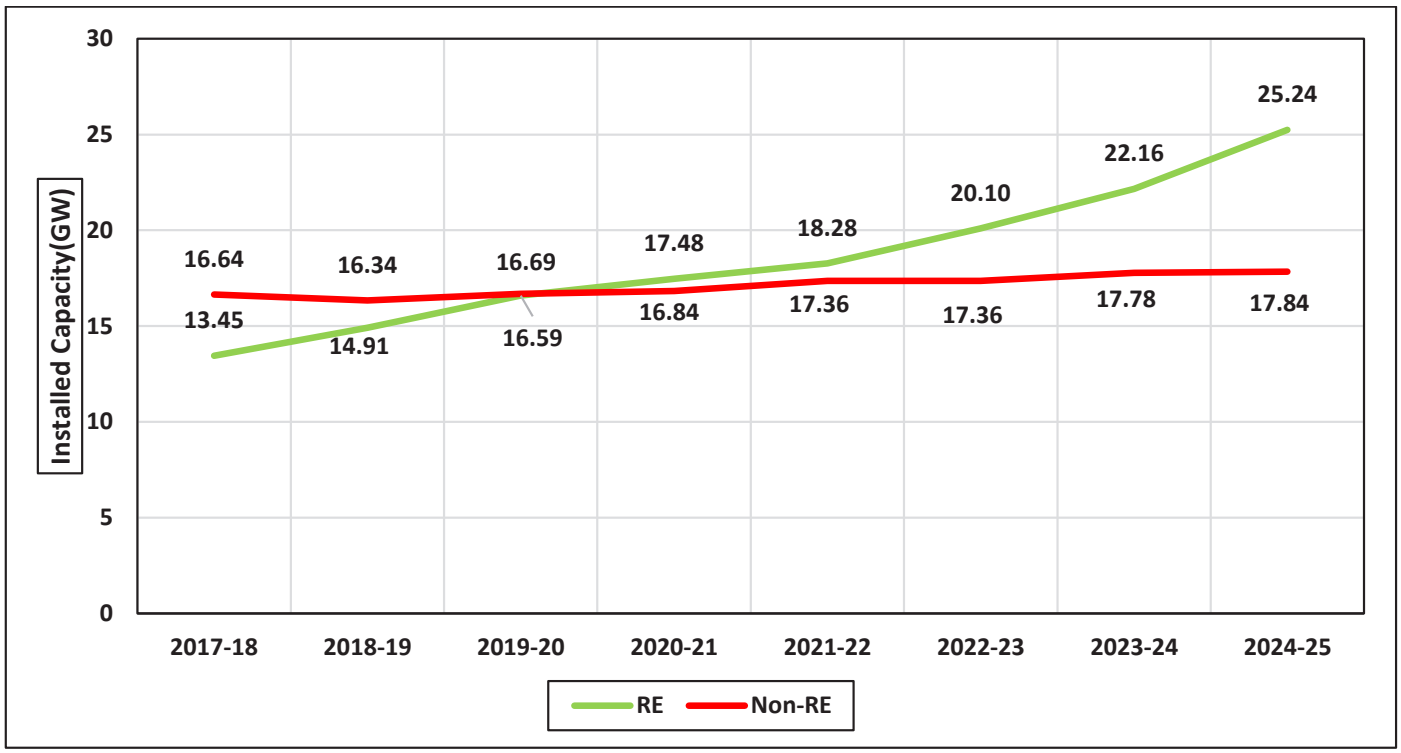
Gr=Growth (%)
CAGR=Compound Annual Growth Rate

Fig. 13.1.1 Share in RE Installed Capacity (in MW)



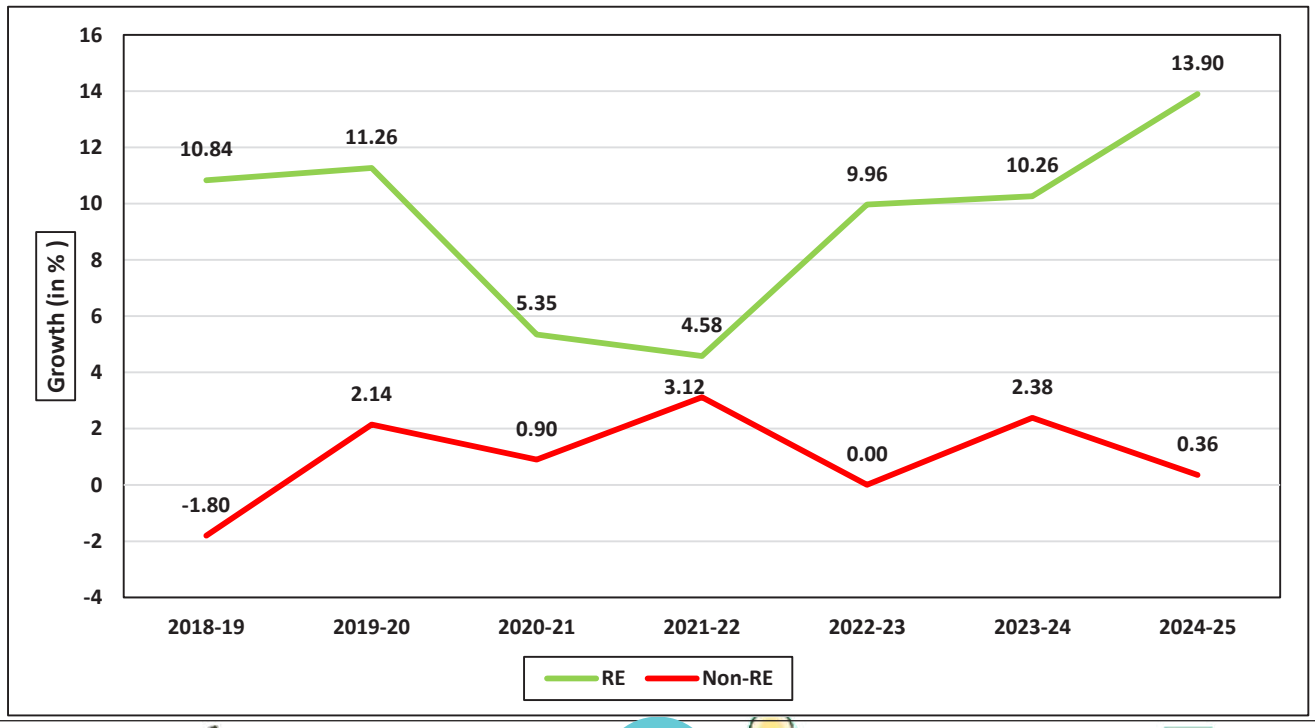
The pie charts clearly depict a significant shift in the installed capacity as on 31st March 2018 and 31st March 2025, marked by a growing dominance of Renewable Energy (RE) in the total installed capacity. As on 31st March 2018, RE accounted for 44.70% of the total installed capacity, while Non-Renewable Energy (Non-RE) held the majority share of 55.30%. However, by 31st March 2025, the scenario had reversed, RE installations surged to a 58.59% share, whereas Non-RE's share declined to 41.41%.

Fig 13.1.2 Trend in installed Capacity



The graph illustrates the installed capacity under Renewable Energy (RE) and Non-Renewable Energy (Non-RE) sources from 2017-18 to 2024-25. As on 31st March 2018, RE installed capacity was at 13.45 GW, noticeably lower than 16.64 GW. Over the years, installed capacity under RE witnessed consistent and accelerated growth, surpassing Non-RE in 2020-21, where RE reached 17.48 GW compared to 16.84 GW of capacity installations under Non-RE. The gap between the two lines continued to widen thereafter. By 2024-25, RE capacity surged to 25.24 GW, while Non-RE grew modestly to 17.84 GW, expanding the gap to 7.4 GW in favour of RE.

Fig 13.1.3 Year wise growth (%) in installed capacity



The graph shows the year-wise growth (%) in installed capacity under Renewable Energy (RE) and Non-Renewable Energy (Non-RE) sources from 2018-19 to 2024-25. Installed capacity under RE exhibits a consistently higher growth rate than that of Non-RE throughout the period, reflecting strong momentum in renewable sector expansion. RE growth peaked at 13.90% in 2024-25, following a gradual rebound from a dip to 4.58% in 2021-22. However, Non-RE growth remained subdued, even turning negative in 2018-19 (-1.80%), and never exceeding 3.12% in any year. The fluctuating but overall stagnant trend in Non-RE contrasts sharply with the accelerating growth in RE.

13.2 Installed Capacity under Wind, Solar, Small Hydro & Bio Energy (RES):

Installed capacity under Renewable Energy Sources (RES) in Karnataka has seen significant growth from 2014-15 to 2024-25, primarily driven by solar power. Installed capacity under solar witnessed an exponential rise from 156.83 MW in 2014-15 to 10,153.58 MW by 2024-25, marking an exceptional growth of 6374.26% and a CAGR of 51.75%. Wind power, while already established, grew steadily from 7,455.09 MW to 11,739.91 MW, registering an increase of 57.48% with a CAGR of 4.65%. Bio-power showed marginal growth of 13.02% over the decade, increasing from 926.06 MW to 1,046.62 MW, with a low CAGR of 1.23%, indicating limited addition of installed capacity. In contrast, small hydro power remained unchanged at 123.05 MW throughout the period. Overall, total installed capacity under RES expanded from 8,661.03 MW to 23,063.16 MW, a rise of 166.29% with a CAGR of 10.29%, underscoring a decisive shift towards renewable energy, predominantly led by solar capacity installations. Installed capacity under RES sector from 2014-15 is stipulated in **Table 13.2.1**.

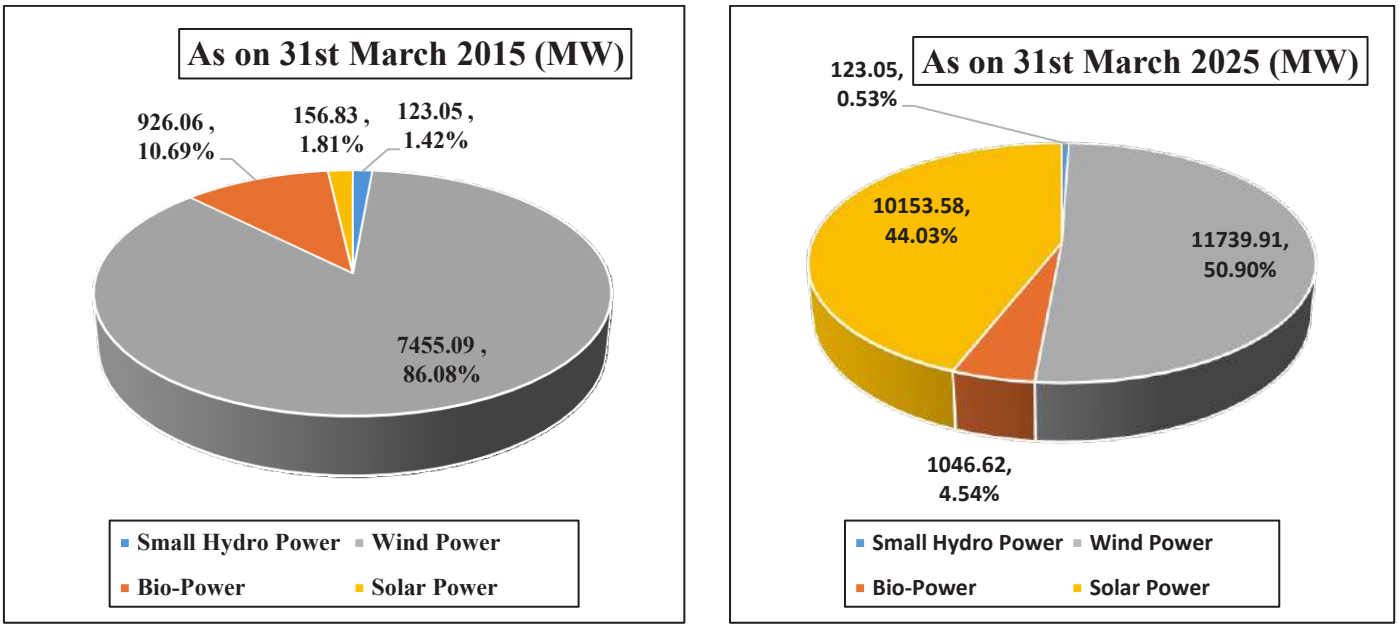
Table 13.2.1: Installed Capacity under Solar, wind, Bio Power and Small Hydro Power (RES) since 2014-15

(in MW)

Year	Small Hydro Power	Wind Power	Bio-Power	Solar Power	Total	Growth (%)
2014-15	123.05	7455.09	926.06	156.83	8661.03	3.10
2015-16	123.05	7613.89	926.06	1090.57	9753.57	12.61
2016-17	123.05	7861.46	926.67	1728.52	10639.7	9.09
2017-18	123.05	8197.09	977.52	1950.86	11248.52	5.72
2018-19	123.05	8968.91	1020.52	2618.71	12731.19	13.18
2019-20	123.05	9304.34	1021.69	3961.56	14410.64	13.19
2020-21	123.05	9608.04	1039.91	4527.47	15298.47	6.16
2021-22	123.05	9866.37	1042.70	5067.18	16099.3	5.23
2022-23	123.05	10017.17	1043.70	6736.43	17920.35	11.31
2023-24	123.05	10603.54	1045.45	8211.38	19983.42	11.51
2024-25	123.05	11739.91	1046.62	10153.58	23063.16	15.41
Gr(2014-15 to 2024-25)	**0.00%**	**57.48%**	**13.02%**	**6374.26%**	**166.29%**	
CAGR(2014-15 to 2024-25)	**0.00%**	**4.65%**	**1.23%**	**51.75%**	**10.29%**	

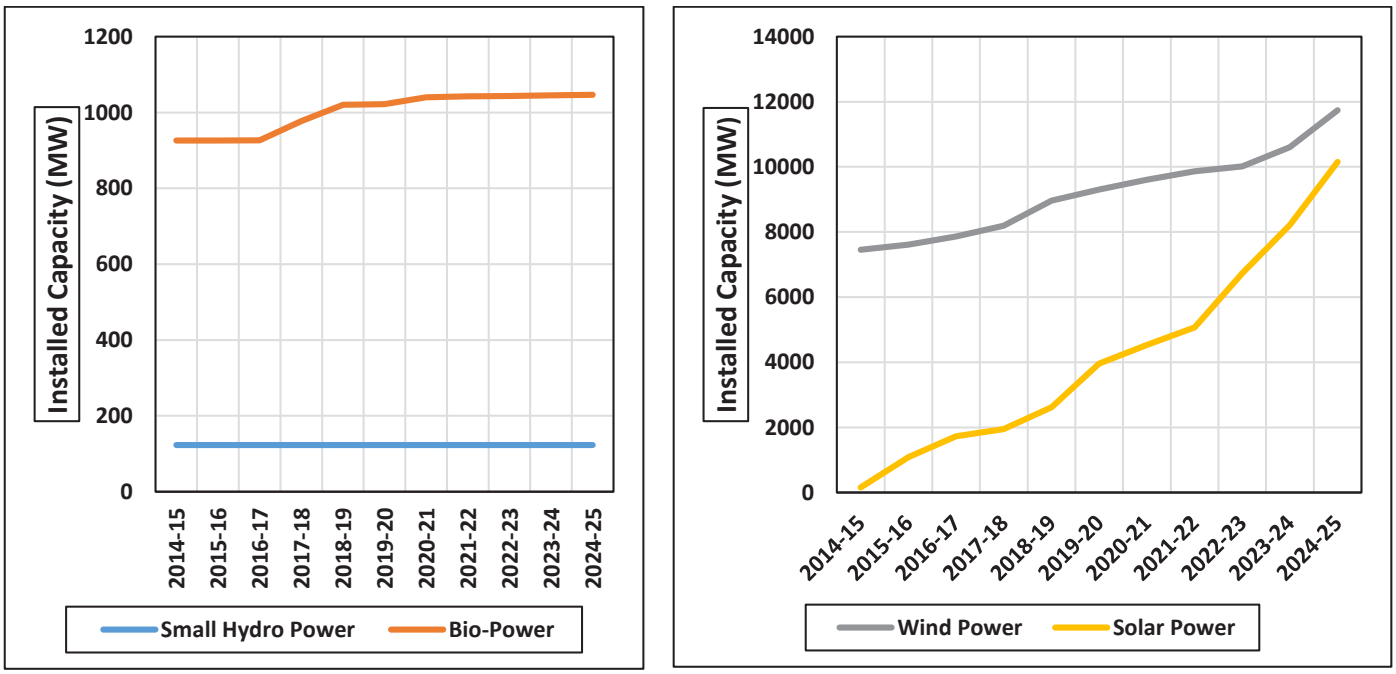
Gr=Growth (%)
CAGR=Compound Annual Growth Rate

Fig 13.2.1 Share (%) in Cumulative Installed capacity



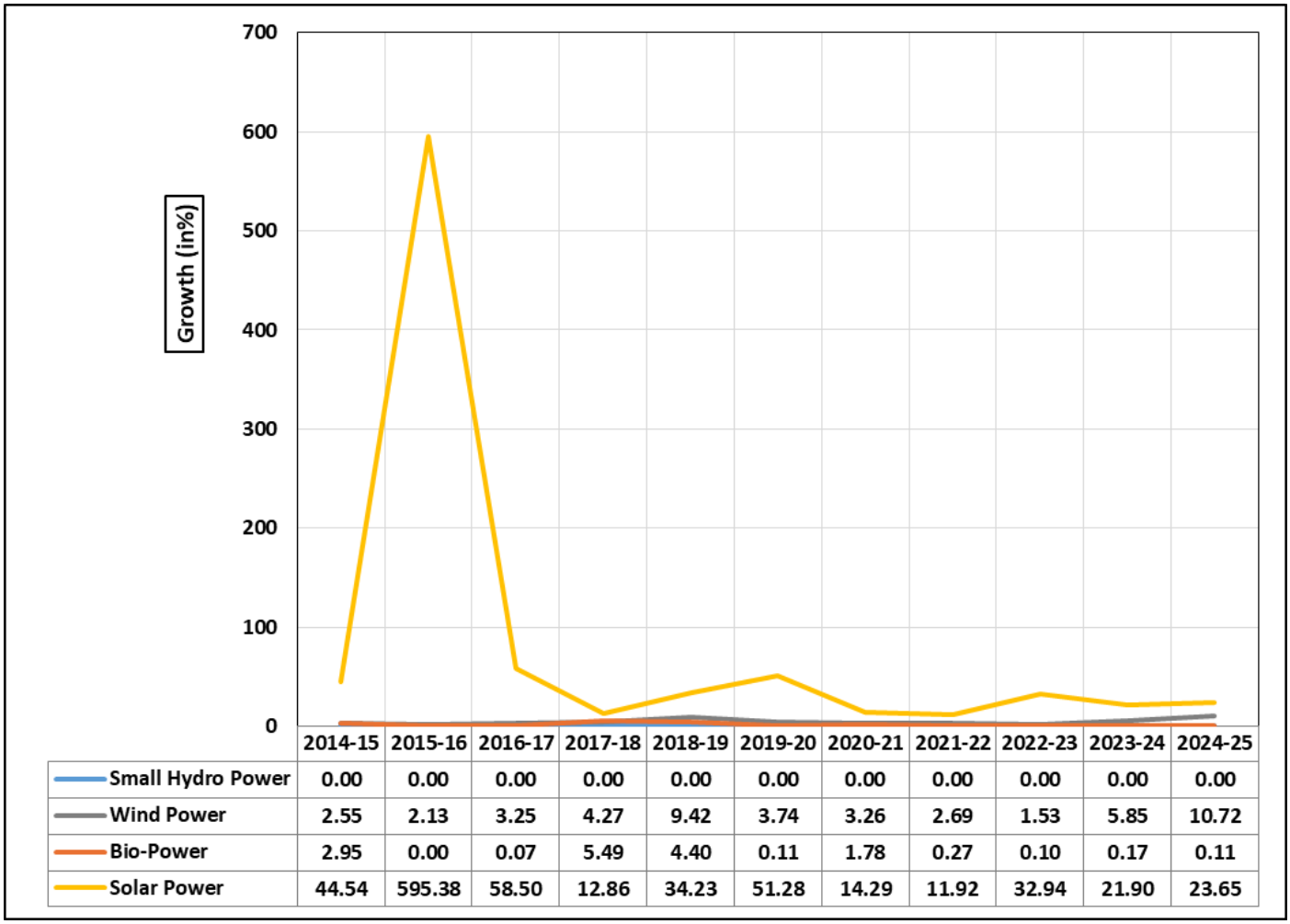
Composition of Tamil Nadu's renewable energy installed capacity has undergone a major transformation over the past decade. Wind power dominated with a share of 86.08% having 7455.09 MW installation, followed by Bio-Power installation of 926.06 MW with a share of 10.69%. Solar power had a share of 1.81% having installation of 156.83 MW and Small Hydro Power had the least share of 1.42% with a cumulative installation of 123.05 MW. However, as on 31st March 2025, Tamil Nadu's renewable energy landscape became more diversified. Wind power continued to hold the highest share at 50.90% with an installed capacity of 11.74 GW. Solar power registered a significant increase, contributing 44.03% with 10.15 GW, emerging as the second-largest source. Bio-power accounted for 4.54% with 1.05 GW, while small hydro power constituted 0.53% of the total renewable capacity, with no change in its installed capacity.

Fig 13.2.2 Trend in cumulative Installed Capacity



The trend in cumulative installed capacity of renewable energy sources from 2014-15 to 2024-25 reveals significant variation across different sources. Small Hydro Power has remained constant at 123.05 MW throughout the entire period, indicating no new capacity additions in this segment. Bio-Power showed a gradual increase from 926.06 MW of 2014-15 to 1,046.62 MW by 2024-25, with most of the growth occurring between 2017-18 and 2020-21, after which it plateaued whereas, Wind Power exhibited steady growth, rising from 7,455.09 MW in 2014-15 to 11,739.91 MW by 2024-25, reflecting consistent capacity additions over the years. However, the most remarkable growth was observed in Solar Power, which surged from a modest 156.83 MW in 2014-15 to 10,153.58 MW by 2024-25. This sharp rise highlights a strategic focus and accelerated investments in solar energy, especially after 2018-19. Overall, while hydro and bio-energy remained largely static, wind power grew steadily, and solar power experienced an exponential expansion, transforming the renewable energy landscape.

Fig 13.2.3 Year wise growth (%) in installed capacity



	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Small Hydro Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wind Power	2.55	2.13	3.25	4.27	9.42	3.74	3.26	2.69	1.53	5.85	10.72
Bio-Power	2.95	0.00	0.07	5.49	4.40	0.11	1.78	0.27	0.10	0.17	0.11
Solar Power	44.54	595.38	58.50	12.86	34.23	51.28	14.29	11.92	32.94	21.90	23.65

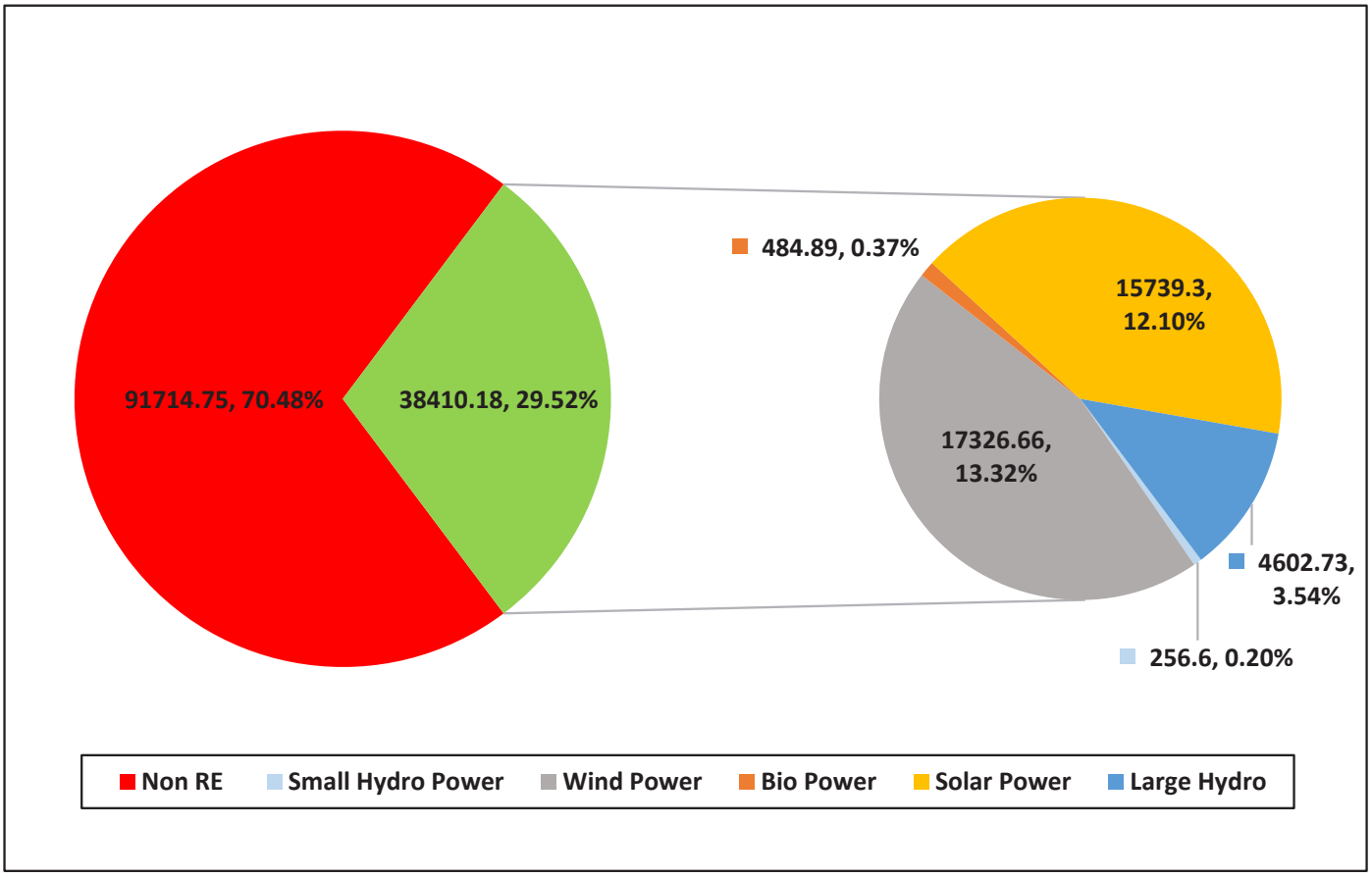
The year-wise growth in installed capacity shows distinct trends across renewable energy sources from 2014-15 to 2024-25. Small Hydro Power remained stagnant with zero growth throughout the period. Wind Power experienced steady and moderate growth, ranging mostly between 1.5% and 10.7%, reflecting consistent capacity expansion. Bio-Power showed minimal and irregular growth, generally below 3%, indicating slow capacity additions. In contrast, Solar Power witnessed explosive growth early on, with a remarkable 595% increase in 2015-16, followed by strong but fluctuating growth rates mostly between 12% and 51%, highlighting rapid and sustained expansion in solar capacity over the years. Overall, solar power led the growth momentum, while wind power grew steadily, bio-power grew slowly, and small hydro power remained unchanged.

