Management Discussion & Analysis

Global Economic Overview

The global economy in 2024 navigated a complex landscape of challenges and opportunities, influenced by economic, geopolitical, and policy-driven factors. According to the International Monetary Fund (IMF) 'World Economic Outlook', global GDP growth for the year was projected to moderate to 3.3%, This moderation reflected varying growth dynamics across different regions, with advanced economies experiencing slower expansion compared to the relatively stronger growth momentum seen in emerging markets, particularly in Asia. The growth in advanced economies was forecasted at 1.8% for 2024, while the emerging market and developing economies were anticipated to maintain a robust growth rate of 4.3% for the year.

Economic Factors

Geopolitical instability, notably the ongoing conflict between Russia and Ukraine, disruptions in global supply chains, and trade tensions between major economies like the US and China, continued to impact the global economic stability. Additionally, climate change policies and shifting regulatory landscapes influenced investment decisions across industries.

Despite these headwinds, the US economy demonstrated resilience, achieving 2.8% growth, driven by a strong labour market and moderating inflation. The Eurozone, however, experienced slower growth at 0.9%, including a slight contraction in Germany. Emerging markets, particularly those in Asia, maintained stronger growth momentum, reaching 5.3% overall, fuelled by investments in technology and infrastructure. India's economy is estimated to grow by 6.5%, supported by strong private consumption and economic recovery.

Global inflation showed improvement, having been estimated at 5.7% in 2024, down from 6.7% in 2023. Advanced economies were likely to achieve this target faster than emerging markets and developing economies, where the decline was expected to be more gradual. Advanced economies should see inflation average 2.6% for 2024, likely reaching target levels by late 2025. Emerging markets experienced a slower but still a positive trend.

Defying significant easing expectations for 2024, major central banks largely maintained high rates to combat inflation. The Federal Reserve's target rate remained elevated for most of the year, with a 25 basis point cut in December, bringing it to 4.25-4.50%. Similarly, the European Central Bank held rates steady after earlier hikes, also implementing a 25 basis point cut to its deposit rate in December, reducing it to 3.00%. The Bank of England's Bank Rate stayed high throughout much of 2024, with cuts later in the year reducing it by 25 basis points to 5.00% in August and a further 25 basis points to 4.75% in November.

(Source: IMF.org)

International Climate Goals

The global push for sustainability was a key economic agenda in 2024, with international climate policies shaping investment strategies and government priorities. The COP29 summit, held in November 2024 in Abu Dhabi, aimed to accelerate the transition to clean energy, reduce carbon emissions, and advance net-zero commitments. Nations presented enhanced climate action plans, focussed on expanding renewable energy, decarbonising industries, and adopting green financing models. However, the discussions were overshadowed by the United States' withdrawal from key international climate commitments, citing economic challenges and domestic priorities, which raised concerns about global climate collaboration.

The withdrawal of the United States from the Paris Agreement created a significant gap in global climate action. At COP29, the US had pledged a substantial amount towards the new USD 300 billion climate finance goal, signalling a renewed commitment to tackling the climate crisis. This abrupt reversal undermined the collective efforts to combat climate change and raised critical questions about the stability of global climate finance.

A significant issue at COP29 was the cost of net-zero initiatives, especially for developing nations. Many countries stressed the urgent need for capital assistance to support their transitions, urging developed economies to fulfil their financial pledges. Despite these challenges, the summit concluded with renewed momentum for climate action, though gaps in financial and policy alignment remained evident.

Outlook

The IMF World Economic Outlook projects global GDP growth at 3.3% in both 2025 and 2026, reflecting a stabilisation followed by gradual growth. While the

global economy demonstrates perseverance, growth trajectories remain uneven across regions, driven by diverging policy approaches, inflationary trends, and geopolitical uncertainties. Growth in the advanced economies is expected at 1.8% in 2026, while the emerging markets and developing economies are estimated to maintain their growth rate of 4.2% in 2025-26.

Overall, the economic outlook for 2025 remains cautiously optimistic, supported by strong performance in key economies, moderating inflation, and policy-driven stability. Several factors contribute to the positive outlook:

- **Strong U.S. Economic Momentum:** The U.S. economy is expected to grow at 2.7% in 2025, supported by strong consumer spending, improving financial conditions, and a stable labour market.
- **Gradual Recovery in Europe:** While the Eurozone is projected to grow at 1.0%, easing inflation and improving consumer confidence could support moderate recovery in the latter half of the year.
- **Steady Growth in Emerging Markets:** Latin America and Africa anticipate growth of 2.5% and 4.2%, respectively, driven by infrastructure investment and strong commodity exports.
- **Sustained Expansion in Asia:** China and India remain key drivers of global growth, with positive projections, driven by fiscal support and domestic demand growth.