13.3 Energy Generation during 2024-25:

During 2024–25, Tamil Nadu ranked 5th in the country in electricity generation from renewable energy sources, contributing 38.41 BU, which accounted 9.52% of the total of the country's electricity generation from Renewable Energy sources. In terms of generation from solar, wind, bio power, and small hydro power, the state attained fourth position ,by generating 33.81 BU and contributing 13.26% to the national share. Out of total energy generation of Tamil Nadu, renewable energy sources contributed 38.41 BU of electricity comprising 29.52 % of the total, while non-renewable sources accounted for 91.71 BU, making up 70.48 %. Wind power contributed the largest share from RE sector with 17.33 BU, accounting for 13.32% of the total generation, followed by solar power with 15.74 BU, contributing 12.10% in the state. Small hydro power generated 4.60 BU, accounting for 3.54%, and bio power contributed 0.48 BU, making up 0.37%. Large hydro accounted for 0.26 BU of electricity , contributing 0.20% to the total.

Fig 13.3.1 RE share in total energy generation during 2024-25

(in MU)



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CHAPTER 14

KARNATAKA

14.1 Status of RE and Non-RE sector in Karnataka:

As on 31st March 2025, Karnataka acquired 4th position in electricity installed capacity under RE sector with cumulative installed capacity of 23.92 GW accounting 10.87% of the country's cumulative RE installed capacity. State has witnessed a significant shift towards clean energy, with its RE installed capacity increasing by 1.47 times between 2017–18 and 2024–25, compared to a marginal 1.02 times growth in non-renewable energy capacity. The share of RE in the total installed capacity of the state enhanced from 60.71% of 2017–18 to 68.98% by 2024–25. Solar power has emerged as the dominant contributor to Karnataka's RE portfolio, comprising 47.85% of the total RE installed capacity, followed by wind power with a share of 36.34%. The installed capacities of small hydro power and bio power have remained relatively stable.

During 2024-25, total electricity generation of 100.09 BU, RE contributed 48.10% share. Within the electricity generation from RE sources , the highest share was from solar power having 32.61%, followed by wind power with 28.29%, and large hydro as the next significant contributor. The state ranked 3rd in the country for overall renewable energy generation, with a total contribution of 48.14 BU, accounting for 11.93% of India's total electricity generation from RE sources. Karnataka also held the third position in electricity generation from solar, wind, bio power, and small hydro power by generating 34.09 BU and contributing 13.37% to the national total in this category. Upcoming sections provide a meticulous examination of Karnataka's energy landscape, focusing on Renewable Energy sector's advancements.

Details of installed capacity under RE and Non-RE sector since 2017-18 , installed capacity under Solar Power, Wind Power, Small Hydro Power since 2014-15, electricity generation from various sources of Renewable Energy sector and their analysis in respect of the state of Karnataka is elaborated in this chapter.

INSTALLED CAPACITY

Table 14.1.1 Installed Capacity in RE and Non-RE sector since 2017-18

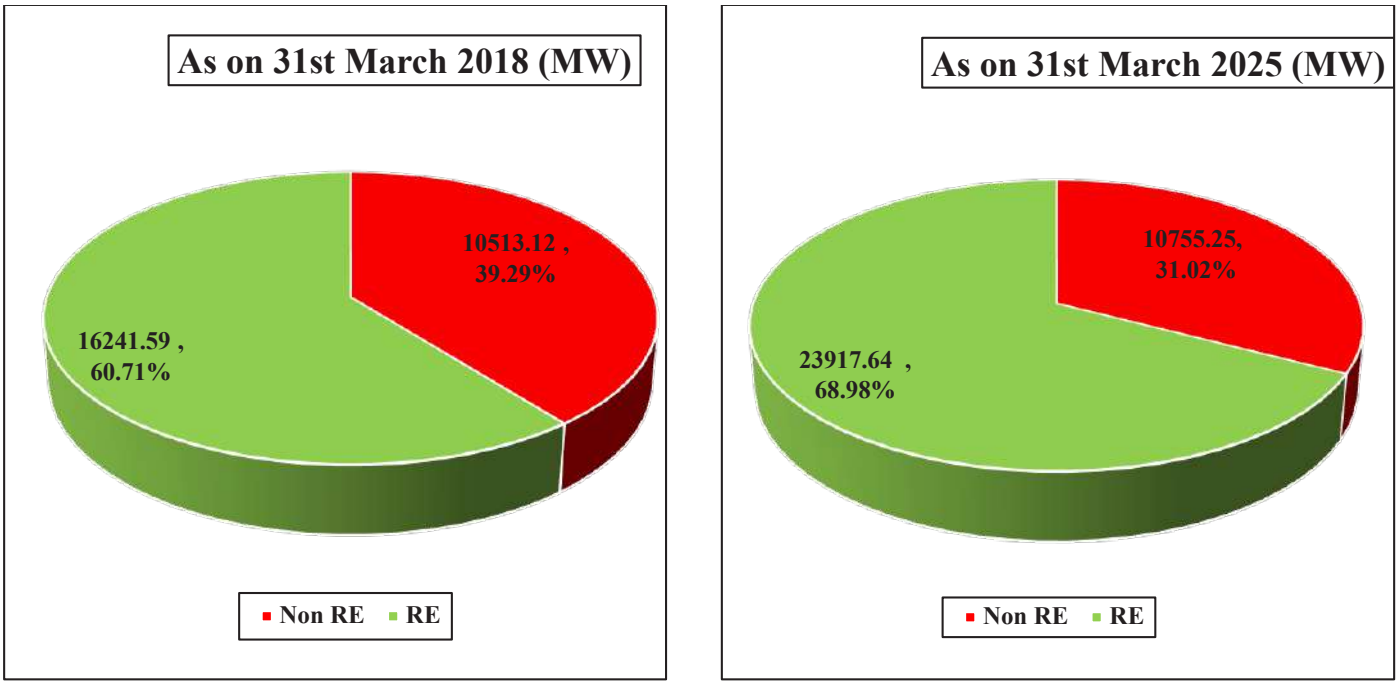
(in MW)

Year	RE	Non-RE	Total	Share (%)		Growth (%)	
				RE	Non-RE	RE	Non-RE
2017-18	16241.59	10513.12	26754.71	60.71	39.29		
2018-19	17524.40	10513.12	28037.52	62.50	37.50	7.90	0.00
2019-20	18918.13	10385.20	29303.33	64.56	35.44	7.95	-1.22
2020-21	19149.33	10385.20	29534.53	64.84	35.16	1.22	0.00
2021-22	19593.79	10385.20	29978.99	65.36	34.64	2.32	0.00
2022-23	20408.43	10385.20	30793.63	66.27	33.73	4.16	0.00
2023-24	21441.94	10385.20	31827.14	67.37	32.63	5.06	0.00
2024-25	23917.64	10755.25	34672.89	68.98	31.02	11.55	3.56
Gr (2017-18 to 2024-25)	**47.26%**	**2.30%**	**29.60%**				
CAGR (2017-18 to 2024-25)	**5.68%**	**0.33%**	**3.77%**				

Source: NPP, MoP and MNRE

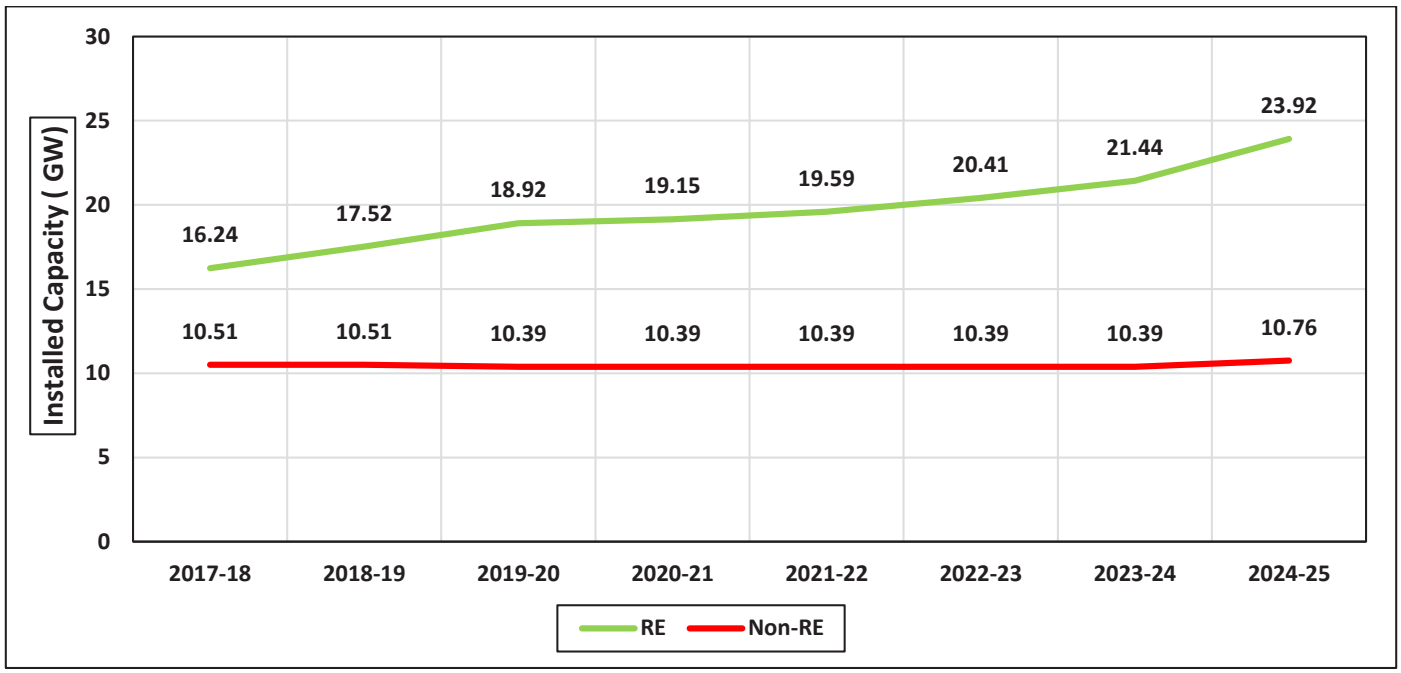
Gr=Growth (%)
CAGR=Compound Annual Growth Rate

Fig. 14.1.1 Share of RE in Installed Capacity



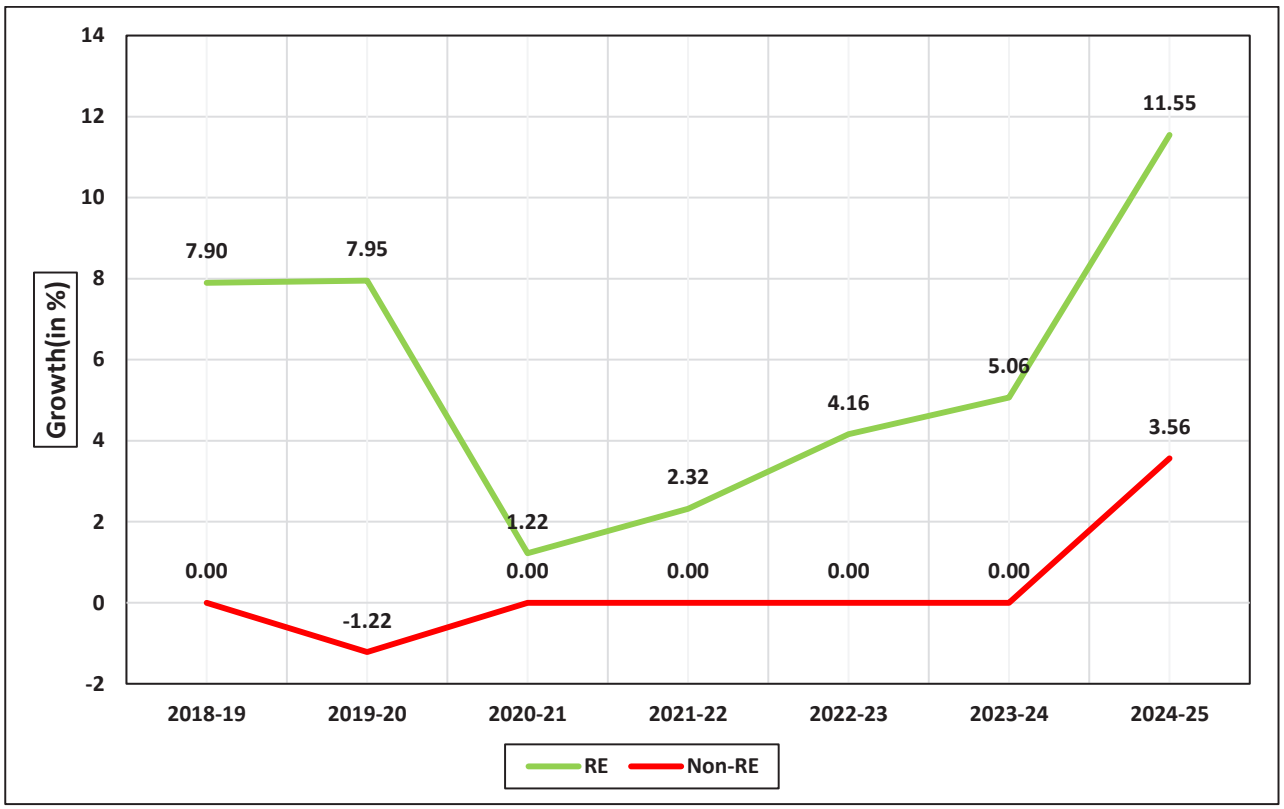
As on 31st March 2018, installed capacity under RE sources accounted for 60.71% while Non-RE sources was 39.29%. By 31st March 2025, RE's share grew to 68.98% and Non-RE's share dropped to 31.02% . This shows a clear shift towards renewable energy, with significant growth in RE installed capacity and a stagnation in Non-RE expansion.

Fig14.1.2 Trend in installed capacity



The trend in capacity installation from 2018-19 to 2024-25 shows a steady increase in Renewable Energy (RE) installed capacity, rising from 16.24 GW to 23.92 GW. This reflects a consistent focus on expanding renewable sources over the years whereas Non-Renewable Energy (Non-RE) capacity remains almost flat, fluctuating slightly around 10.4 GW and only increasing marginally to 10.76 GW by 2024-25. This indicates that growth in energy capacity is primarily driven by renewables, while non-renewable capacity has largely stagnated during this period.

Fig 14.1.3 Growth (%) in installed capacity



Annual growth in installed capacity shows a clear contrast between Renewable Energy (RE) and Non-Renewable Energy (Non-RE) sectors from 2018-19 to 2024-25. Installed capacity under RE sources experienced steady growth throughout this period, with rates fluctuating between 1.22% and 7.95%, followed by a significant surge to 11.55% in 2024-25, indicating accelerating investment and expansion in renewables. On the other hand, growth of installed capacity under Non-RE sources remained mostly stagnant, with zero growth for several years and a slight dip (-1.22%) in 2019-20. Only in 2024-25 did Non-RE capacity show a modest increase of 3.56%. Overall, the data highlights strong and increasing growth in renewable installed capacity, while non-renewable installed capacity growth remains minimal.

14.2 Installed Capacity under Wind, Solar, Small Hydro & Bio Energy (RES) :

The installed capacity under Solar, Wind, Small Hydro and Bio power has shown significant variation in growth trends from 2014-15 to 2024-25. Solar power stands out with an extraordinary increase, rising from just 83.95 MW of 2014-15 to 9679.66 MW by 2024-25, representing a staggering growth of over 11,430% and a CAGR of 60.76%. Wind power has also seen strong expansion, rising from 2638.2 MW to 7351.10 MW, reflecting a growth of 178.64% and a CAGR of 10.79%. Bio-power and small hydro power have experienced more modest growth, with bio-power increasing by 39.45% (from 1371.83 MW to 1912.95 MW) and small hydro power growing by 16.19% (from 1105.73 MW to 1284.73 MW), corresponding to CAGRs of 3.38% and 1.51%, respectively. Overall, total installed capacity under RES has surged nearly 289%, with an annual growth rate of 14.55%, highlighting a major shift towards renewable energy, particularly driven by the rapid rise of solar power capacity. Details of installed capacity under RES is given in the **Table 14.2.1.**

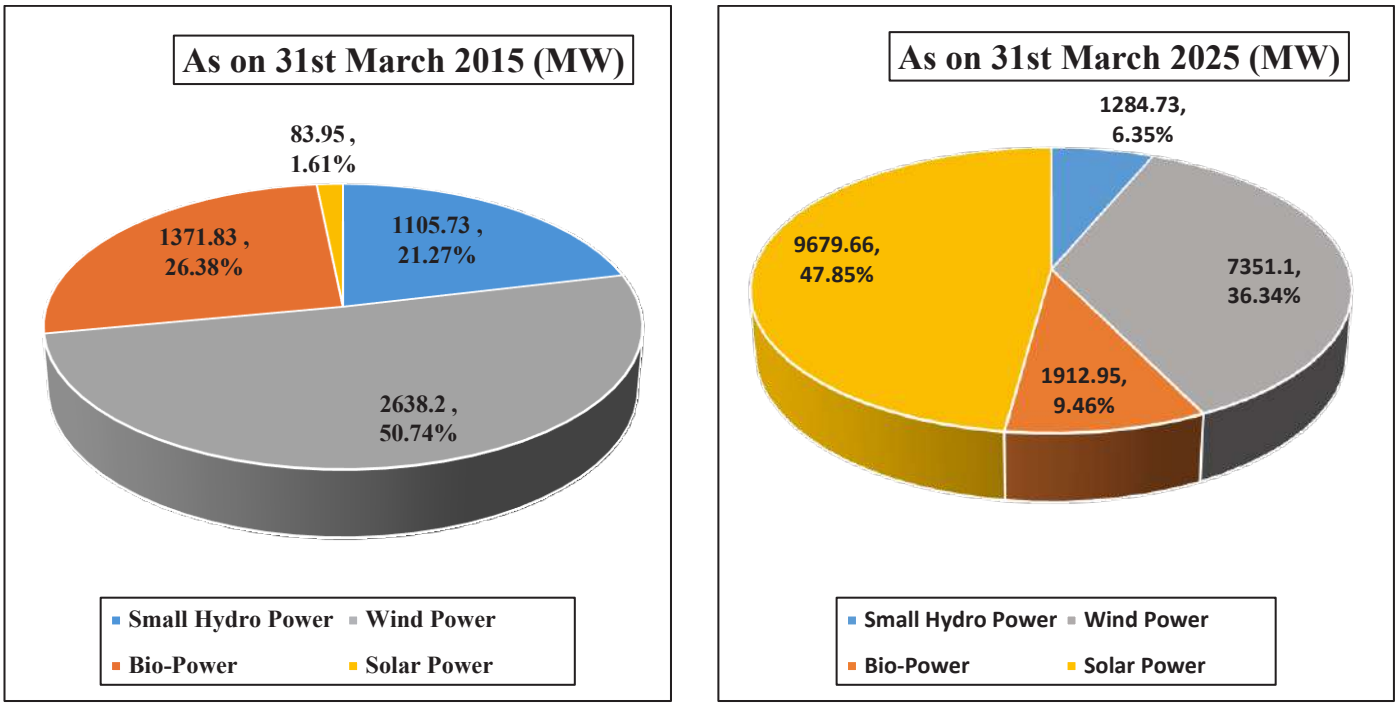
Table 14.2.1: Installed Capacity under Solar, wind, Bio Power and Small Hydro Power (RES) since 2014-15:

(in MW)

Year	Small Hydro Power	Wind Power	Bio-Power	Solar Power	Total	Growth (%)
2014-15	1105.73	2638.2	1371.83	83.95	5199.71	10.1
2015-16	1217.73	2869.1	1427.83	158.41	5673.07	9.1
2016-17	1225.73	3751.40	1477.83	1045.30	7500.26	32.21
2017-18	1230.73	4608.40	1779.81	4965.25	12584.19	67.78
2018-19	1254.73	4694.90	1809.81	6120.76	13880.20	10.30
2019-20	1280.73	4790.60	1896.42	7306.18	15273.93	10.04
2020-21	1280.73	4938.60	1901.92	7383.88	15505.13	1.51
2021-22	1280.73	5130.90	1902.15	7590.81	15904.59	2.58
2022-23	1280.73	5294.95	1902.15	8241.40	16719.23	5.12
2023-24	1280.73	6019.61	1907.72	8544.68	17752.74	6.18
2024-25	1284.73	7351.10	1912.95	9679.66	20228.44	13.95
Gr (2014-15 to 2024-25)	**16.19%**	**178.64%**	**39.45%**	**11430.27%**	**289.03%**	
CAGR(2014-15 to 2024-25)	**1.51%**	**10.79%**	**3.38%**	**60.76%**	**14.55%**	

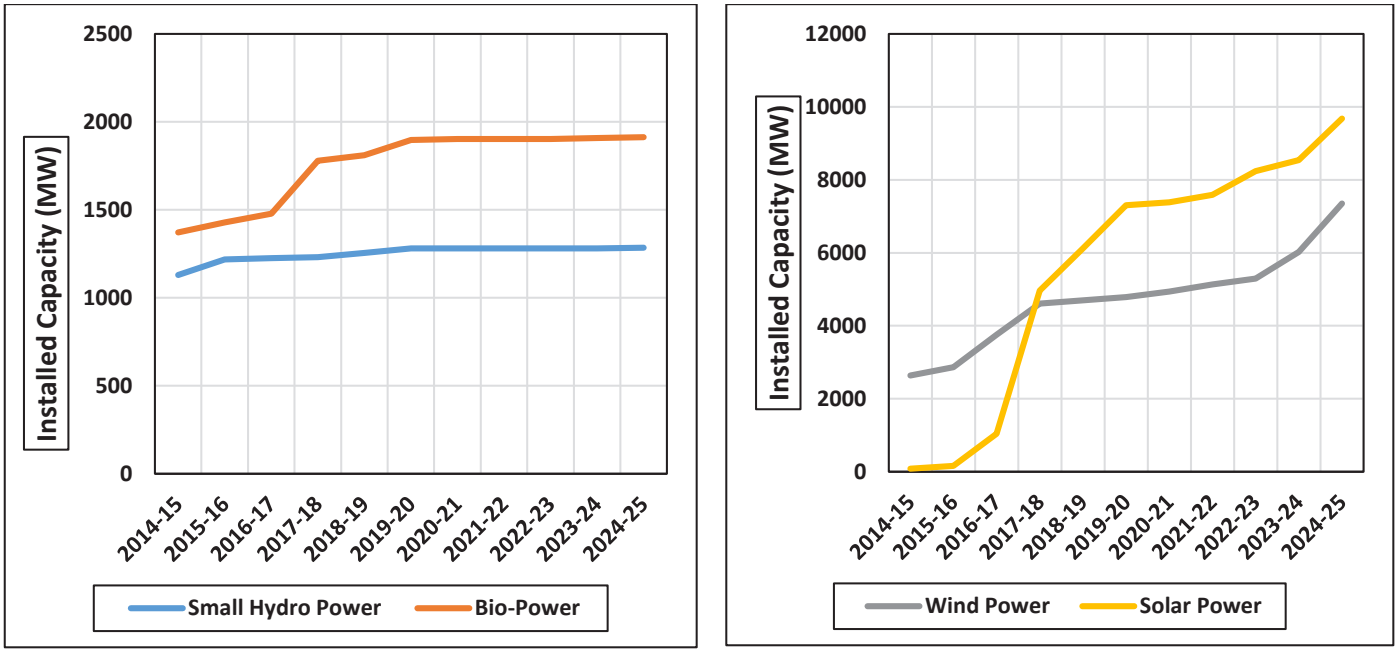
Gr=Growth (%)
CAGR=Compound Annual Growth Rate

Fig 14.2.1 Share in Cumulative Installed capacity



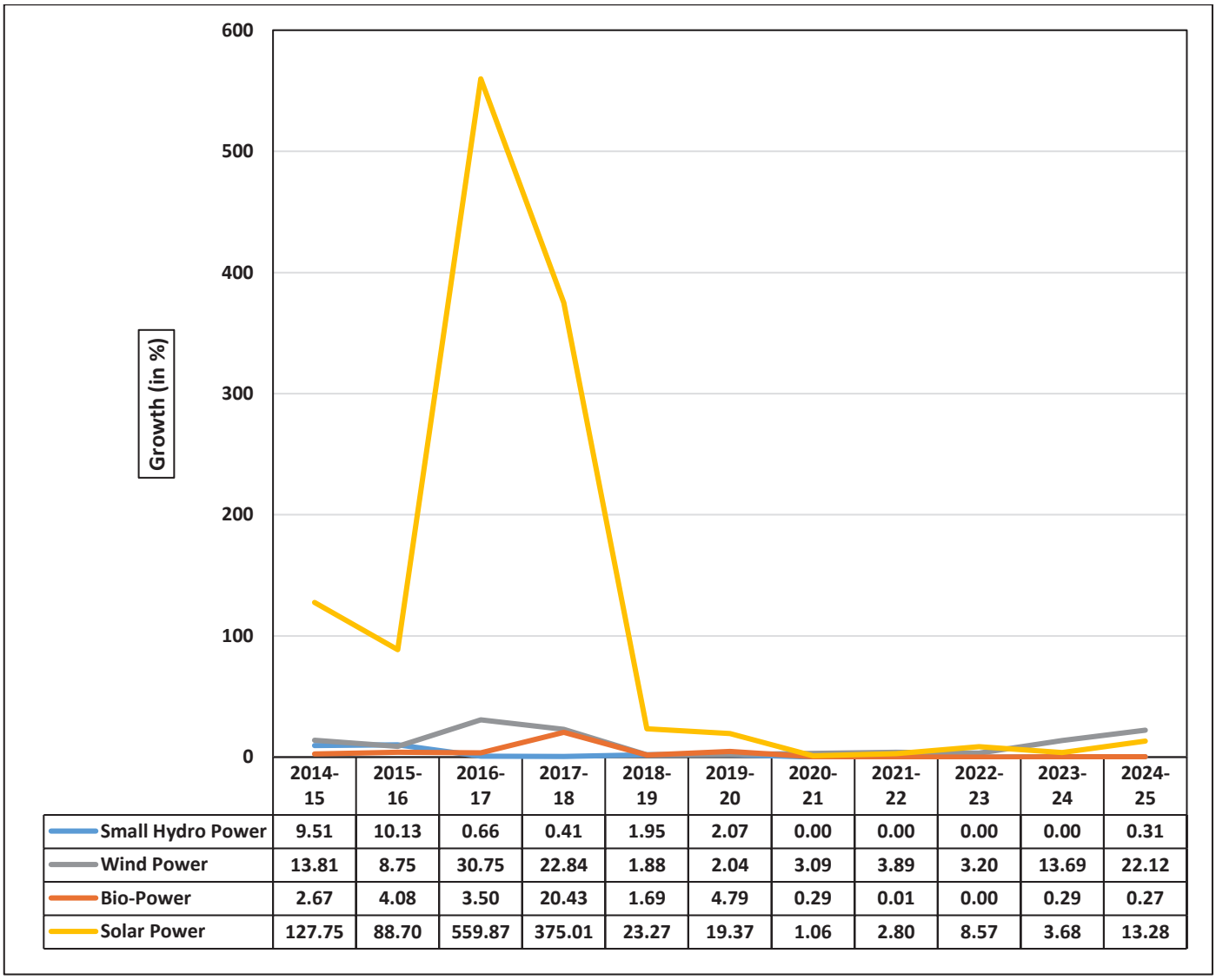
Comparing the electricity installed capacity of renewable energy sources between 31st March 2015 and 31st March 2025 reveals significant shifts. As on March 2015, wind power dominated the sector with a share of 50.74% followed by bio-power having 26.38%. Small hydro power had a share of 21.27% and solar power contributing the smallest share of 1.61%. By 31st March 2025, solar power has surged dramatically to become the largest contributor with 47.85% share and the share of wind power dropped to 36.34%. Bio-power's share significantly declined to 9.46% , and small hydro power also saw a decrease to 6.35%. This comparison highlights a remarkable growth in solar power installed capacity, transforming the renewable energy landscape and reducing the relative shares of other sources despite some absolute increases.

Fig 14.2.2 Trend in cumulative Installed Capacity



During last decade, small hydro power and bio-power capacities grew slowly, with bio-power stabilizing after 2019-20. Wind power increased steadily, reaching about 7350 MW, while solar power saw explosive growth, rising from under 100 MW to nearly 9700 MW, surpassing wind power around 2017-18. Solar is the fastest-growing renewable energy source during this period in Karnataka.

Fig 14.2. 3 Year wise growth (%) in installed capacity



	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Small Hydro Power	9.51	10.13	0.66	0.41	1.95	2.07	0.00	0.00	0.00	0.00	0.31
Wind Power	13.81	8.75	30.75	22.84	1.88	2.04	3.09	3.89	3.20	13.69	22.12
Bio-Power	2.67	4.08	3.50	20.43	1.69	4.79	0.29	0.01	0.00	0.29	0.27
Solar Power	127.75	88.70	559.87	375.01	23.27	19.37	1.06	2.80	8.57	3.68	13.28

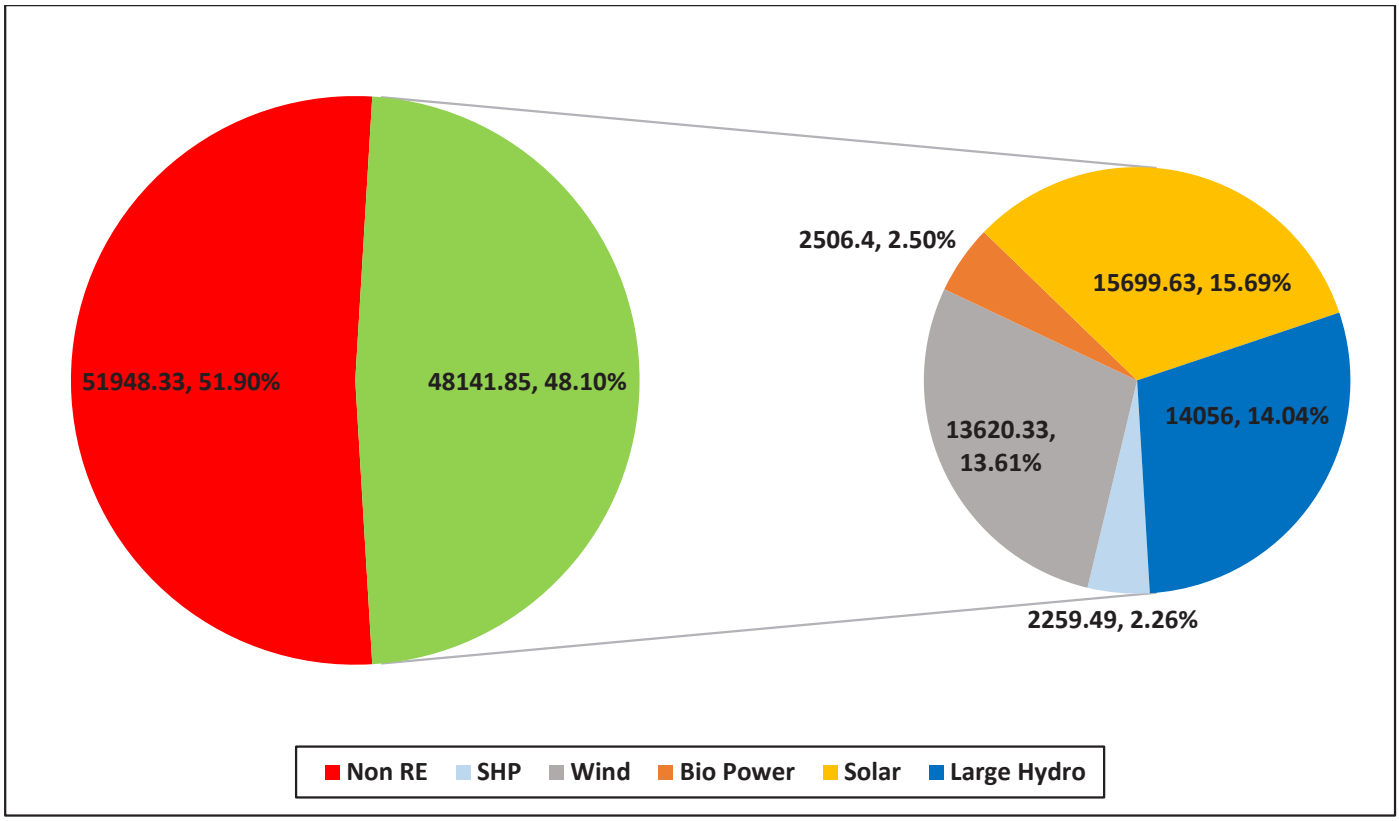
Year-wise growth in installed capacity across different renewable energy sources reveals distinct patterns. Small Hydro Power has shown steady but modest growth, mostly staying below 10%, with several years recording little to no increase. Wind Power exhibits more variability but generally significant growth, peaking at 30.75% in 2016-17, and maintaining moderate growth rates between 2% and 22% in recent years, reflecting ongoing capacity additions. Bio-Power experiences moderate growth with occasional spikes, such as 20.43% in 2017-18, but usually remains under 5%, indicating a slower expansion rate. In contrast, Solar Power has demonstrated explosive growth, especially in the early years, with an extraordinary peak of 559.87% in 2016-17, followed by high but gradually declining growth rates. Despite this decline, solar power continues to grow strongly, with rates above 10% in recent years, highlighting its rapid expansion and increasing share in the installed capacity. Overall, solar power leads the growth trajectory with remarkable surges and sustained increases, wind power shows consistent moderate growth, while bio-power and small hydro power have steadier, slower growth trends.

14.3 Energy generation during 2024-25:

During 2024-25, renewable energy (RE) accounted for 48.10% share of the total electricity generation, nearly matching the non-renewable energy share of 51.90%. Among the renewable sources, solar power contributed the largest share of 15.69%, of the total generation followed closely by large hydro having 14.04%, and wind power with share of 13.61%. Bio-power and small hydro power had smaller shares, contributing 2.50% and 2.26% respectively. This distribution highlights the significant role of solar, large hydro, and wind energy in the renewable energy mix, collectively forming the bulk of the electricity generation from green energy sources.

Fig 14.3.1 RE share in total energy generation during 2024-25

(in MU)



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CHAPTER 15

MAHARASHTRA

15.1 Status of RE and Non-RE sector:

As on 31st March, 2025, Maharashtra ranked 5th in India in terms of installed renewable energy (RE) capacity, with a total of 22.40 GW, accounting for 10.18% of the nation's overall RE installed capacity. Share of renewables in the state's total installed power capacity grew significantly from 27.86% of 2017–18 to 43.35% by 2024–25, indicating a marked shift towards cleaner energy sources. Within Maharashtra's RE portfolio, solar energy leads with a 55.22% share, followed by wind energy having share of 27.30%. In terms of electricity generation, the state produced 170.24 Billion Units (BU) in 2024–25, of which 25.23 BU having 14.82% was from renewable energy sources.

Maharashtra ranked 6th nationwide in total electricity generation from RE Sources contributing 6.25% to India's electricity generation from renewable sources. When focusing on electricity generation from solar, wind, bioenergy, and small hydro combined, Maharashtra secured 5th position, producing 19.59 BU electricity equivalent to 7.68% of the national total under these segments. Among the RE sources within the state, solar energy emerged as the top contributor, accounting for 30.62% of Maharashtra's electricity generation from renewable energy sources, closely followed by wind energy with share 30.36%. These figures underscore the rising prominence of solar power in the state's energy mix. The following sections delve deeper into Maharashtra's energy landscape, with a focused examination of the renewable energy sector's progress.

Details of installed capacity under RE and Non-RE sector since 2017-18 , installed capacity under Solar Power, Wind Power, Small Hydro Power since 2014-15, electricity generation from various sources of Renewable Energy sector and their analysis in respect of the state of Maharashtra is elaborated in this chapter.

INSTALLED CAPACITY

Table 15.1.1 Installed Capacity in RE and Non-RE sector since 2017-18

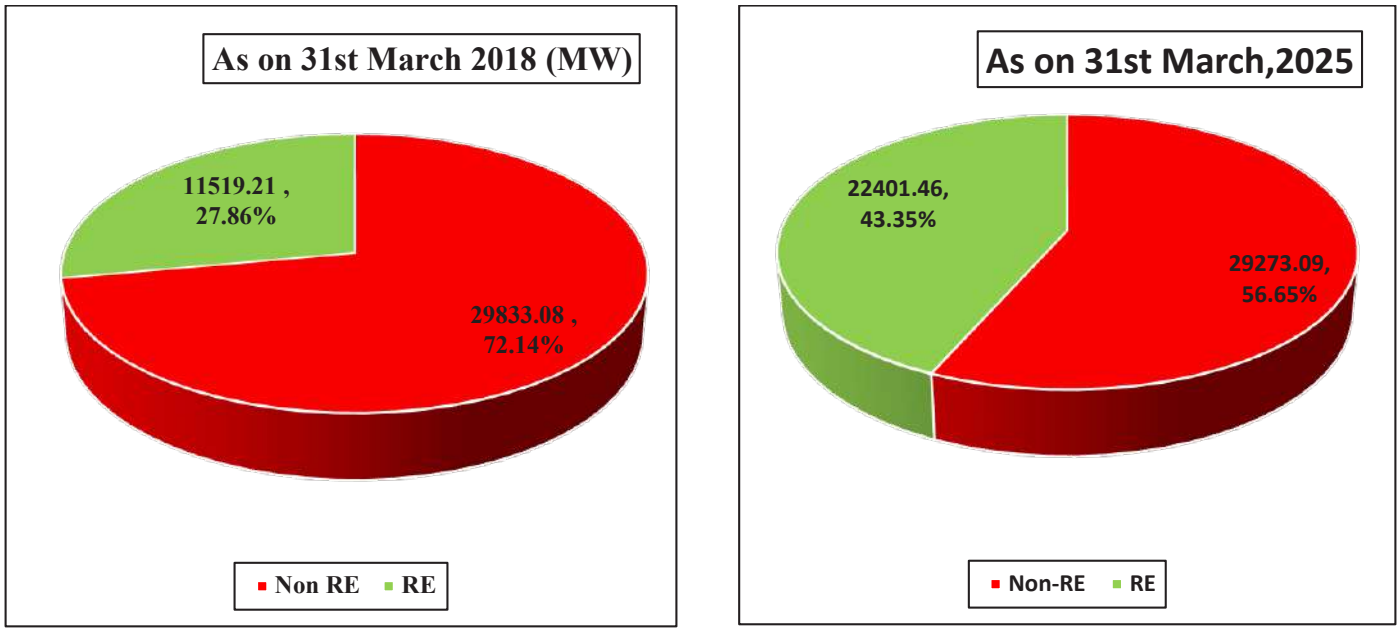
(in MW)

Year	RE	Non-RE	Total	Share (%)		Growth (%)	
				RE	Non-RE	RE	Non-RE
2017-18	11519.21	29833.08	41352.29	27.86	72.14		
2018-19	12421.69	30493.08	42914.77	28.95	71.05	7.83	2.21
2019-20	12822.27	29573.08	42395.35	30.24	69.76	3.22	-3.02
2020-21	13382.85	29573.08	42955.93	31.15	68.85	4.37	0.00
2021-22	13704.08	28463.08	42167.16	32.50	67.50	2.4	-3.75
2022-23	15804.50	28463.08	44267.58	35.70	64.30	15.33	0.00
2023-24	17530.12	28613.09	46143.21	37.99	62.01	10.92	0.53
2024-25	22401.46	29273.09	51674.55	43.35	56.65	27.79	2.31
Gr (2017-18 to 2024-25)	**94.47%**	**-1.88%**	**24.96%**				
CAGR (2017-18 to 2024-25)	**9.97%**	**-0.27%**	**3.23%**				

Source: NPP, MoP and MNRE

Gr=Growth (%)
CAGR=Compound Annual Growth Rate

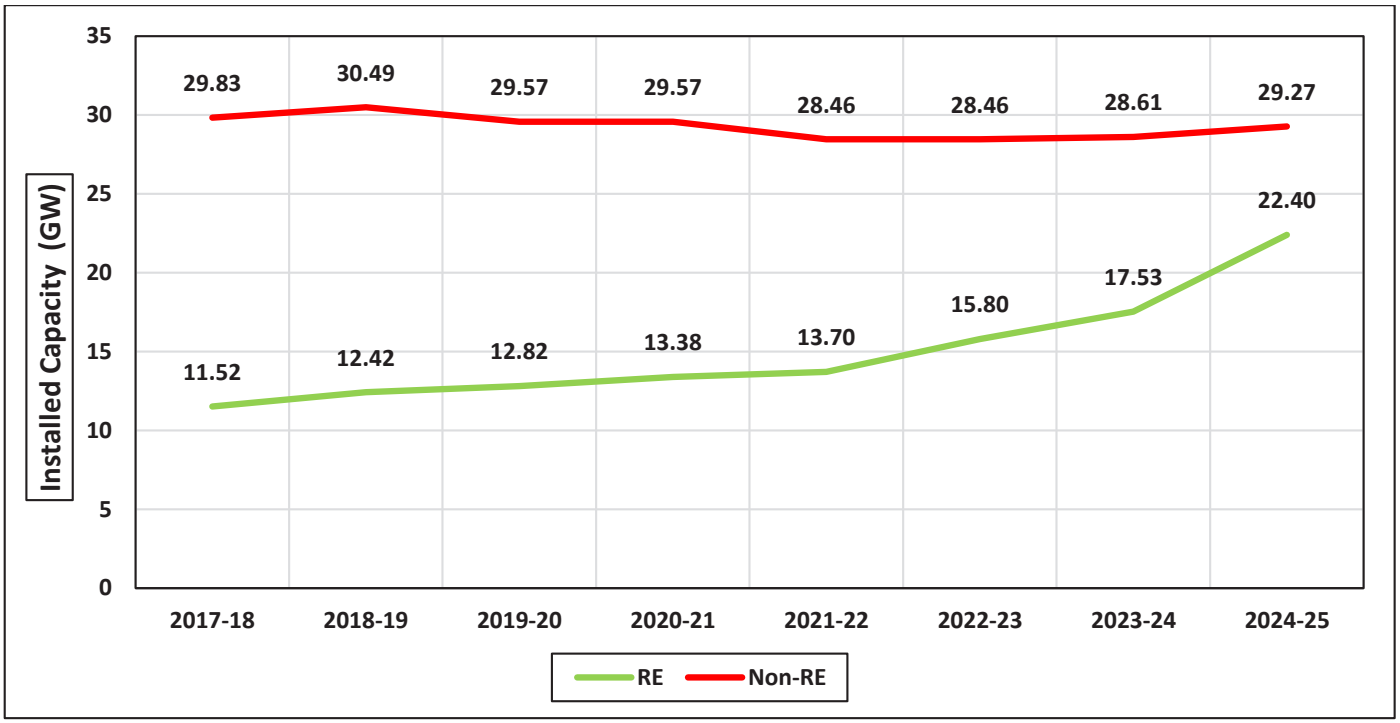
Fig. 15.1.1 RE Installed Capacity (in MW) and its share (%)



The two pie charts visually illustrate the shift in the installed capacity between Renewable Energy (RE) and Non-Renewable Energy (Non-RE) sources from 31st March 2018 to 31st March 2025. As on 31st March 2018, installed capacity under RE sector accounted for 27.86% of the total electricity installed capacity, while Non-RE segment dominated by making up 72.14%. However, by 31st March 2025, RE installed capacity

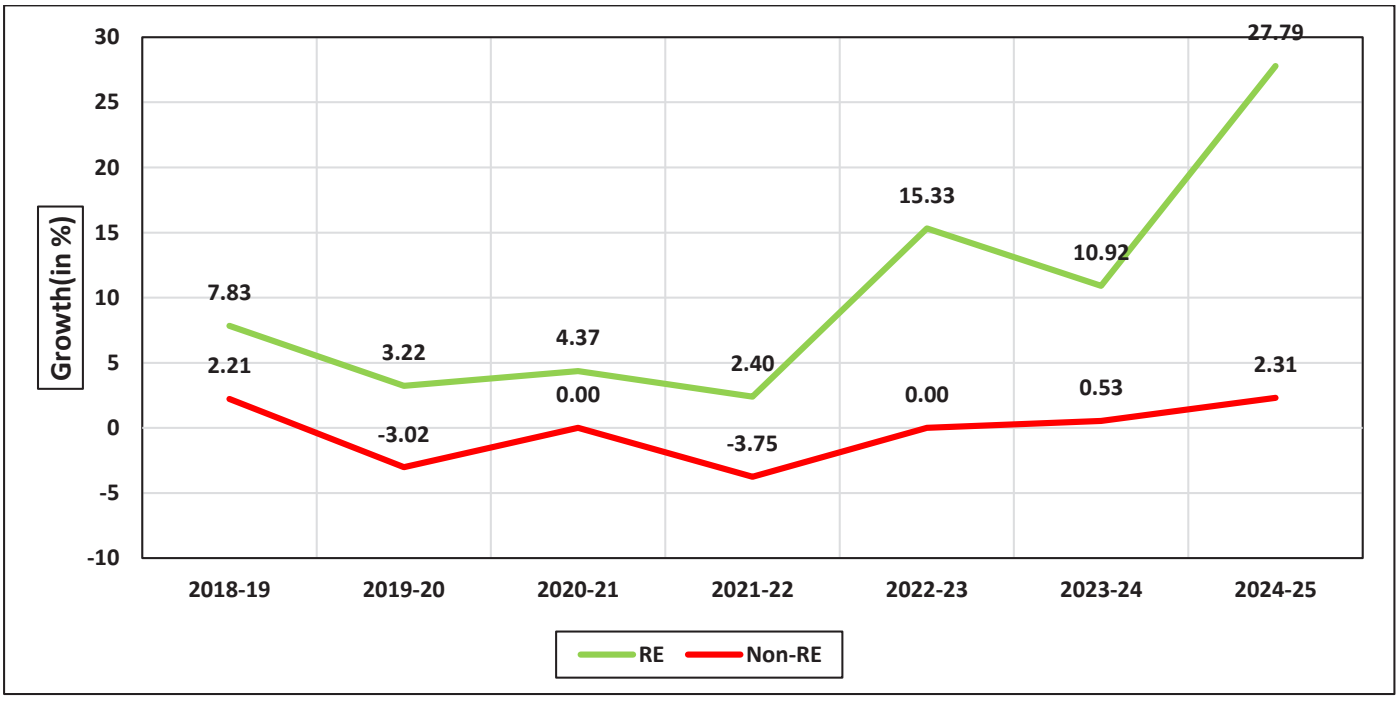
increased its share to 43.35%, while Non-RE, registered decline in installed capacity as well as in share. This comparison highlights a clear and substantial shift towards renewable sources, reflecting the growing focus on sustainable and clean energy.

Fig 15.1.2 Trend in Capacity installation



Installed capacity under Renewable Energy (RE) has shown a strong and consistent upward trend, rising from 11.52 GW of 2017-18 to 22.40 GW in 2024-25, nearly doubling over the period. This sharp growth, particularly after 2021-22, reflects increased focus on clean energy initiatives whereas Non-RE capacity remained relatively stagnant, fluctuating slightly around 29 to 30 GW, ending at 29.27 GW in 2024-25.

Fig 15.1.3 Year wise growth (%) in installed Capacity



RE sector demonstrates a consistently positive growth trend, albeit with varying intensity. After moderate growth in early years a major surge occurred from 2021-22 onwards, with growth jumping to 15.33% in 2022-23, 10.92% in 2023-24, and peaking at 27.79% in 2024-25, indicating a sharp acceleration in renewable capacity additions. Non-RE sector exhibits low and fluctuating growth, including negative growth in 2019-20 and 2021-22, followed by very modest recovery, peaking only at 2.31% in 2024-25. This analysis clearly highlights a dynamic expansion in RE, while Non-RE growth remains subdued, signalling a paradigm shift towards clean energy in the overall installed capacity.

15.2 Installed Capacity under Wind, Solar, Small Hydro & Bio Energy (RES) :

Installed capacity of Renewable Energy Sources (RES) under Solar Power, Wind Power, Bio-Power, and Small Hydro Power has shown remarkable growth from 2014-15 to 2024-25, with the most significant expansion seen in solar energy. Solar power installed capacity rose exponentially from 363.77 MW of 2014-15 to 10,687.27 MW by 2024-25, recording a staggering growth of 2837.92% with a CAGR of 40.22%, making it the primary driver of growth in RES. Wind power, already a well-established segment in 2014-15 at 4,445.93 MW, grew steadily to 5,284.61 MW, achieving 18.86% growth over the decade. Bio-power also expanded from 1,883.25 MW to 2,998.30 MW, marking a 59.21% growth with a CAGR of 4.76%. Small hydro power showed minimal but consistent growth, increasing from 336.93 MW to 384.28 MW, reflecting a 14.05% growth with a CAGR of 1.32%. Overall, total RES installed capacity increased from 7,029.88 MW of 2014-15 to 19,354.46 MW by 2024-25, translating to an impressive 175.32% growth and a CAGR of 10.66%. Details of installed capacity under RES is given in the **Table 15.2.1.**

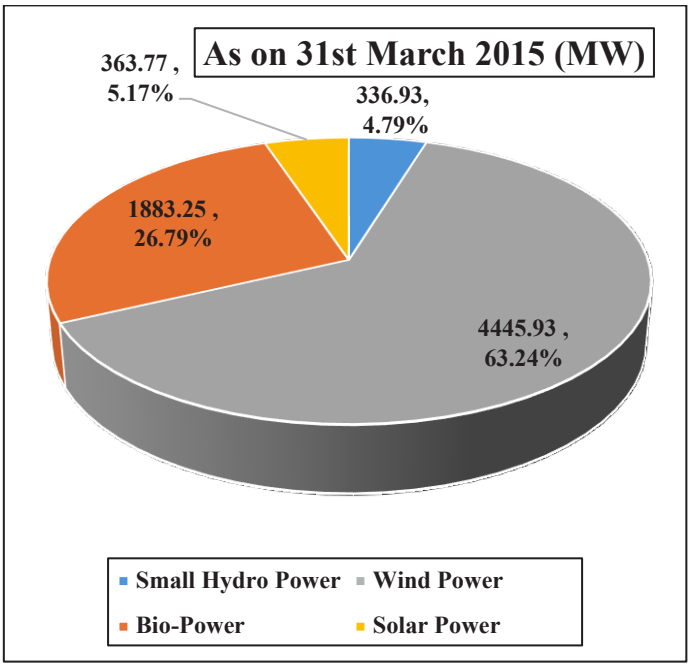
Table 15.2.1: Installed Capacity under Solar, wind, Bio Power and Small Hydro Power (RES) since 2014-15

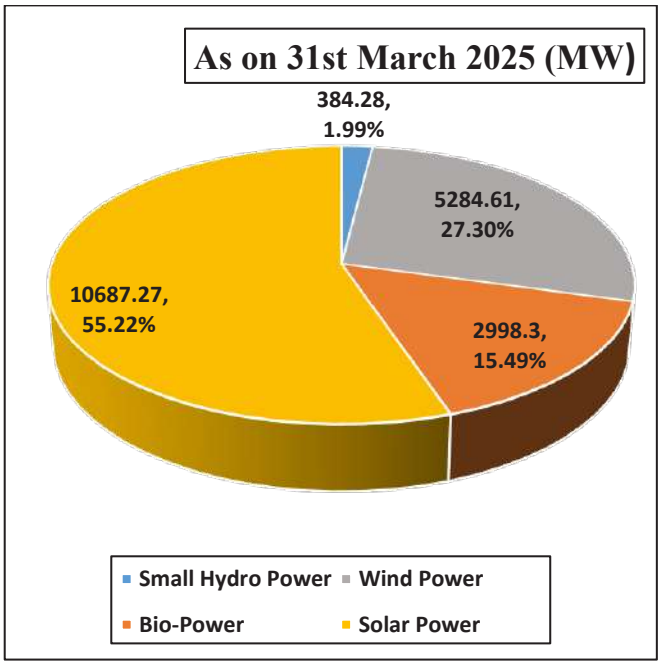
(in MW)

Year	Small Hydro Power	Wind Power	Bio-Power	Solar Power	Total	Growth (%)
2014-15	336.93	4445.93	1883.25	363.77	7029.88	10.83
2015-16	339.88	4653.78	2020.08	390.88	7404.61	5.33
2016-17	346.18	4771.33	2118.83	460.69	7697.03	3.95
2017-18	373.18	4783.93	2223.7	1251.4	8632.21	12.15
2018-19	375.57	4794.13	2556.53	1648.46	9374.69	8.60
2019-20	379.58	5000.33	2559.74	1835.62	9775.27	4.27
2020-21	379.58	5000.33	2632.15	2323.79	10335.85	5.73
2021-22	381.08	5012.83	2632.15	2631.02	10657.08	3.11
2022-23	381.08	5012.83	2640.69	4722.9	12757.5	19.71
2023-24	382.28	5207.98	2643.19	6249.67	14483.12	13.53
2024-25	384.28	5284.61	2998.30	10687.27	19354.46	33.63
Gr(2014-15 to 2024-25)	**14.05%**	**18.86%**	**59.21%**	**2837.92%**	**175.32%**	
CAGR(2014-15 to 2024-25)	**1.32%**	**1.74%**	**4.76%**	**40.22%**	**10.66%**	

Gr=Growth (%)
CAGR=Compound Annual Growth Rate

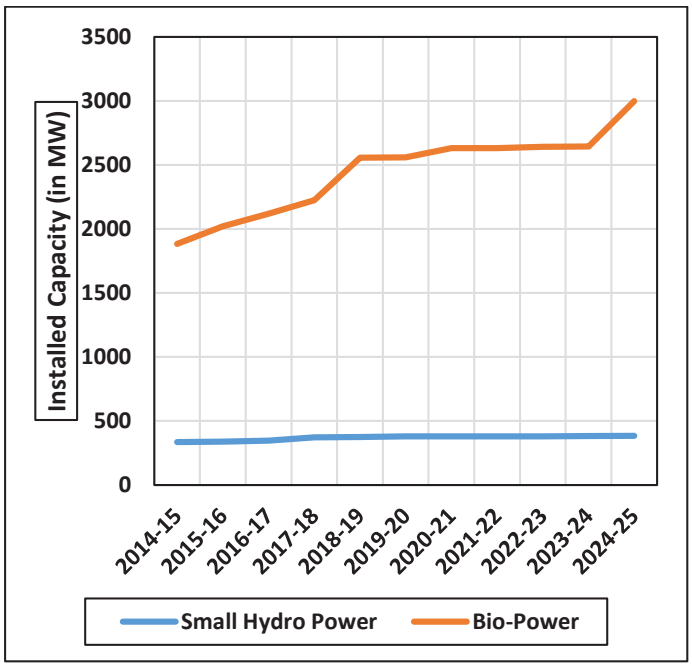
Fig 15.2.1 Share (%) in Cumulative Installed capacity

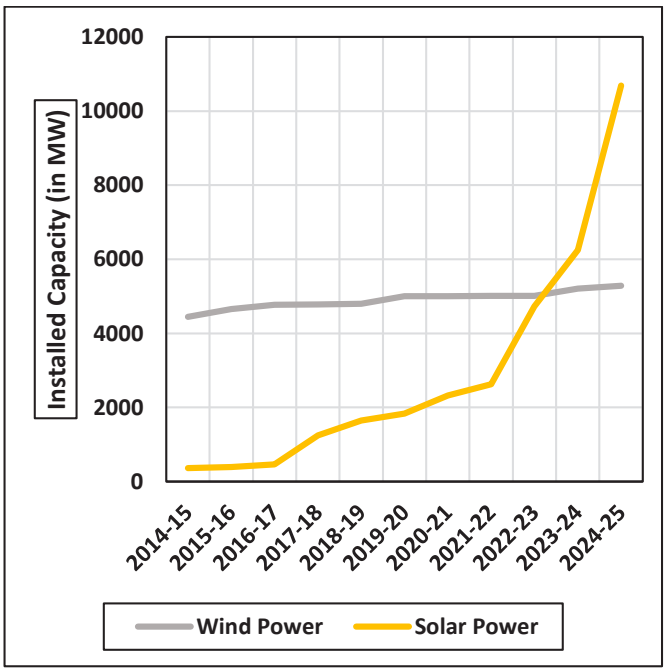




The pie charts compare the share (%) of cumulative installed capacity from various Renewable Energy Sources (RES) between 31st March 2015 and 31st March 2025. As on 31st March 2015, Wind Power dominated with 63.24% share , followed by Bio-Power having share 26.79%, while Solar Power and Small Hydro Power contributed only 5.17% and 4.79%, respectively. By 31st March 2025, RES landscape changes significantly. Solar Power becomes the largest contributor with 55.22%, reflecting rapid growth, while Wind Power's share declines to 27.30% despite modest capacity additions. Share of Bio-Power drops to 15.49%, and that of Small Hydro Power to just 1.99%.

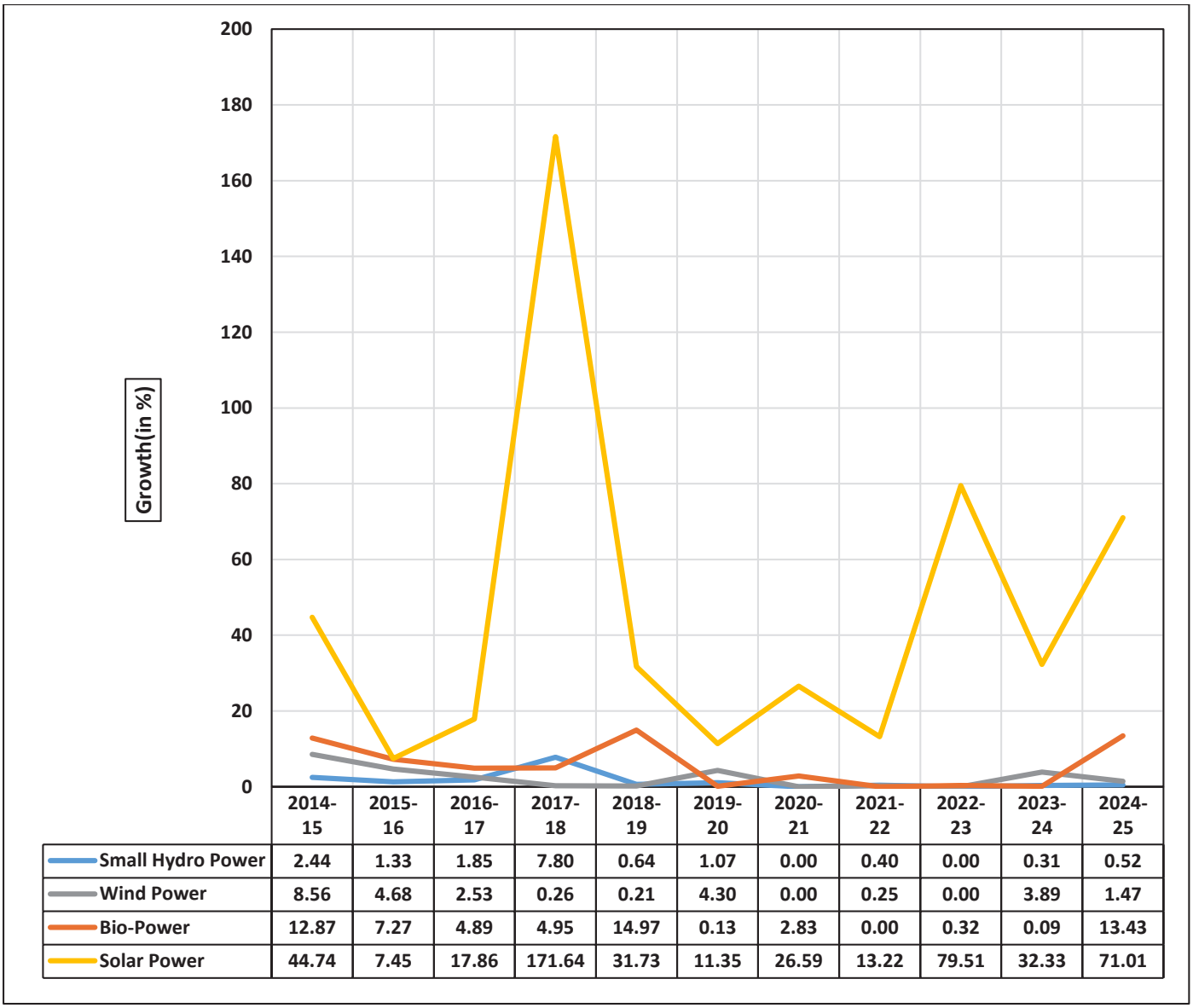
Fig 15.2.2 Trend in cumulative Installed Capacity





Trend in cumulative installed capacity , Bio-Power exhibits steady growth, rising from around 1,883 MW in 2014-15 to 2,998 MW in 2024-25, with a notable jump after 2018-19. Small Hydro Power, on the other hand, shows marginal growth, increasing only slightly from 337 MW to 384 MW, indicating limited expansion in this segment. While Wind Power has grown moderately from 4,446 MW to 5,285 MW, Solar Power has surged dramatically from just 364 MW of 2014-15 to 10,687 MW by 2024-25. This exponential rise, especially post 2017-18, positions solar as the fastest-growing and leading RES contributor.

Fig 15.2.3 Year wise growth (%) in installed capacity



	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Small Hydro Power	2.44	1.33	1.85	7.80	0.64	1.07	0.00	0.40	0.00	0.31	0.52
Wind Power	8.56	4.68	2.53	0.26	0.21	4.30	0.00	0.25	0.00	3.89	1.47
Bio-Power	12.87	7.27	4.89	4.95	14.97	0.13	2.83	0.00	0.32	0.09	13.43
Solar Power	44.74	7.45	17.86	171.64	31.73	11.35	26.59	13.22	79.51	32.33	71.01

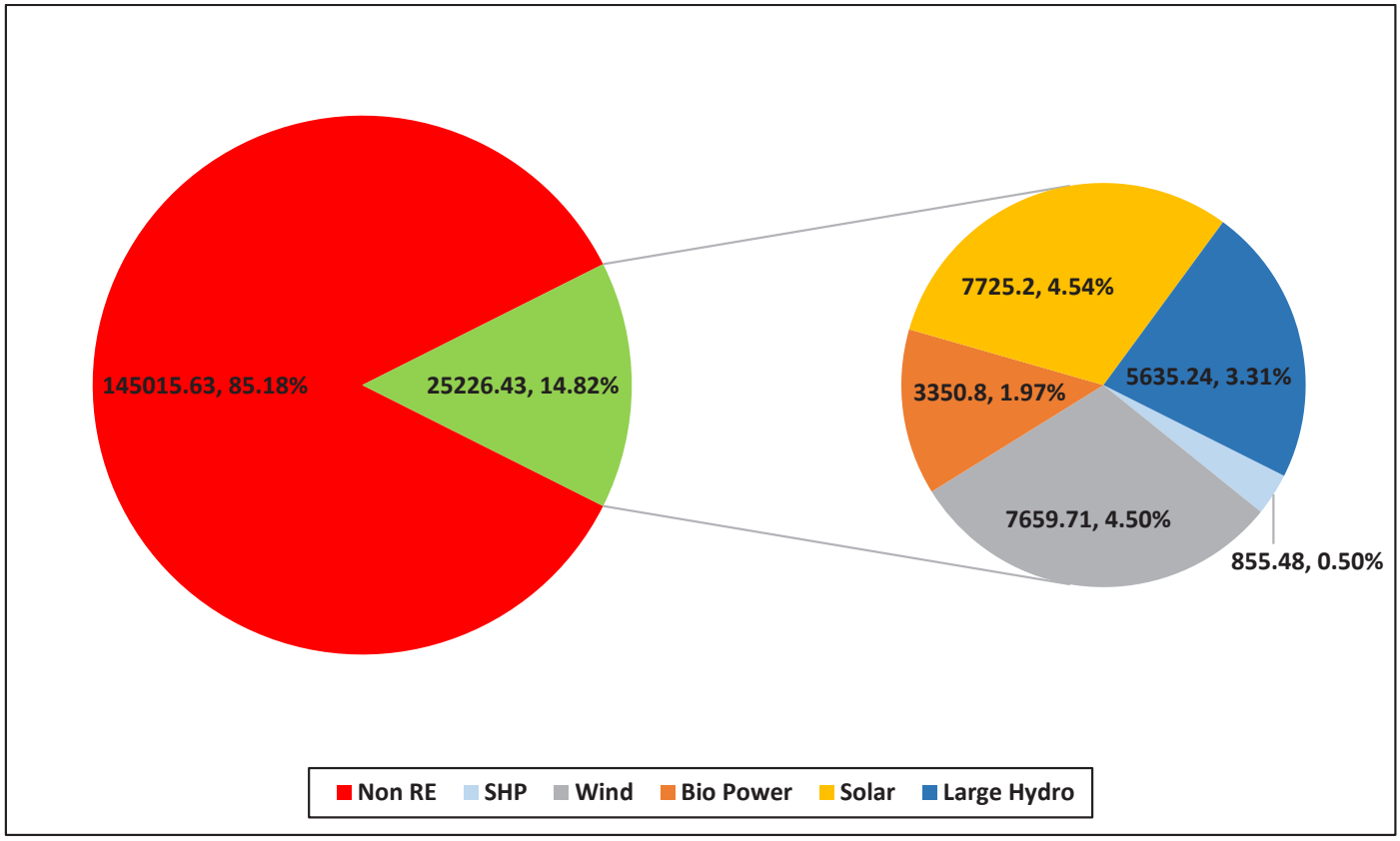
Year-wise growth in installed capacity of renewable energy sources from 2014-15 to 2024-25 reveals varied trends across different technologies. Small Hydro Power shows relatively steady but modest growth rates, mostly below 8%, with a peak of 7.8% in 2017-18 and minimal increases in other years. Wind Power experiences fluctuating growth, generally lower than other sources, with growth rates mostly under 9%, except for a slight surge of 4.3% in 2019-20 and a few other small spikes. Bio-Power exhibits moderate growth, with percentages ranging from near zero to nearly 15%, peaking in 2018-19 and showing a notable 13.43% increase in 2024-25. The most significant fluctuations are observed in Solar Power, which demonstrates dramatic growth, notably an extraordinary 171.64% surge in 2017-18 and substantial increases of over 70% in 2024-25, along with other double-digit growth years. Overall, solar power clearly leads in expansion pace, while other sources grow steadily but at a much slower rate.

15.3 Energy Generation during 2024-25 :

During 2024-25, renewable energy (RE) accounted for 14.82% of the total electricity generation, contributing 25.23 BU, while non-renewable energy (Non-RE) sector dominated with 85.18%, producing 145.02 BU. Among the renewable sources, solar power had the largest share, generating 7.73 BU, which is 4.54% of the total energy mix. Wind power closely followed with 7.66 BU, representing 4.50%. Large hydro contributed 3.31% while bio power and small hydro power accounted for smaller portions of 1.97% and 0.50% respectively. Although renewable energy still forms a minority of the total energy generation, solar and wind power are the leading contributors within the renewable sector, indicating a clear shift towards cleaner energy sources in the energy mix for 2024-25.

Fig 15.3.1 RE share in total energy generation during 2024-25

(in MU)



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INTERNATIONAL STATUS

CHAPTER 16
Installed Capacity

16.1 Installed Capacity- in RE & Non-RE sector

As on 31st December 2024, total global electricity installed capacity across Renewable Energy (RE) and Non-Renewable Energy (Non-RE) sectors was at 9616.36 GW. Out of this, 4442.76 GW installed capacity was from RE sector, representing 46.2% of total installed capacity, a substantial increase from 29.5% of 2015. During 2016 to 2024, RE installed capacity expanded from 1849.07 GW to 4442.76 GW, registering a 140.27% growth with CAGR of 10.23%. Non-RE sector grew from 4418.96 GW to 5173.60 GW, marking a modest 17.08% growth registering a CAGR of 1.77%.

The rapid expansion of RE sector has consistently outpaced growth of installed capacity under Non-RE sector. Annual growth rates of RE sector have remained above 7.78% during the period , peaking at 15.07% in 2024. Meanwhile, growth of Non-RE sector has been below 3 % in all years, with its highest annual rate of 2.99% observed in 2018. The year 2024 marked a significant milestone, with unprecedented additions of 581.86 GW from RE sources compared to 55.66 GW from Non-RE sources. This shift highlights the accelerating global transition towards cleaner energy systems. Overall, the data underscores a decisive structural shift in the global power mix towards renewables, driven by technological advancements, policy support, and cost competitiveness. The detailed year-wise analysis of RE and Non-RE capacity installations is presented in this chapter.

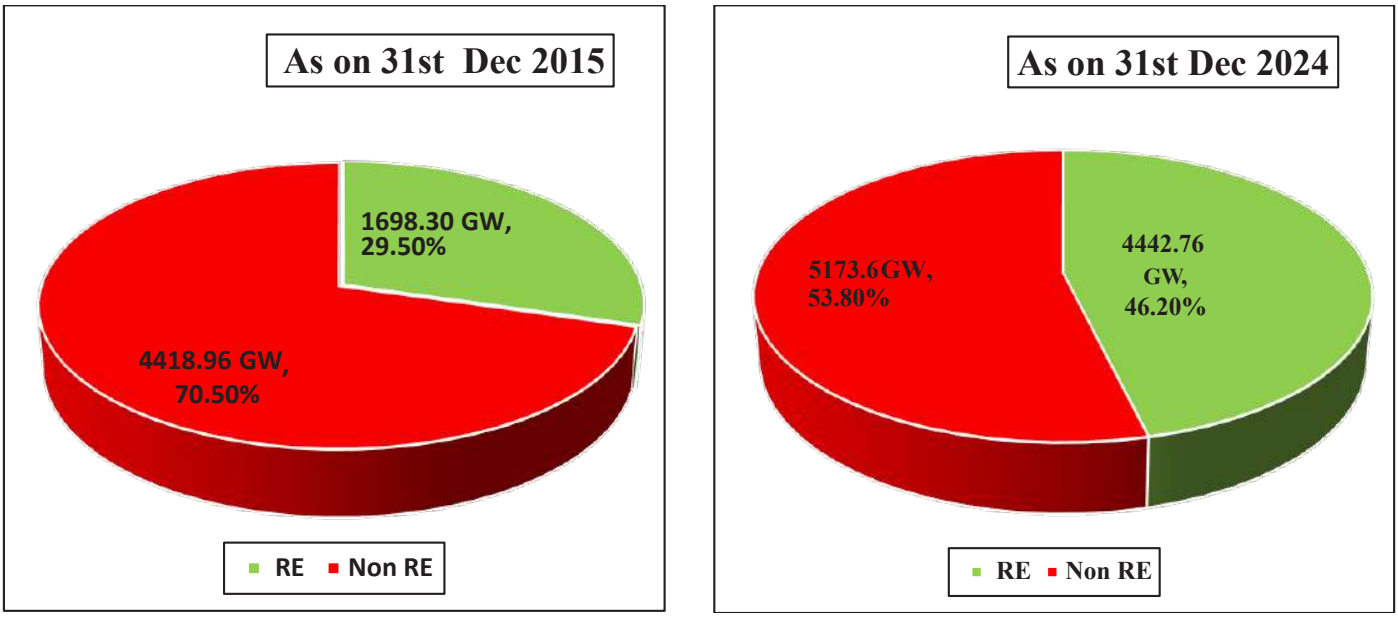
Table 16.1.1 Cumulative electricity installed capacity under RE & Non-RE sectors since 2015

Year	RE	Non-RE	Total	Share (%)		Growth (%)	
				RE	Non-RE	RE	Non-RE
2015	1849.07	4418.96	6268.03	29.5	70.5		
2016	2017.39	4532.58	6549.97	30.8	69.2	9.10	2.57
2017	2183.98	4619.70	6803.68	32.1	67.9	8.26	1.92
2018	2354.05	4757.88	7111.93	33.1	66.9	7.79	2.99
2019	2538.22	4818.94	7357.16	34.5	65.5	7.82	1.28
2020	2808.1	4885.32	7693.42	36.5	63.5	10.63	1.38
2021	3072.58	4949.82	8022.40	38.3	61.7	9.42	1.32
2022	3375.1	5020.67	8395.77	40.2	59.8	9.85	1.43
2023	3860.9	5117.94	8978.84	43	57	14.39	1.94
2024	4442.76	5173.60	9616.36	46.2	53.8	15.07	1.09
Gr (2015 to 2024)	140.27%	17.08%	53.42%				
CAGR (2015 to 2024)	10.23%	1.77%	4.87%				

Source: IRENA –Renewable Energy Statistics 2025

Gr=Growth Rate
CAGR=Compound Annual Growth Rate

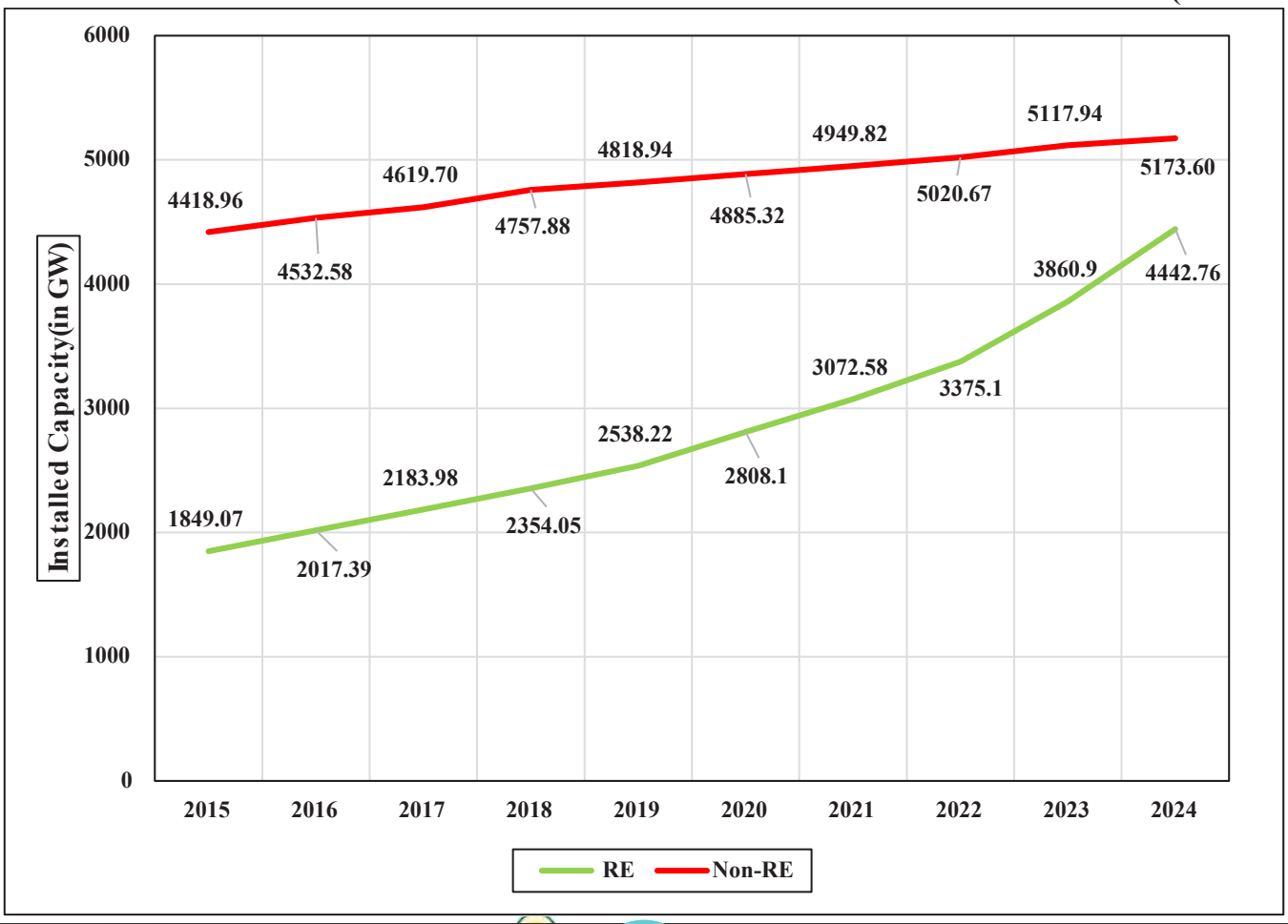
Fig 16.1.1 RE share(%) in Cumulative electricity installed capacity



Global renewable energy sector has recorded substantial growth, with its share in total installed capacity rising from 29.50% of 2015 to 46.20% by 2024, reflecting an overall increase of 140.27% over the past nine years.

Fig 16.1.2 Trend in Capacity installation

(in GW)



Global electricity installed capacity under renewable energy (RE) sources has experienced a remarkable expansion over the past nine years, rising from 1849.07 GW of 2015 to 4442.76 GW by 2024 having an impressive growth of 140.27% with a Compound Annual Growth Rate (CAGR) of 10.23%. This surge significantly outpaces the growth in non-renewable energy (Non-RE) capacity, which increased from 4418.96 GW to 5173.60 GW over the same period, reflecting a modest growth of 17.08% with a CAGR of only 1.77%.

The data reveals a clear structural shift in the global power mix, with the gap between RE and Non-RE capacity installations steadily narrowing year after year. This trend underscores the accelerating adoption of clean energy technologies by countries and a gradual move away from conventional fossil-fuel-based generation.

Fig 16.1.3 Annual installed Capacity addition (in %)

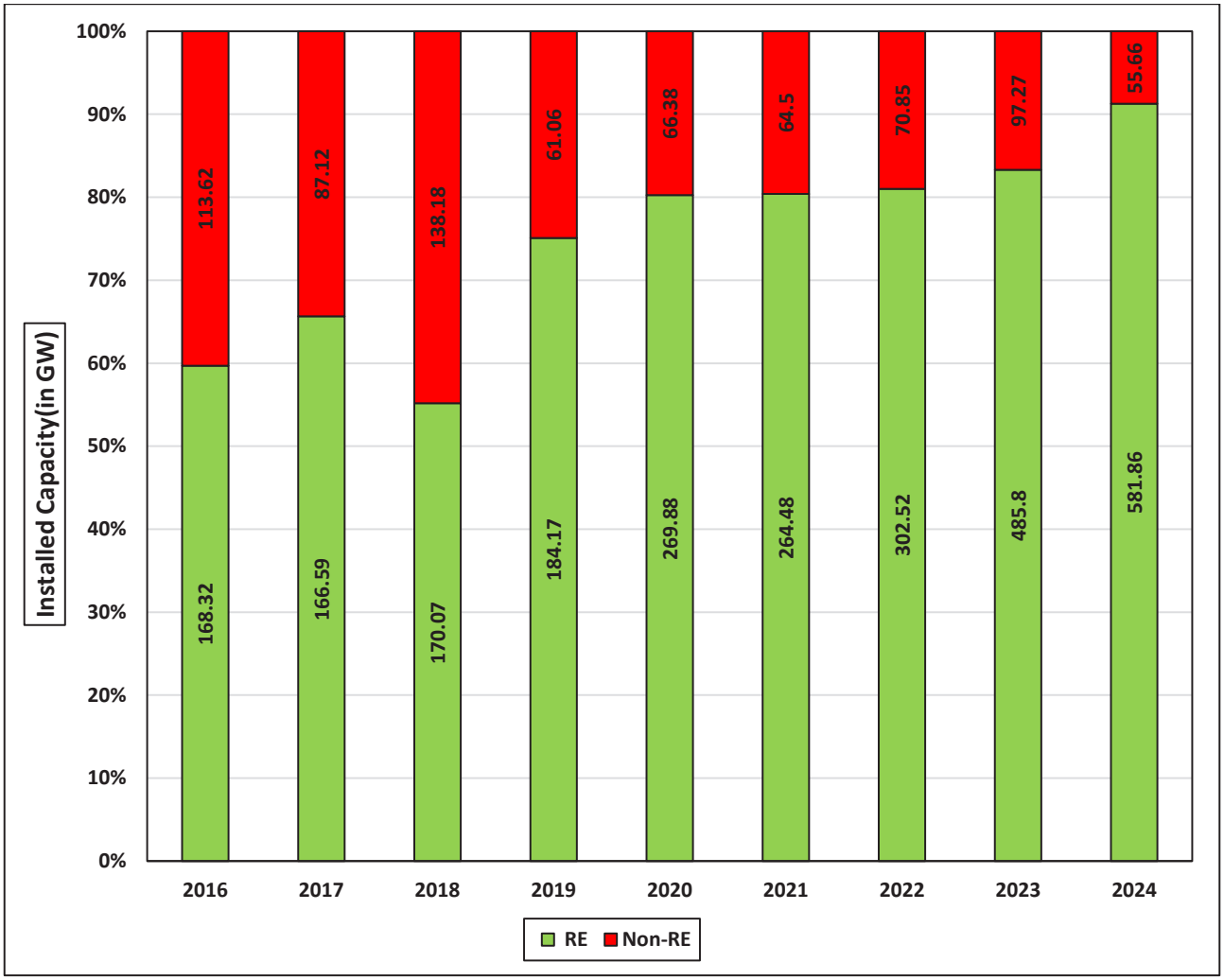
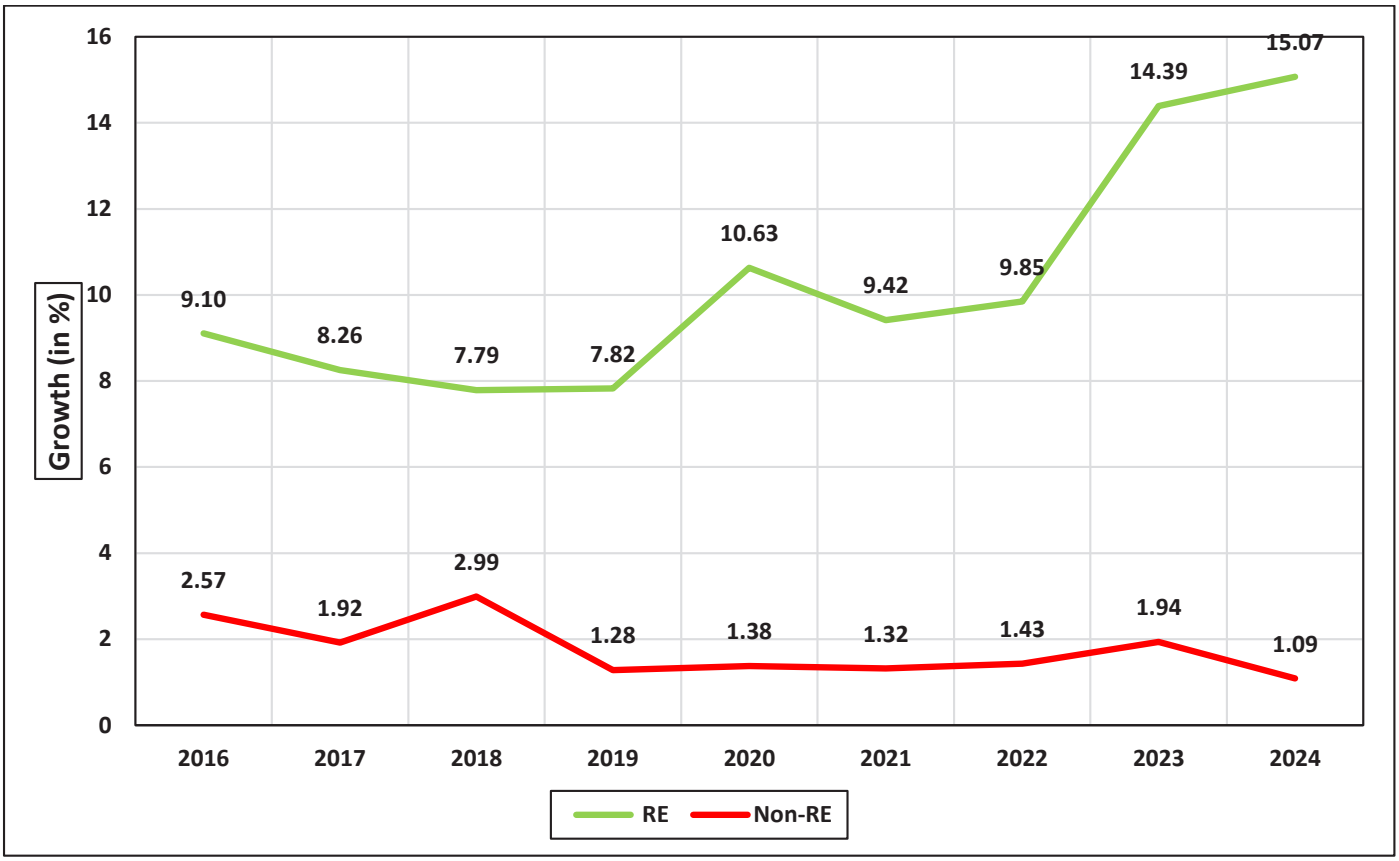


Figure inside the bar shows the installed capacity in GW

Annual installed capacity additions under renewable energy (RE) globally have demonstrated sustained momentum, consistently surpassing annual installations in the non-renewable energy (Non-RE) segment. From 2016 to 2024, annual installed capacity additions under RE ranged from 168.32 GW in 2016 to an unprecedented 581.86 GW in 2024. The Non-RE segment, meanwhile, saw much lower and more fluctuating additions, peaking at 138.18 GW in 2018 before declining steadily to just 55.66 GW in 2024. During the past five years, around 80% of annual installed capacity additions have been driven by the renewable energy sector.

The gap between RE and Non-RE annual capacity installations widened significantly over time. RE annual installations crossed the 300 GW mark in 2022 and surged sharply in the following years, reaching 485.80 GW in 2023 and setting a new record of 581.86 GW in 2024.

Fig 16.1.4 Growth (%) in Capacity Installation



From 2016 to 2024, electricity installed capacity under renewable energy (RE) sector consistently recorded substantially higher annual growth rates than the non-renewable energy (Non-RE) segment. In 2016, RE capacity grew by 9.10%, compared to just 2.57% for Non-RE, clearly indicating the early onset of a faster expansion trajectory for renewables. Over the following years, RE maintained strong momentum ,registering growth rates between 7.79% and 8.26% during 2017 to 2019. A notable acceleration occurred in 2020, when growth of RE installed capacity enhanced to 10.63%, supported by large-scale investments and rapid deployment of clean energy technologies. This upward trend continued, with growth holding above 9% through 2021 and 2022.The most significant surge came in the last two years of the period. In 2023, RE installed capacity grew by 14.39%, and in 2024 it reached a peak of 15.07%, marking the fastest annual expansion in the nine-year span. In the case of growth of non-RE sector in installed capacity remained modest throughout, fluctuating between 1.09% and 2.99%. After peaking in 2018, Non-RE growth steadily declined, underscoring the global slowdown in conventional power generation expansion. Overall, the period from 2016 to 2024 reflects a decisive structural shift in the global power sector, with renewable energy not only expanding rapidly but also widening the growth gap over non-renewables year after year.

16.2 Capacity installation under various RE Sector:

Global installed capacity under renewable energy sector has undergone a major transformation between 2016 and 2024, with solar and wind power driving most of the growth. In 2015, total renewable energy (RE) capacity was at 1849.07 GW, comprising 225.72 GW of solar, 416.39 GW of wind, 1099.06 GW of renewable hydro (excluding pumped storage), and 95.55 GW of bioenergy. By 2024, total RE capacity had surged to 4442.76 GW, reflecting an overall growth of 140.27% registering a CAGR of 10.23% over the nine-year period.

Installed capacity under Solar energy recorded the fastest growth among all RE sources. Installed capacity expanded from 225.72 GW in 2015 to 1866.31 GW in 2024 ,an exceptional increase of 726.83% registering a CAGR of 26.45%. Wind energy also posted strong gains, rising from 416.39 GW to 1132.66 GW, marking an increase of 172.02% with a CAGR of 11.76%.

Installed Capacity under Renewable Hydro(excluding pumped storage) increased modestly from 1099.06 GW of 2015 to 1276.62 GW by 2024, a growth of 16.16% with a CAGR of 1.68%. Installed capacity under Bioenergy power, on the other hand, grew steadily from 95.55 GW to 151.22 GW, translating into 58.26% growth having a CAGR of 5.23%.

Annual growth in total installed capacity under RE sector ranged between 7.79% in 2018 and 15.07% in 2024, with a sharp acceleration in the last two years. This surge was largely the result of record-breaking solar and wind installations, cementing their roles as the key drivers of the global clean energy transition. Details of installed capacity under important Renewable Energy sources are described below:

Table 16.2.1 Installed Capacity under solar, wind, renewable hydro and bioenergy from 2015 to 2024

(in GW)

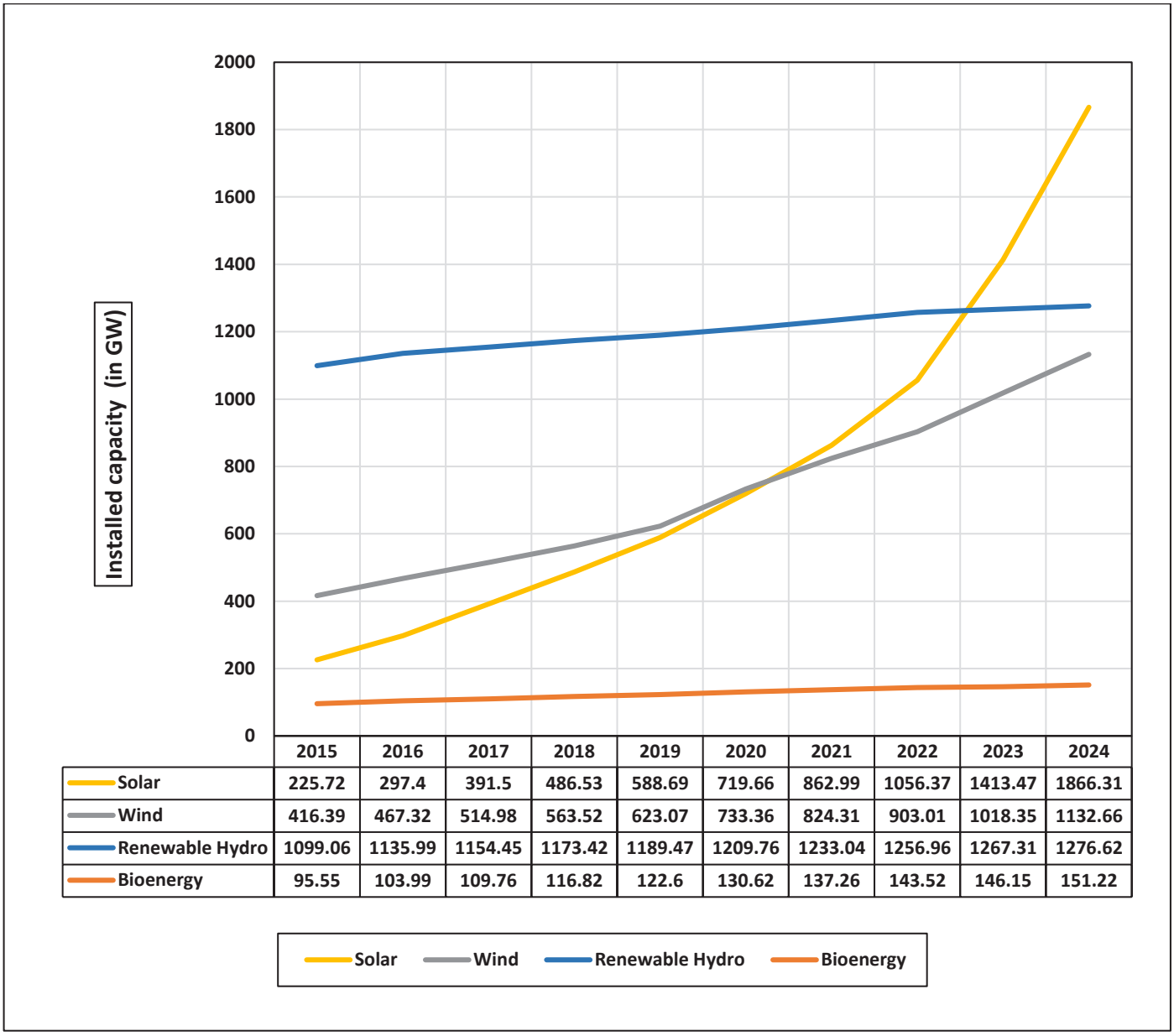
Year	Solar	Wind	Renewable Hydro	Bioenergy	Total RE	Growth (%)
2015	225.72	416.39	1099.06	95.55	1849.07	
2016	297.4	467.32	1135.99	103.99	2017.39	9.10
2017	391.5	514.98	1154.45	109.76	2183.98	8.26
2018	486.53	563.52	1173.42	116.82	2354.05	7.79
2019	588.69	623.07	1189.47	122.6	2538.22	7.82
2020	719.66	733.36	1209.76	130.62	2808.1	10.63
2021	862.99	824.31	1233.04	137.26	3072.58	9.42
2022	1056.37	903.01	1256.96	143.52	3375.1	9.85
2023	1413.47	1018.35	1267.31	146.15	3860.9	14.39
2024	1866.31	1132.66	1276.62	151.22	4442.76	15.07
Gr (2015-2024)	**726.83%**	**172.02%**	**16.16%**	**58.26%**	**140.27%**	
CAGR (2015-2024)	**26.45%**	**11.76%**	**1.68%**	**5.23%**	**10.23%**	

Source: IRENA – Renewable Energy Statistics 2025

Gr=Growth (%)
CAGR=Compound Annual Growth Rate

Fig 16.2.1 Trend in Capacity installation

(in GW)



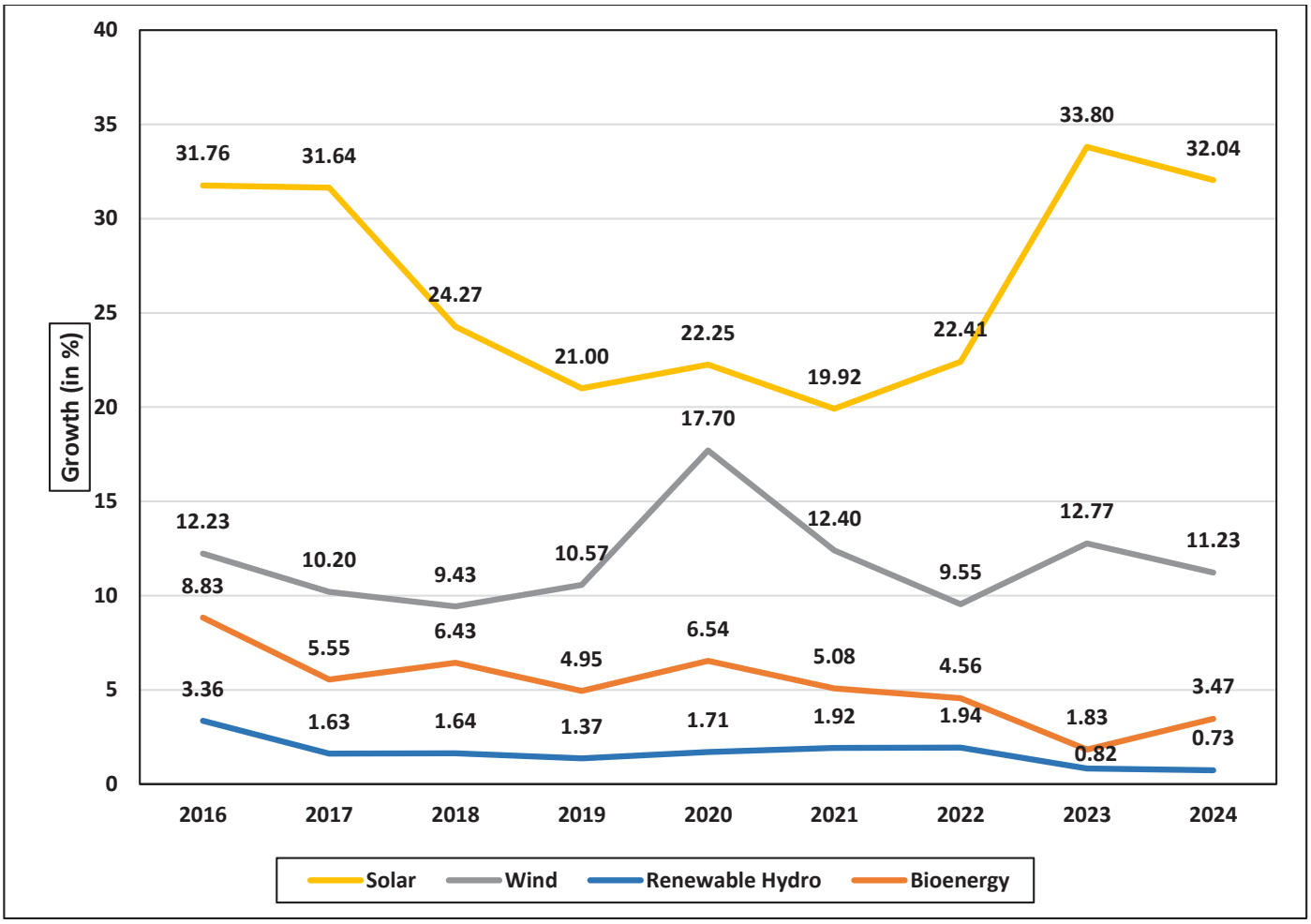
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Solar	225.72	297.4	391.5	486.53	588.69	719.66	862.99	1056.37	1413.47	1866.31
Wind	416.39	467.32	514.98	563.52	623.07	733.36	824.31	903.01	1018.35	1132.66
Renewable Hydro	1099.06	1135.99	1154.45	1173.42	1189.47	1209.76	1233.04	1256.96	1267.31	1276.62
Bioenergy	95.55	103.99	109.76	116.82	122.6	130.62	137.26	143.52	146.15	151.22

From 2015 to 2024, all major renewable energy sources—solar, wind, renewable hydro, and bioenergy, recorded growth in installed capacity, though at significantly different rates. Solar energy showed the most dramatic rise, expanding more than eightfold from 225.72 GW of 2015 to 1866.31 GW by 2024.

Installed capacity under Wind sector also experienced substantial expansion, increasing from 416.39 GW of 2015 to 1132.66 GW by 2024. The steady year-on-year rise in wind installations, highlights its growing role in the renewable energy installed capacity. Renewable hydro remained the largest contributor in the initial years, starting at 1099.06 GW in 2015 and growing modestly to 1276.62 GW by 2024.

Installed capacity under Bioenergy sector grew gradually from 95.55 GW of 2015 to 151.22 GW by 2024. Although its share in the total installed capacity under renewable energy sector is small, it maintained steady incremental growth throughout the period. Overall, the trend indicates a clear shift in the renewable energy landscape, with solar rapidly emerging as the dominant growth engine, wind consolidating its position as a major contributor, and hydro retaining a stable but slower-growing share.

Fig 16.2.2 Annual Growth (%) in electricity installed Capacity



From 2016 to 2024, installed capacity under solar power consistently led the growth in global renewable energy installed capacity, reaching its highest annual growth rate of 33.80% in 2023 and above 19% in all remaining years during the period. Wind energy recorded fluctuations in its growth, with the lowest growth rate of 9.43% in 2018 and the highest of 17.70% in 2020. Renewable hydro and Bioenergy maintained relatively smaller contributions to overall growth, with Renewable hydro largely registering under 2% from 2017 onwards and bioenergy ranging between 1.83% and 8.83%.

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CHAPTER 17

Energy Generation

17.1 Energy generation in RE & Non-RE sector :

From 2015 to 2023, global electricity generation from renewable energy (RE) sources showed a robust upward trajectory, significantly outpacing the growth of electricity generation from non-renewable energy (Non-RE) sources. Electricity generation from RE sources increased from 5,516.41 TWh of 2015 to 8,928.49 TWh by 2023, marking a total growth of 61.85% with a CAGR of 6.20%. Electricity generation from Non-RE sources enhanced from 18,784.96 TWh to 20,932.68 TWh over the same period, representing a comparatively modest growth of 11.43% during the period having a CAGR of 1.36%.

The share of RE sources in total global electricity generation improved from 22.7% of 2015 to 29.9% by 2023, while share of Non-RE sources declined from 77.3% to 70.1%. Year-on-year growth in RE remained consistently positive, peaking at 7.28% in 2022. Growth of Electricity generation from Non-RE sources was relatively muted, with its highest annual increase of 4.56% in 2021.

Overall, the data underscores a gradual but steady global shift in the electricity generation mix towards renewables, with RE expanding more faster than Non-RE in percentage terms, thereby strengthening its role in meeting the world's growing energy demand.

Table 17.1.1 Energy generation in RE and Non RE sector from 2015 to 2023

(in TWh)

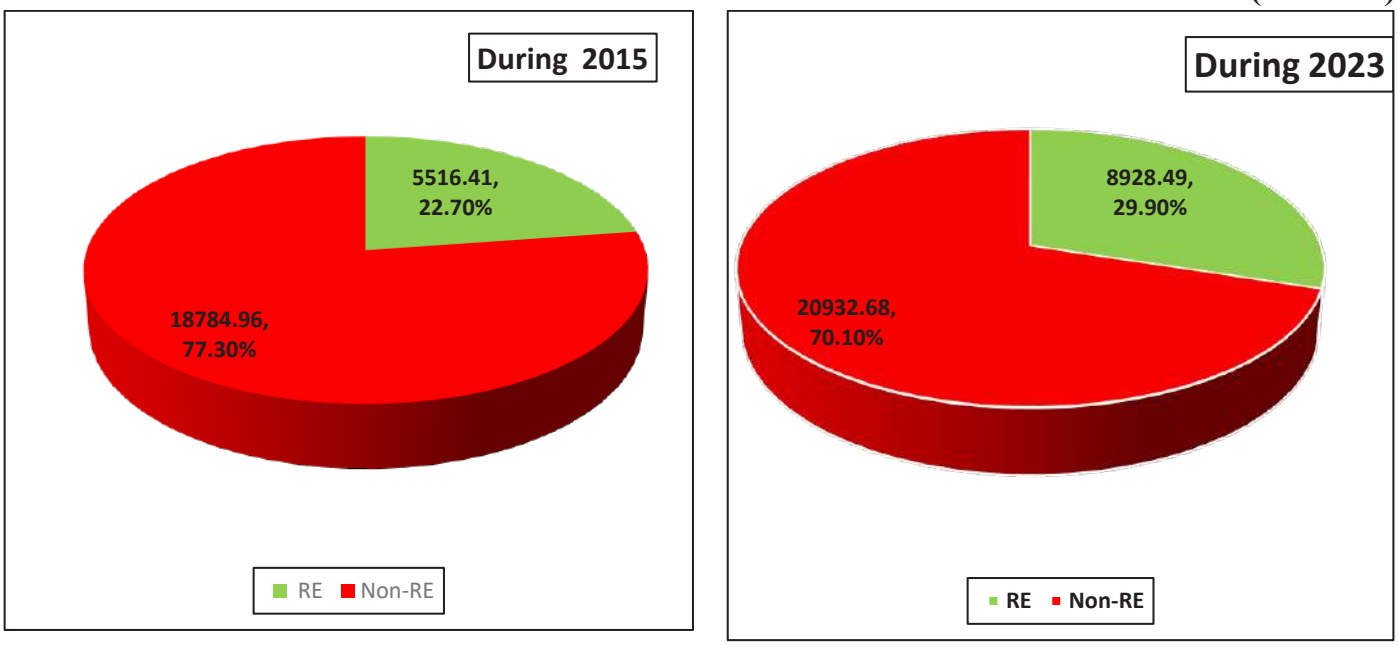
Year	RE	Non-RE	Total	Share (%)		Growth (%)	
				RE	Non RE	RE	Non RE
2015	5516.41	18784.96	24301.37	22.7	77.3		
2016	5871.13	19112.40	24983.53	23.6	76.4	6.43	1.74
2017	6237.92	19432.53	25670.45	24.3	75.7	6.25	1.67
2018	6633.83	20008.06	26641.89	24.9	75.1	6.35	2.96
2019	6997.01	20123.18	27120.19	25.8	74.2	5.47	0.58
2020	7464.89	19581.81	27046.70	27.6	72.4	6.69	-2.69
2021	7883.43	20474.23	28357.66	27.8	72.2	5.61	4.56
2022	8457.27	20705.73	29163.00	29.0	71.0	7.28	1.13
2023	8928.49	20932.68	29861.17	29.9	70.1	5.57	1.10
Gr (2015-2023)	**61.85%**	**11.43%**	**22.88%**				
CAGR(2015-2023)	**6.20%**	**1.36%**	**2.61%**				

Source: IRENA – Renewable Energy Statistics- 2025

Gr=Growth (%)
CAGR=Compound Annual Growth Rate

Fig 17.1.1 Share of RE and Non RE in total Energy generation

(in TWh)



In 2023, global electricity generation from renewable energy sources was at 8,928.49 TWh, registering a substantial increase from 5,516.41 TWh of 2015 by rising its share from 22.70% to 29.90%.

Fig 17.1.2 Trend in Energy Generation

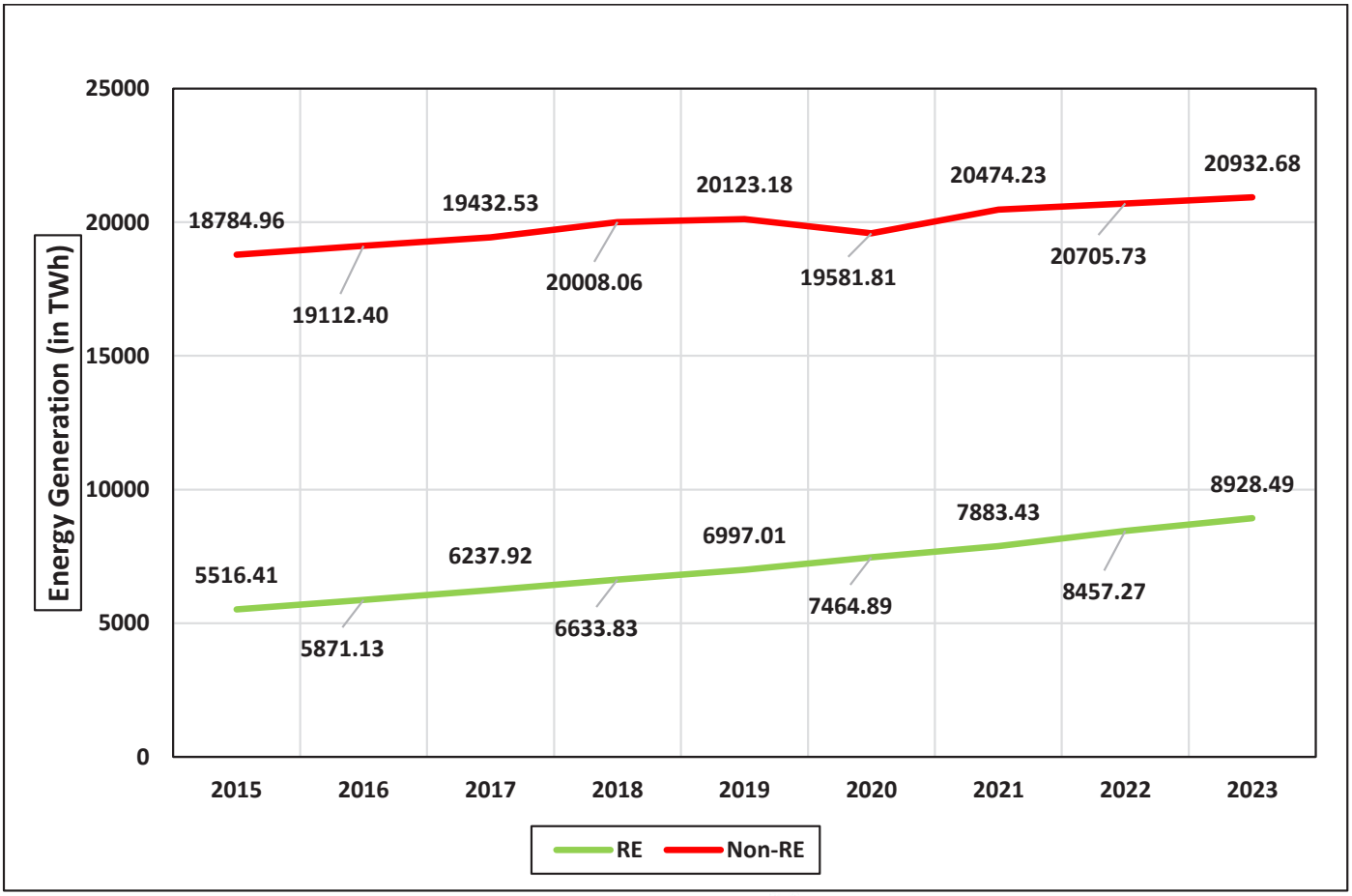
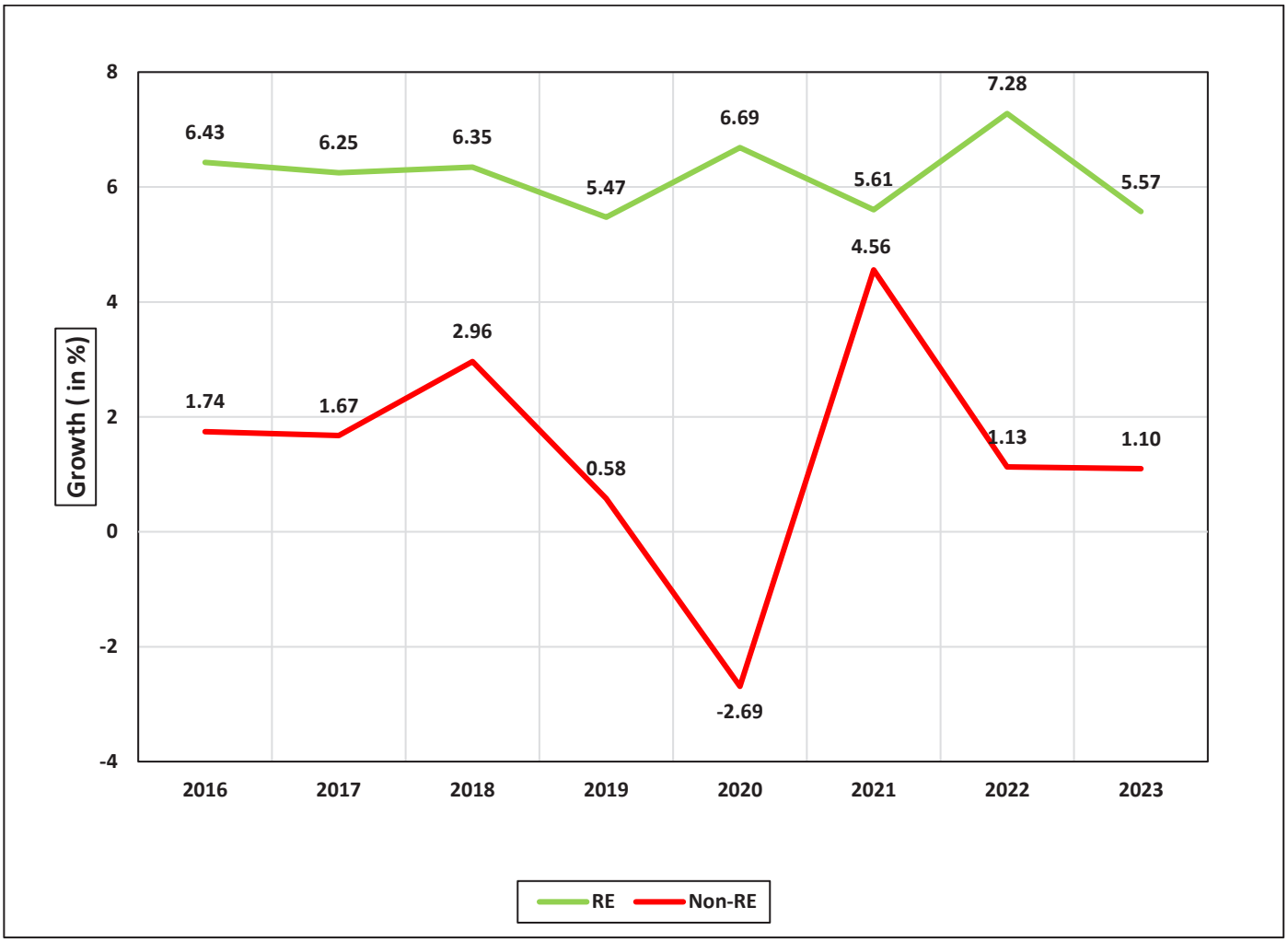


Fig 17.1.3 Year wise Growth (%) in Energy Generation



Trend of electricity generation from Non RE sources and RE sources reveals that the gap between the trajectory of energy generation from Renewable Energy sources and Non -RE sources is gradually shrinking. Renewable energy sector worldwide has shown an impressive year-on-year growth rates compared to Non-RE sector. Maximum growth rate of RE generation was registered in the year 2022. It is to be seen that growth registered from 2016 to 2023 in the annual energy generation through renewable energy sources has consistently outpaced that of the growth of energy generation through Non-RE sources.

17.2 Energy generation in various RE sources:

Between 2015 and 2023, renewable energy generation rose from 5,516.41 TWh to 8,928.49 TWh, registering an overall growth of 61.85% with a compound annual growth rate of 6.20%. Solar led the surge, increasing by 543.58% with a CAGR of 26.20%, followed by wind with 178.26% growth and a CAGR of 13.65%. Hydro remained relatively stable with a growth of 9.56%, while bioenergy grew 38.37%. The years 2016, 2018, 2020, and 2022 were marked as notable growth periods, with the highest annual rise of 7.28% recorded in 2022. The overall expansion of electricity generation from RE sources was primarily driven by solar power and wind power.

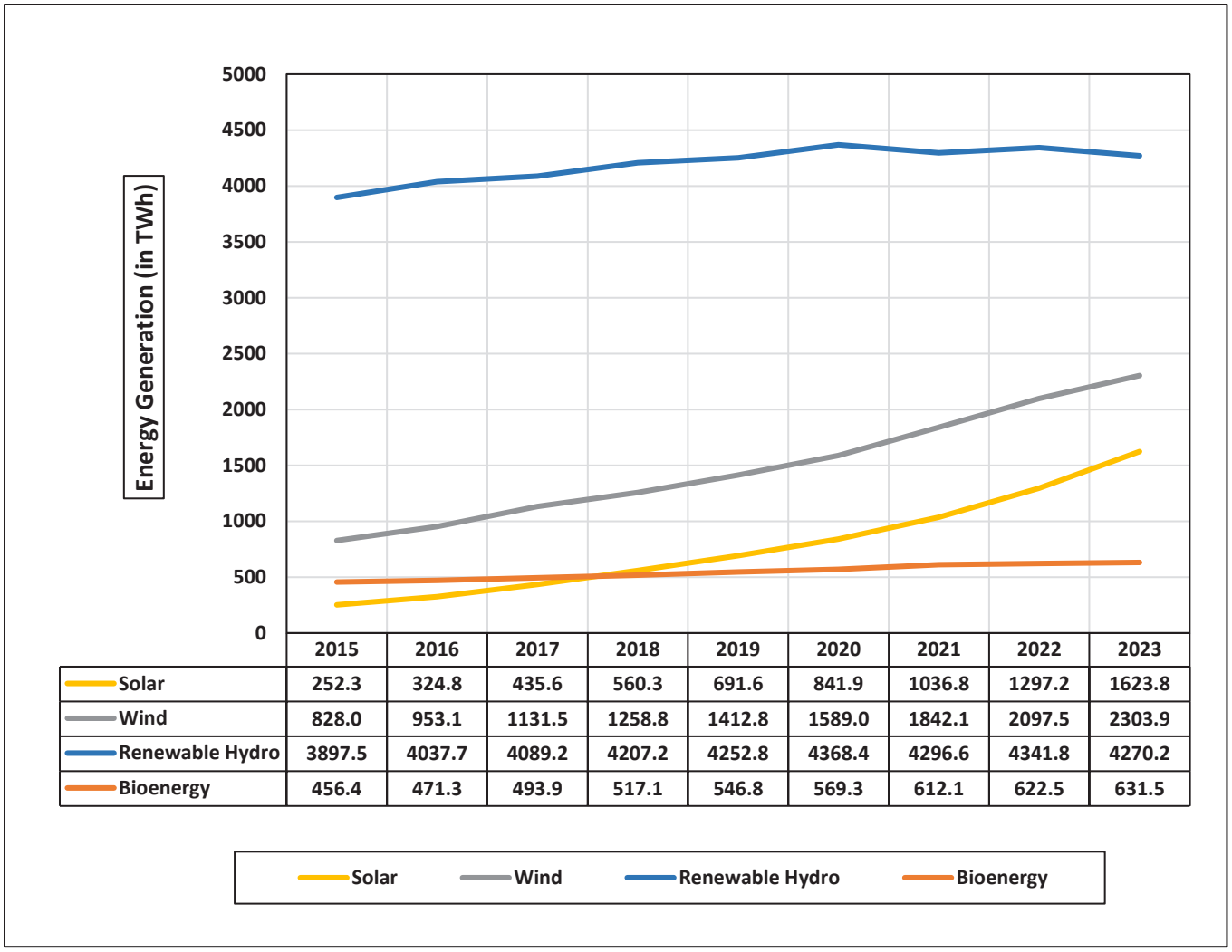
Table 17.2.1 Energy Generation under solar, wind, renewable hydro and bioenergy RE sources from 2015 to 2023 (in TWh)

Year	Solar	Wind	Renewable Hydro	Bioenergy	Total RE	Growth (%)
2015	252.3	827.99	3897.50	456.38	5516.41	
2016	324.83	953.05	4037.66	471.31	5871.13	6.43
2017	435.60	1131.50	4089.21	493.86	6237.92	6.25
2018	560.27	1258.77	4207.21	517.08	6633.83	6.35
2019	691.60	1412.81	4252.82	546.76	6997.01	5.47
2020	841.86	1588.95	4368.38	569.26	7464.89	6.69
2021	1036.83	1842.09	4296.87	612.05	7883.43	5.61
2022	1297.21	2097.49	4341.84	622.49	8457.27	7.28
2023	1623.75	2303.94	4270.21	631.51	8928.49	5.57
Gr (2015-2023)	**543.58%**	**178.26%**	**9.56%**	**38.37%**	**61.85%**	
CAGR (2015-2023)	**26.20%**	**13.65%**	**1.15%**	**4.14%**	**6.20%**	

Source: IRENA – Renewable Energy Statistics 2025

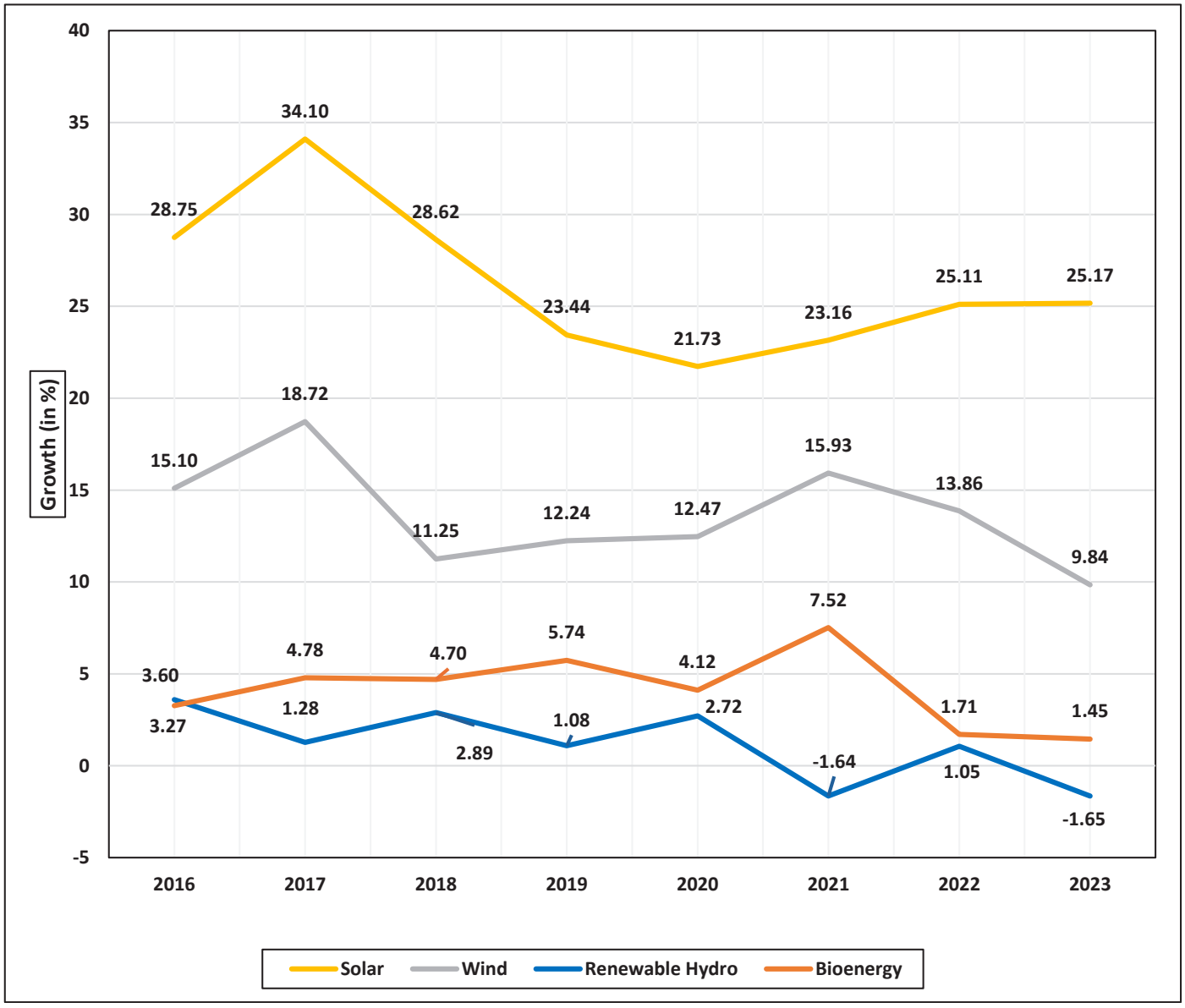
Gr=Growth (%)
CAGR=Compound Annual Growth Rate

Fig 17.2.1 Trend in Energy Generation



Energy generation through RE sources has shown varying trends over the years from 2015 to 2023. Solar power registered the most dramatic increase from 252.30 TWh to 1623.75 TWh, during 8 years starting from 2015. Electricity generation from wind power raised from 827.99 TWh to 2303.94 TWh. Bio Energy generation enhanced steadily from 456.38 TWh to 631.51 TWh. Renewable Hydro(excluding pumped storage) experienced an increase from 3897.50 TWh to 4270.21 TWh.

Fig 17.2.2 Year wise Growth (%) in Energy Generation.



During 2016 to 2023, solar energy registered the highest and most consistent year-on-year growth among all RE sources, peaking at 34.10% in 2017 and above 21% in all remining years. Growth in wind energy generation, though steady, moderated from 18.72% in 2017 to 9.84% in 2023. Renewable hydro recorded low and fluctuating growth in electricity generation , with negative growth rates in 2021 and 2023. Bioenergy exhibited modest growth throughout the period, attaining a peak of 7.52% in 2021, indicating stable generation of electricity. Overall, solar energy emerged as the principal driver of growth of renewable energy generation, with wind and bioenergy contributing steadily and renewable hydro remaining inconsistent.

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CHAPTER 18

Installed capacity and energy generation

18.1 Installed Capacity in RE and Non-RE sector:

Total installed capacity of Renewable Energy (RE) exhibited a consistent upward trend across all major regions during the period of 2016 to 2024 with Asia emerging as the principal driver of global electricity installed capacity addition. In Asia, RE installed capacity increased from 722.70 GW of 2015 to 2374.47 GW by 2024, registering overall growth of 228.56% having CAGR of 14.13%. Installed capacity under Non RE sources in the region also recorded a moderate rise of 36.22% over the same period. Europe reported 83.24% increase in RE installed capacity, from 464.01 GW of 2015 to 850.25 GW by 2024, while installed capacity under Non-RE sector declined by 15.12%, indicating a deliberate policy shift towards clean energy adoption. North America registered a growth of 85.82% in RE installed capacity, reaching 571.52 GW by 2024, with Non-RE installed capacity remaining largely static, recording a marginal rise of 0.78%. In South America, RE installed capacity expanded by 71.26%, accompanied by a 16.34% increase in Non-RE installed capacity. Detailed region wise analysis on installed capacity and electricity generation under RE and Non-RE sources are described in this chapter.

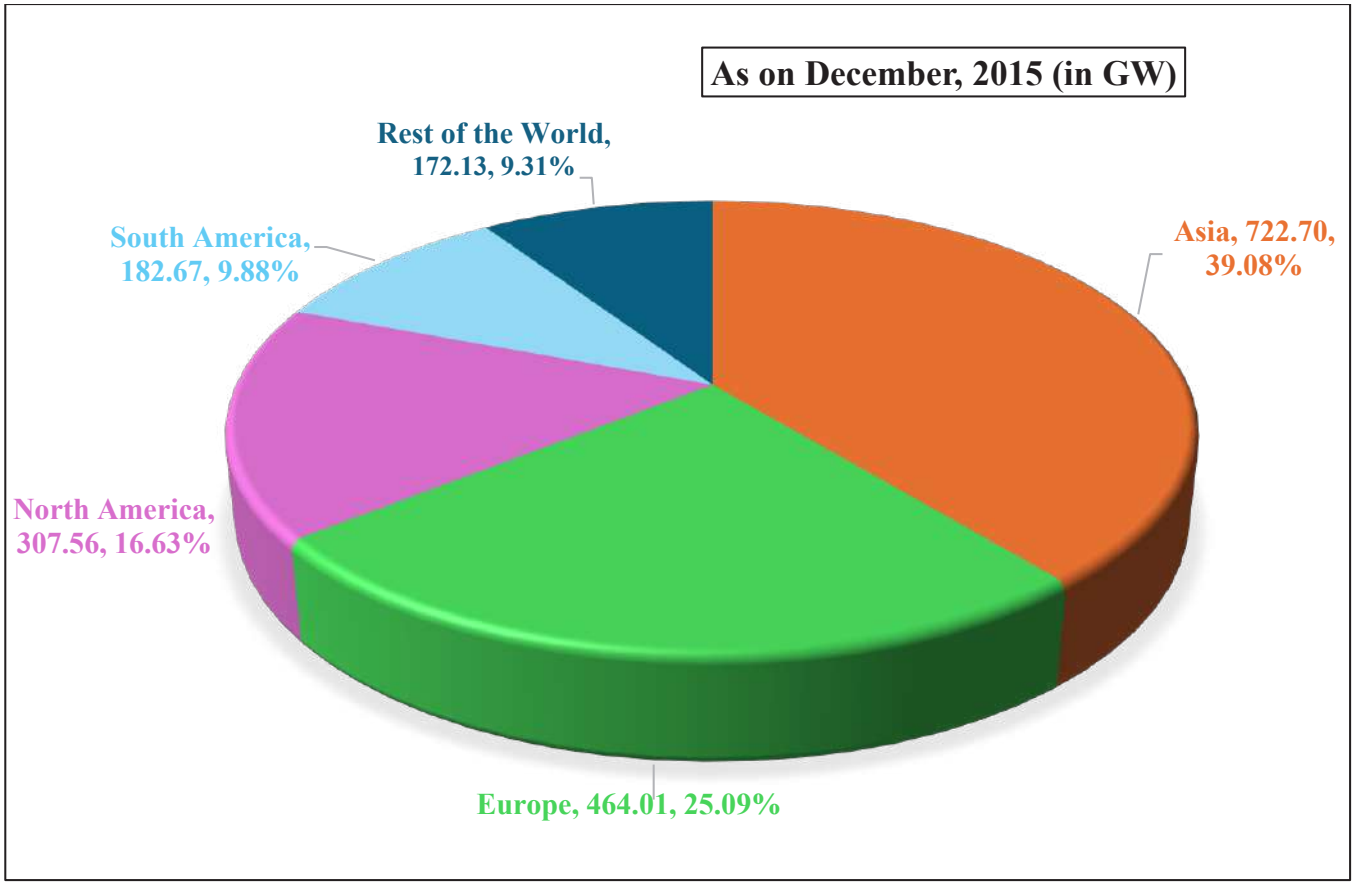
Table18.1.1 Total RE & Non-RE Installed capacity from 2015 to 2024 (in GW)

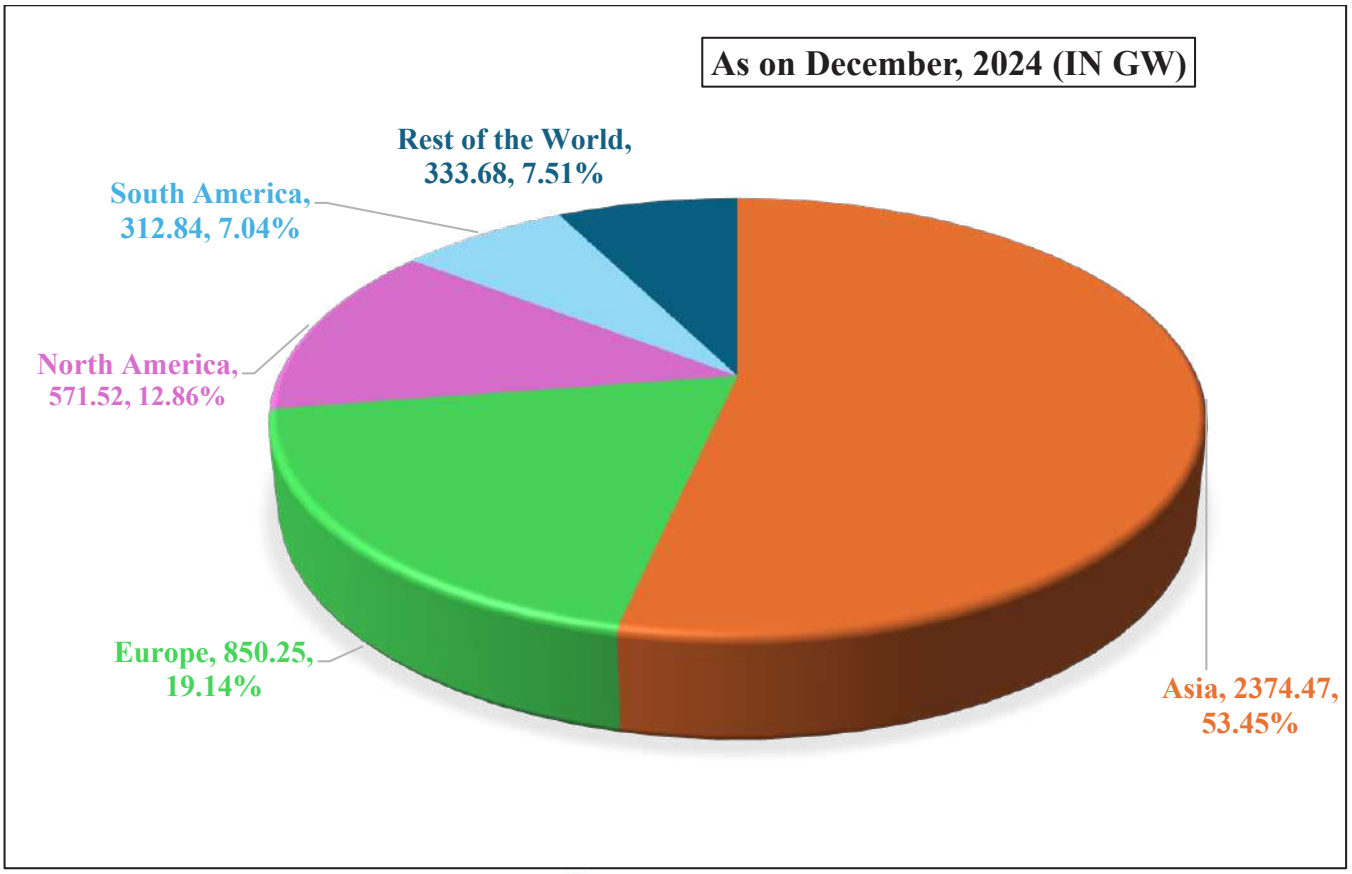
Year	Asia		Europe		North America		South America		Rest of the World	
	RE	Non-RE	RE	Non-RE	RE	**Non-RE**	**RE**	**Non-RE**	**RE**	**Non-RE**
2015	722.70	1934.29	464.01	662.23	307.56	973.94	182.67	100.98	172.13	747.53
2016	813.29	2030.46	487.32	648.62	331.18	972.678	203.94	106.00	181.66	774.82
2017	920.35	2117.11	511.37	640.36	347.62	974.129	210.45	109.87	194.19	778.22
2018	1025.17	2219.04	535.54	644.06	365.96	989.447	217.05	112.81	210.33	792.52
2019	1125.19	2274.18	572.27	627.46	390.52	979 .726	223.6	112.64	226.64	824.94
2020	1301.58	2344.30	606.09	613.41	422.33	971.498	232.69	117.22	245.41	838.90
2021	1456.36	2406.66	647.1	606.97	460.82	970.298	247.09	118.97	261.21	846.92
2022	1630.47	2476.51	705.19	600.72	490.07	977.205	267.89	117.56	281.48	848.68
2023	1961.27	2547.40	778.32	596.80	526.00	985.494	290.34	117.44	304.97	870.80
2024	2374.47	2634.96	850.25	562.13	571.52	981.523	312.84	117.48	333.68	877.52
Gr (2015to 2024)	228.56%	36.22%	83.24%	-15.12%	85.82%	0.78%	71.26%	16.34%	93.85%	17.39%
CAGR (2015 to 2024)	14.13%	3.49%	6.96%	-1.80%	7.13%	0.09%	6.16%	1.70%	7.63%	1.80%

Source: IRENA – Renewable Energy Statistics 2025

Gr=Growth (%)
CAGR=Compound Annual Growth Rate

Fig 18.1.1 Region wise share in RE installed Capacity



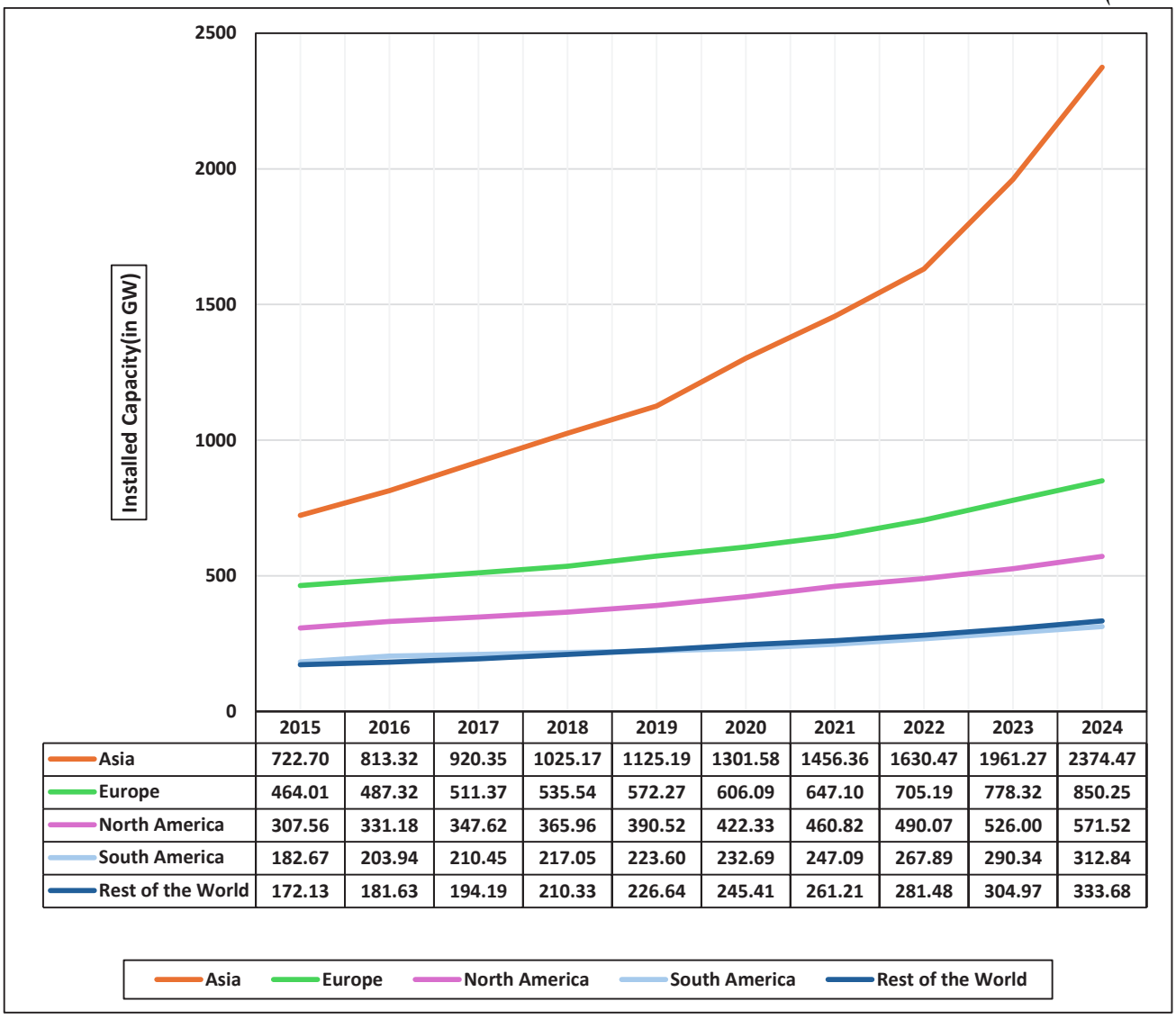


Regional distribution of renewable energy installed capacity showed marked shifts in both volume and share from 31st December 2015 to 31st December 2024. As on 31st December 2015, Asia accounted for 39.08 % of global RE installed capacity having 722.70 GW, followed by Europe having share of 25.09 % with installed capacity of 464.01 GW. North America has the share of 16.63% having installed capacity of 307.56 GW followed by South America with a share of 9.88% by installing 182.67 GW.

By 2024, Asia's installed capacity had risen sharply to 2,374.47 GW, representing 53.45% of global RE capacity. Europe reached 850.25 GW with a share of 19.14%, North America increased its installed capacity under Renewable Energy sources to 571.52 GW having share of 12.86%, South America's installed capacity raised to 312.84 GW with 7.04% of the total installed capacity of the world under Renewable Energy. The decade reflects Asia's dominant and accelerating growth in RE installed capacity, while Europe and North America maintained moderate increases.

Fig 18.1.2 Region wise trend in RE installed Capacity

(in GW)



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Asia	722.70	813.32	920.35	1025.17	1125.19	1301.58	1456.36	1630.47	1961.27	2374.47
Europe	464.01	487.32	511.37	535.54	572.27	606.09	647.10	705.19	778.32	850.25
North America	307.56	331.18	347.62	365.96	390.52	422.33	460.82	490.07	526.00	571.52
South America	182.67	203.94	210.45	217.05	223.60	232.69	247.09	267.89	290.34	312.84
Rest of the World	172.13	181.63	194.19	210.33	226.64	245.41	261.21	281.48	304.97	333.68

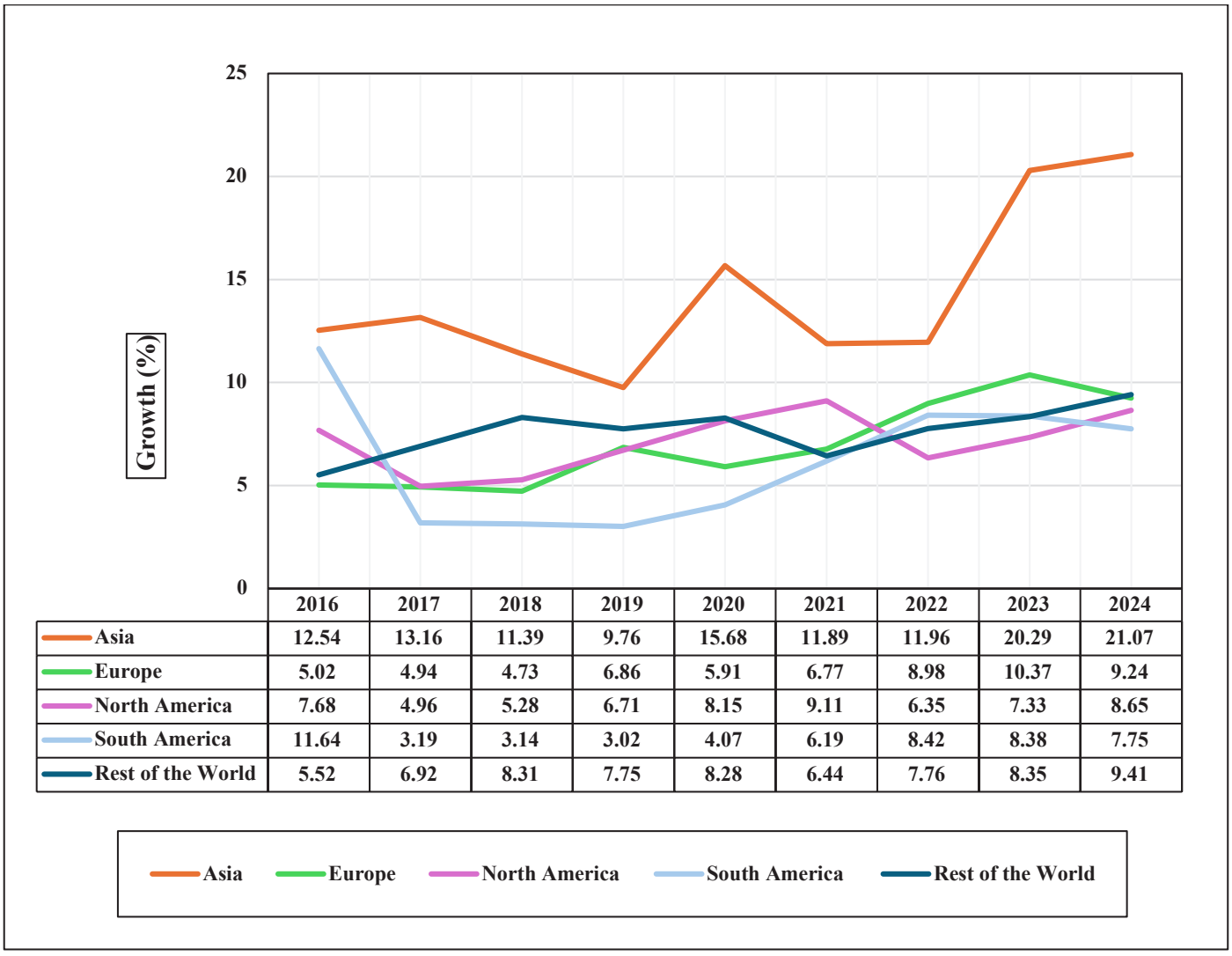
During 2016 to 2024, Renewable Energy (RE) installed capacity across all regions has shown a consistent and significant upward trajectory. In Asia, renewable energy (RE) capacity more than tripled, reflecting the highest absolute growth among all regions. Overall, the data reflect sustained momentum in RE

adoption globally, with Asia contributing the largest share of installed capacity additions, followed by notable expansions in Europe and North America, and steady growth in South America. This trend underscores a broad-based global shift towards renewable energy deployment.

18.2 Region wise growth (%) in RE installed Capacity:

During 2024, Asia experienced the highest growth rate of 21.07% in renewable energy installed capacity, followed by Europe, North America , and South America. Although almost all regions showed fluctuations in their year-on-year growth rates, Asia consistently led in growth rate during 2016 to 2024, surpassing other regions in terms of total installed capacity in the renewable energy sector.

Fig 18.2.1 Region wise growth (%) in RE installed Capacity ***(in GW)***



	2016	2017	2018	2019	2020	2021	2022	2023	2024
Asia	12.54	13.16	11.39	9.76	15.68	11.89	11.96	20.29	21.07
Europe	5.02	4.94	4.73	6.86	5.91	6.77	8.98	10.37	9.24
North America	7.68	4.96	5.28	6.71	8.15	9.11	6.35	7.33	8.65
South America	11.64	3.19	3.14	3.02	4.07	6.19	8.42	8.38	7.75
Rest of the World	5.52	6.92	8.31	7.75	8.28	6.44	7.76	8.35	9.41

18.3 Region wise electricity generation from RE sources:

Asia led the RE generation expanding from 2033.2 TWh of 2015 to 4007.63 TWh during 2023, with an impressive growth of 97.11% having CAGR of 8.85%. Europe followed Asia with a generation of 1626.36 TWh with a growth of 38.52% from renewable energy sources during the period. All other regions have showed positive growth in electricity generation from Renewable Energy sources. The regions Europe, North America and South America have registered decline in overall electricity generation from Non-RE sources during this period.

Table 18.3.1 Electricity Generation from RE & Non-RE sources from 2015 to 2023.

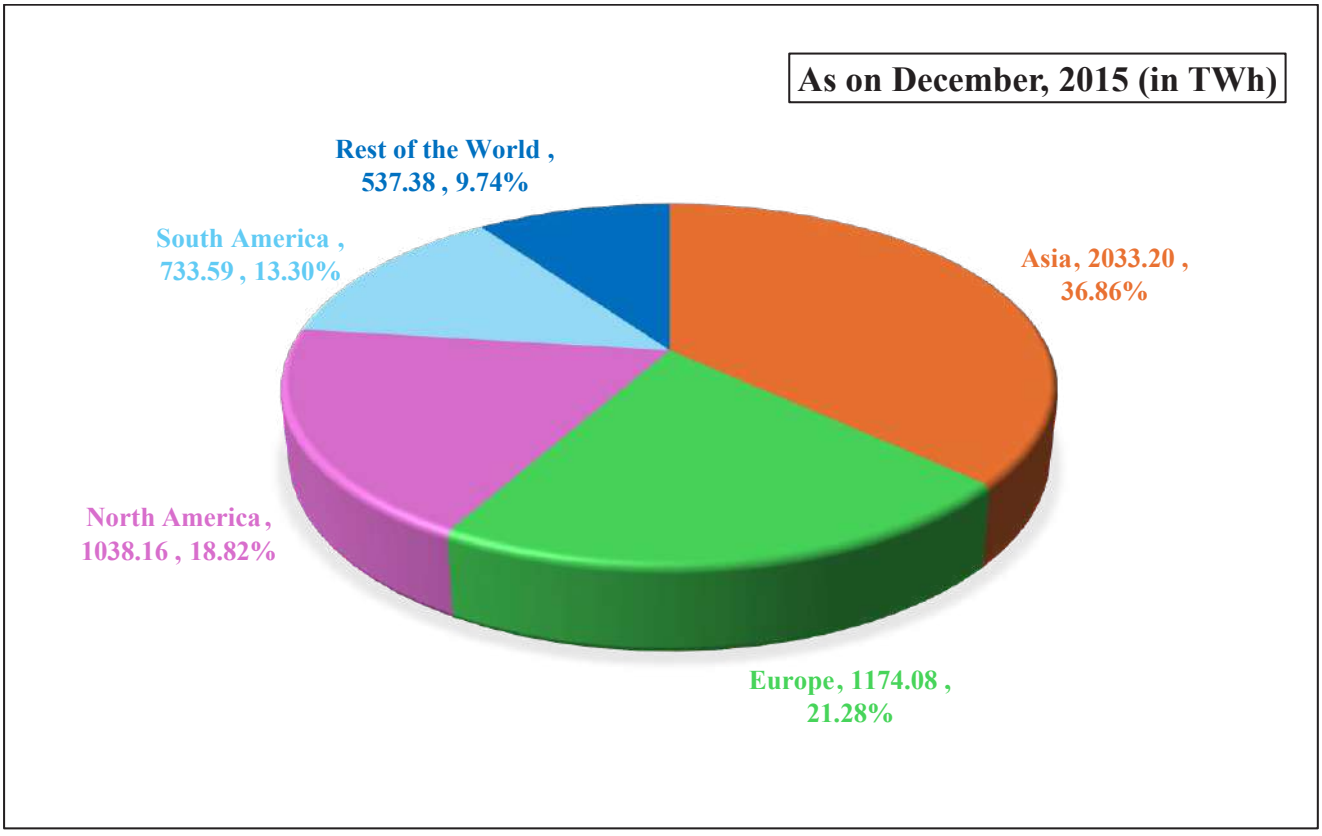
(in TWh)

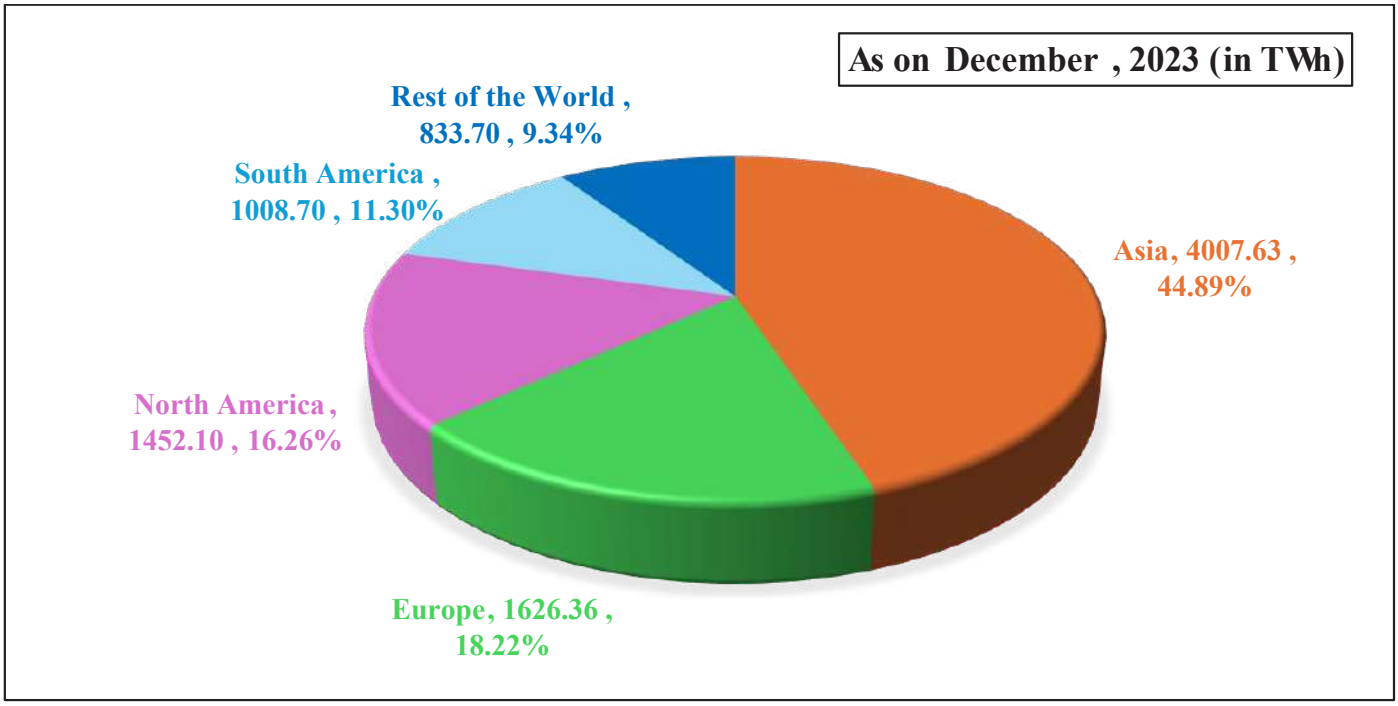
Year	Asia		Europe		North America		South America		Rest of the World	
	RE	Non-RE	RE	Non-RE	RE	Non-RE	RE	Non-RE	RE	Non-RE
2015	2033.2	8287.61	1174.08	2576.97	1038.16	4258.57	733.59	436.41	537.38	3225.39
2016	2217.73	8653.5	1195.8	2588.38	1117.83	4179.94	764.9	406.463	574.87	3284.12
2017	2429.95	9032.08	1210.84	2584.9	1211.8	4056.90	798.04	382.493	587.29	3376.17
2018	2648.06	9611.48	1298.06	2497.44	1234.09	4226.49	827.98	354.849	625.64	3317.81
2019	2865.4	9813.36	1331.21	2408.14	1255.47	4132.81	839.94	346.416	704.99	3422.45
2020	3099.3	9868.48	1450.76	2167.1	1335.2	3900.88	843.00	334.374	736.63	3310.98
2021	3427.1	10447.8	1472.19	2283.4	1385.42	3963.69	841.81	388.906	756.91	3390.44
2022	3751.5	10567.2	1460.44	2145.58	1495.77	4003.38	951.58	315.504	797.98	3674.05
2023	4007.63	11058.6	1626.36	1893.9	1452.1	4006.92	1008.7	304.711	833.7	3668.50
Gr (2015-2023)	97.11%	33.44%	38.52%	-26.51%	39.87%	-5.91%	37.50%	-30.18%	55.14%	13.74%
CAGR (2015-2023)	8.85%	3.67%	4.16%	-3.78%	4.28%	-0.76%	4.06%	-4.39%	5.64%	1.62%

Source: IRENA – Renewable Energy Statistics- 2025

Gr=Growth (%)
CAGR=Compound Annual Growth Rate

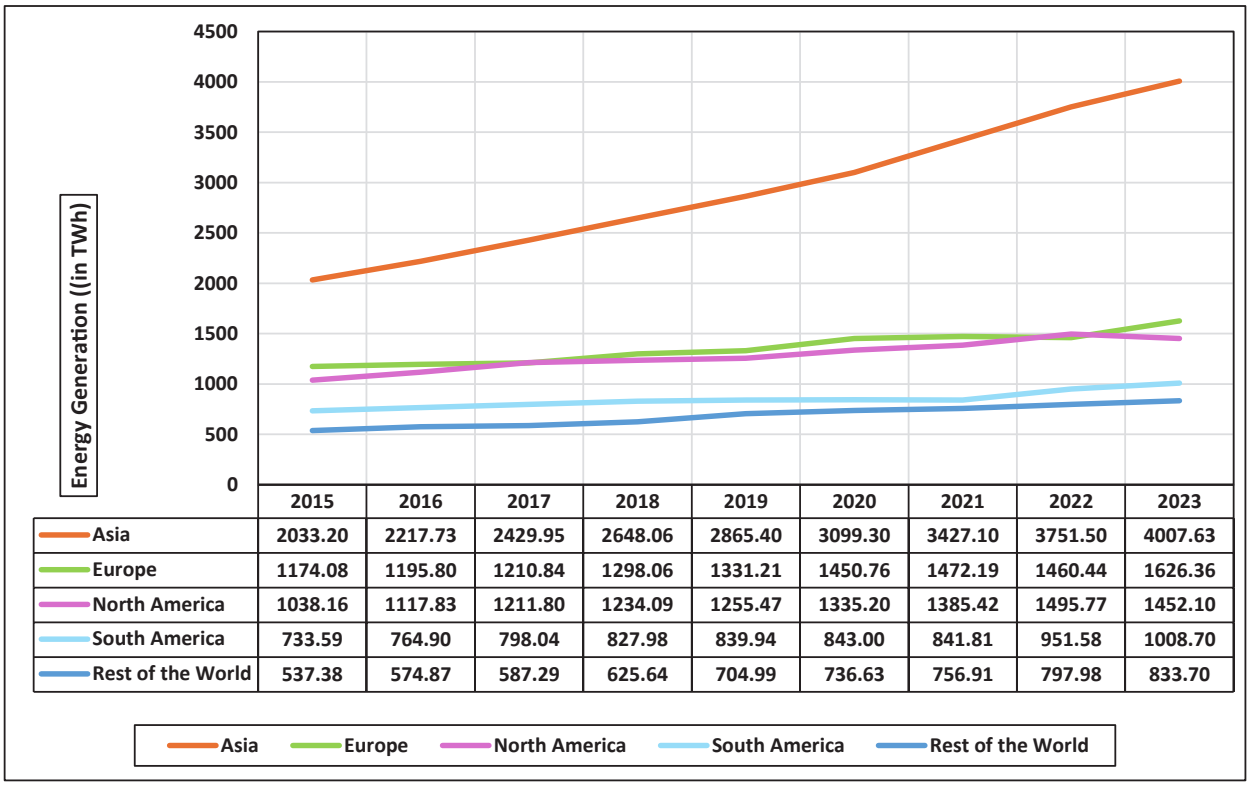
Fig 18.3.1 Region wise share in RE Generation





During 2015, renewable energy generation was led by Asia region with a 36.86% share, followed by Europe with 21.28% and North America by 18.82%. By 2023, Asia's share had risen significantly to 44.89%, followed by Europe and North America. The data reflects substantial absolute growth across all regions, with Asia showing the electricity generation and share gain, while other regions experienced relative share decline despite positive growth in electricity generation.

Fig 18.3.2 Region wise Trend in Renewable Energy Generation



	2015	2016	2017	2018	2019	2020	2021	2022	2023
Asia	2033.20	2217.73	2429.95	2648.06	2865.40	3099.30	3427.10	3751.50	4007.63
Europe	1174.08	1195.80	1210.84	1298.06	1331.21	1450.76	1472.19	1460.44	1626.36
North America	1038.16	1117.83	1211.80	1234.09	1255.47	1335.20	1385.42	1495.77	1452.10
South America	733.59	764.90	798.04	827.98	839.94	843.00	841.81	951.58	1008.70
Rest of the World	537.38	574.87	587.29	625.64	704.99	736.63	756.91	797.98	833.70

Graphs clearly exhibits that Asia registered a sharp increase in the electricity generation through Renewable Energy sources over the years while other regions have moderate increase.

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CHAPTER 19

Installed Capacity and Energy Generation

19.1 Installed Capacity

19.1.1 Top 10 countries in RE Installed Capacity: As on 31st December, 2024, China leads the global renewable energy sector with an installed capacity of 1817.96 GW, holding 40.92% share of the world installed capacity under RE sector followed by United States with 427.89 GW with a share of 9.63%. Brazil ranked third with 213.86 GW having 4.81% share, while India was in fourth position having 4.60% share with installation 204.48 GW of RE installed capacity. Together, top 10 countries accounted for around 75% of the world's total RE installed capacity **(Refer Table 19.1.1)**

Table 19.1.1 Top 10 countries by electricity installed capacity under RE sector as on 31st December, 2024

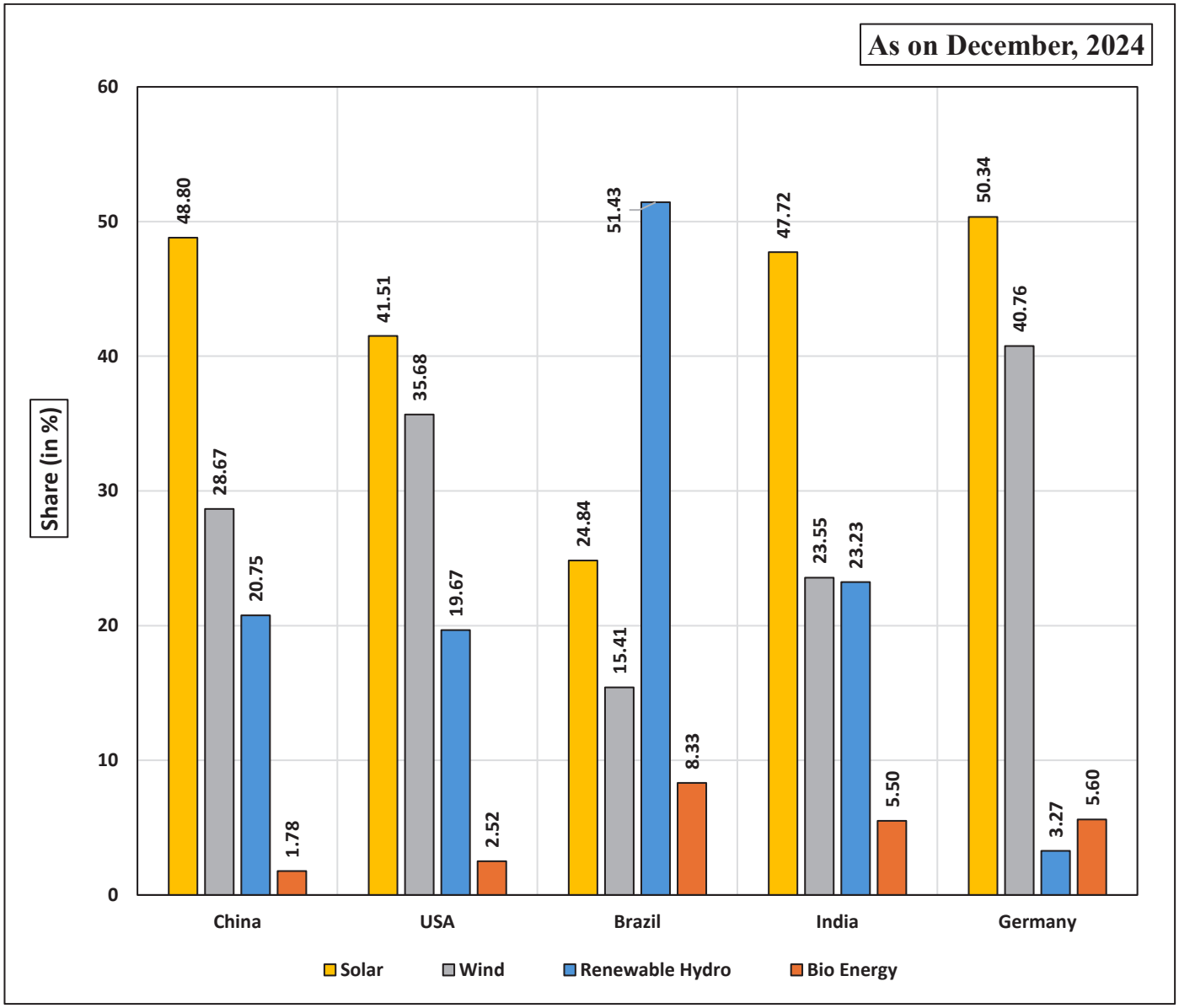
Country	RE Installed Capacity (GW)	Contribution in Total RE installed capacity of the World (in %)
China	1817.96	40.92
USA	427.89	9.63
Brazil	213.86	4.81
India	204.48	4.60
Germany	178.65	4.02
Japan	130.41	2.94
Canada	109.5	2.46
Spain	88.5	1.99
France	74.34	1.67
Italy	72.11	1.62
World	**4442.76**	

Source: IRENA – Renewable Energy Statistics 2025

19.1.2 Share of installed capacity of top 5 countries (in RE installed capacity) within the country:

China, USA, Brazil, India and Germany ranked as the top five countries in total renewable energy installed capacity as on 31st December, 2024. Among them, China, USA, India and Germany have their largest share from solar power sector within their RE installed capacity. Hydropower dominates Brazil's renewable energy sector, accounting for 51.43% of its total RE installed capacity. Among these top five countries, bioenergy represents the smallest share of Renewable Energy capacity, except in Germany. Germany has the smallest share of Hydro power among the top five countries in their respective RE installed capacity. (**Refer Fig 19.1.1**)

Fig 19.1.1 Share of various RE installed capacity of top 5 (in RE Installed Capacity) countries within the respective country



19.2 Renewable Energy Generation

19.2.1 China leads the global renewable energy (RE) sector with electricity generation of 2842.83 TWh, holding a 31.84 % share of electricity generation from RE sources in the world during 2023 followed by United States with 962.08 TWh having a share of 10.78%. Brazil and Canada ranked third and fourth position with 629.91 TWh having 7.06% share and 418.84 TWh having 4.69% share respectively. India secured fifth position having 4.14 % share with 369.97 TWh generation of electricity from Renewable Energy sources. Together, top 10 countries accounted for around 70% of the world's total generation from Renewable Energy sources. **(Refer Table 19.2.1)**

Table 19.2.1 Top 10 countries by electricity generation from RE sources during 2023

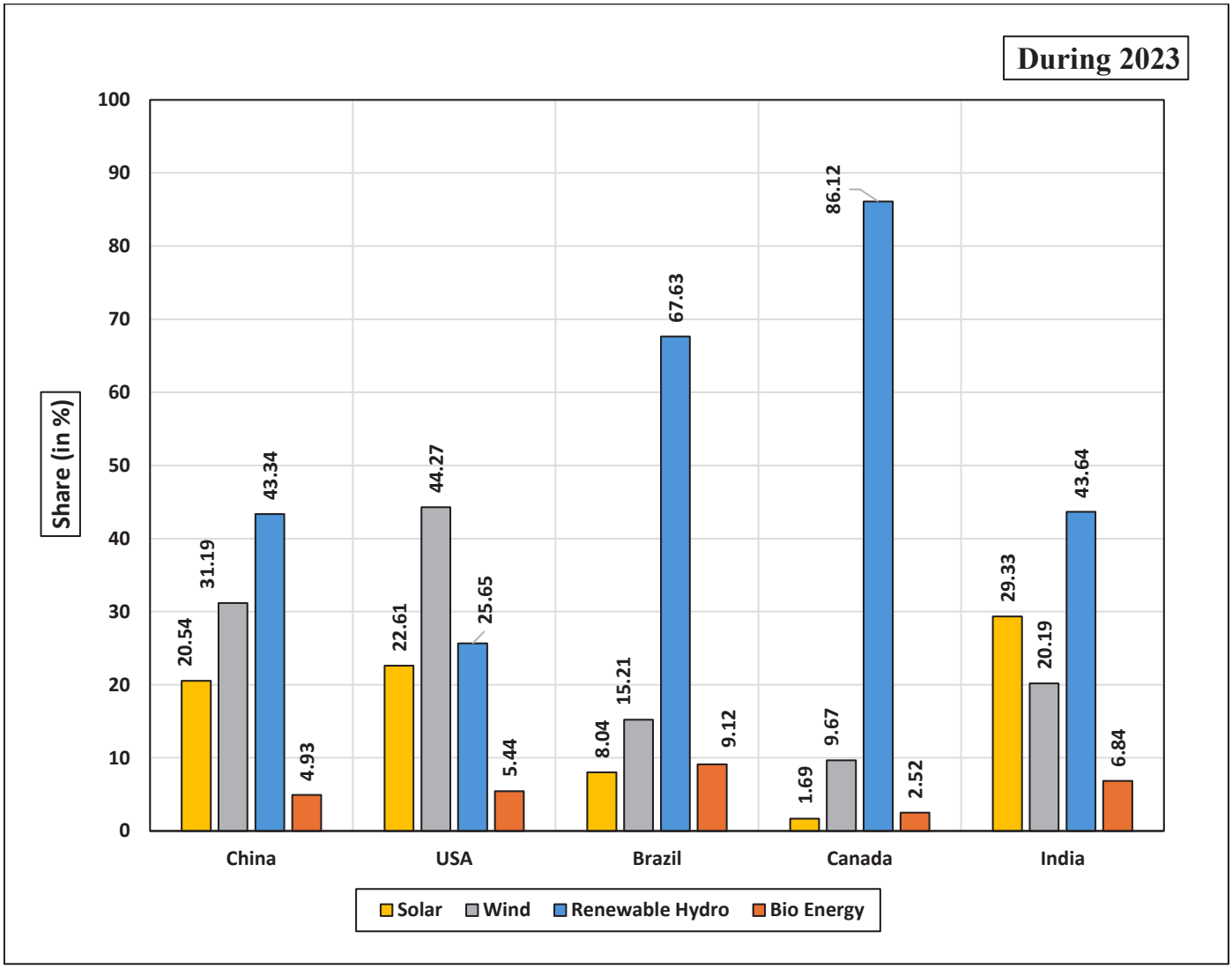
(in TWh)

Country	RE Generation (TWh)	Contribution in the Total RE generation of the World (in %)
China	2842.83	31.84
USA	962.08	10.78
Brazil	629.91	7.06
Canada	418.84	4.69
India	369.97	4.14
Germany	270.11	3.03
Japan	226.52	2.54
Russia	213.68	2.39
Norway	151.3	1.69
Spain	143.81	1.61
World	**8928.49**	

19.2.2 Share of electricity generation from RE sources of top 5 (in RE generation) countries within the country:

In 2023, China, USA, Brazil, Canada and India ranked as the top five countries in total electricity generation from renewable energy sources. China, Brazil, Canada and India had the largest share from Renewable Hydro within their Renewable Energy Generation whereas in respect of USA ,largest share was from wind power. Within the top five RE generating countries, bioenergy held the smallest share of total RE generation except Canada. Canada had the smallest share from Solar Power among the top five RE generating countries in their RE generation. Detailed contribution of various RE sectors in the respective country's Renewable energy generation is mentioned in **Fig 19.2.1.**

Fig 19.2.1 Share of various RE sources in the total RE generation of top 5 (in RE generation) countries within their respective country



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Metadata

1. Contact	
1.1. Contact organization	Ministry of New and Renewable Energy (MNRE)
1.2. Compiling Agency	Statistics Division, MNRE
1.3. Custodian Agency	Statistics Division , MNRE
1.4. Contact Details	Deputy Director General (MNRE) Atal Akshay Urja Bhavan, Lodhi Road New Delhi 110003 ddgmnre@gov.in
2. Data Description and Presentation	
2.1 Data Description	
The statistics represent information about electricity installed capacity and electricity generation from Non-RE sources and from various sources of Renewable Energy viz. Solar, Wind, Hydro and Bio Power. At national and state levels, the analysis is limited to installed capacity and electricity generation from utilities .For international statistics ,data includes electricity installed capacity and electricity generation from both utility and non-utility power plants.	
2.2. System of Classification	
Installed capacity and electricity generation from Non RE and from various sources of Renewable Energy viz. Solar, Wind, Hydro and Bio Power at international, national and state level.	
2.3 International/National Standards Classification etc.	
International System of units (SI) of measurement for electricity installed capacity (GW) and electricity generation (Tera Watt Hour (TWh) / Billion Units (BU)	
2.4 Sector Coverage	
Electricity Installed Capacity and Electricity generation from Non Renewable Energy and Renewable Energy sources such as Solar, Wind , Hydro and Bio Power.	
2.5. Concepts and definition	
Electricity Installed Capacity and Electricity generation from Non Renewable Energy and Renewable Energy sources such as Solar, Wind , Hydro and Bio Power their Growth and share over the years.	
2.6 Reference Period	
Reference period for the Publication of "Renewable Energy Statistics 2024-25" is the financial year 2024- 25 and the previous financial years since 2014-15.	
2.7 Duration and period of enumeration	
Publication is based on secondary data	
2.8 Sample size/ Dataset Size	
No sample selection as data represents the overall electricity installed capacity and electricity generation at national, state and international level.	

3. Institutional mandate
3.1 Legal Acts and other agreements
Publication is based on secondary data
3.2 **Release calendar**
November
3.4 Frequency of dissemination
Annual
3.5 Data access
Website: https://mnre.gov.in/en/renewable-energy-statistics/ Title : Renewable Energy Statistics Dataset Edition: Second Presentation format : .pdf Dataset language : English
4 Quality Management
4.1 Documentation on methodology
Publication is based on secondary data. So specific statistical methodology is not there except calculation of share , growth etc.
5 Timeliness
5.1 Timeliness
Electricity installed capacity under utilities of Non-RE and RE sources are available within one month after the reference year. Electricity generation is available within two months of reference year. In respect of International data on electricity installed capacity, is published within three months of completion of a reference year by IRENA and international electricity generation data is published within 19 months after the end of the reference year.
6 Data Processing
6.1 Source data type
Publication is based on administrative data sources
6.2 Frequency of data collection
National data on installed capacity and electricity generation is collected on monthly basis and international data by IRENA on annual basis.
6.3 Data validation
Publication is based on secondary data
6.4 Data identifiers
No specific identifiers used in the publication