Global inflation is forecast to fall to 4.4% in 2025 and 3.5% in 2026, with advanced economies returning to target levels sooner. However, monetary policy varies, with some central banks remaining restrictive while others ease to support growth.

Oil prices are projected to decrease by 2.6% in 2025, reflecting weaker demand from China and increased supply from non-OPEC+ nations. Trade uncertainty, particularly regarding protectionist measures and geopolitical tensions, continues to pose a risk to global trade flows.

The global economic trajectory over the next few years will be shaped by several critical factors. The import tariffs imposed by the US on China and other countries may impact the cost and availability of manufacturing inputs and spare parts from China. This, in turn, could elevate manufacturing costs and product prices, affecting global competitiveness and export dynamics. Furthermore, these changes could also influence infrastructure projects worldwide.

The interplay of these elements highlights the intricate nature of the global economic environment, necessitating careful navigation and strategic planning by policymakers and industry leaders to sustain growth and stability.

Policymakers must carefully balance economic growth, inflation control, and financial stability to maintain progress. Investments in infrastructure, clean energy and technology will be the key drivers of sustainable long-term growth. Overall, strategic policy responses, technological advancements, and sustained investments in infrastructure and clean energy will play crucial roles in ensuring long-term economic stability. Despite the optimistic elements, downside risks persist. Uncertainty surrounding trade policies, geopolitical tensions, and monetary policy shifts could bring volatility. Inflation is expected to continue its downward trajectory but remains above pre-pandemic levels in several economies.

Indian Economy

India's economy demonstrated perseverance and steady expansion in FY 2024-25, maintaining its position as one of the world's fastest-growing major economies. According to the NSO's Second Advanced Estimate (SAE), real GDP is estimated to grow by 6.5% in FY 2024-25, building on the prior year's 9.2% growth as per the First Revised Estimates.. This sustained momentum reflected the country's strong economic fundamentals, supportive government policies, a growing services sector, and strong domestic demand, contributing to enhanced confidence in India's long-term growth prospects.

Government reforms, significant investments in physical and digital infrastructure, and initiatives such as 'Make in India' and the Production-Linked Incentive (PLI) scheme have been instrumental in enhancing the country's growth trajectory and promoting self-reliance.

Growth of the Indian Economy

FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25 (E)	FY 2025-26 (P)
9.7%	7.6%	9.2%	6.5%	6.3-6.8%

(E- Estimates; P - Projected)

The services sector maintained strong growth at 7.2% in FY 2024-25, driven by healthy activity across various segments, including finance, real estate, professional services, public administration, defence, and others.

India's economic stature continues to rise, now ranking as the world's fifth-largest economy by nominal GDP and third-largest by purchasing power parity (PPP). Ambitious national targets aim for a USD 5 trillion

economy by FY 2027-28, and a USD 30 trillion economy by 2047. The focus is on achieving these goals through infrastructure investment, ongoing reforms, and widespread technology adoption. This commitment is reflected in the 2025-26 capital investment budget, marked by an increase to ₹ 11.21 lakh crore, representing 3.1% of GDP.

Outlook

India's economy is forecast at 6.3%-6.8% in FY 2025-26. By 2030, India is projected to become the world's third-largest economy, driven by infrastructure investment, private capital expenditure, and expansion of financial services. Ongoing reforms are expected to support this long-term growth.

This positive outlook is supported by India's demographic advantage, increased capital investment, proactive policies, and strong consumer demand. Improved rural consumption, fuelled by moderating inflation, further strengthens this trajectory. The government's focus on capital expenditure, fiscal discipline, and rising business and consumer confidence supports both investment and consumption.

Initiatives such as Make in India 2.0, Ease of Doing Business reforms, and the PLI scheme aim to bolster infrastructure, manufacturing and exports, positioning India as a global manufacturing hub. With inflation anticipated to align with targets of around 4% by FY 2025-26, a more accommodative monetary policy is expected. Infrastructure development and public policies will drive capital formation, while rural demand will be supported by initiatives like Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY)

(Source: PIB, MoSPI, Economic Survey)

Union Budget 2025-26

The Union Budget 2025-26 provides a balanced and growth-focussed financial plan, designed to address both immediate and long-term economic needs. By increasing disposable income, prioritising infrastructure development, and promoting domestic manufacturing, the budget establishes a foundation for continued economic growth while maintaining fiscal responsibility.

A key highlight is the increased income tax exemption limit of ₹ 12 lakh annually, significantly boosting the disposable income for middle-class families. This change is expected to increase consumer spending and savings, directly benefiting salaried individuals and contributing to the country's economic growth. The emphasis on infrastructure, a key driver of development, includes substantial investments in roads, railways, and urban infrastructure. These investments will improve connectivity, create jobs, and stimulate demand in related sectors.

The budget also supports the PLI scheme, focussing on sectors like electronics and textiles, and aligns with the "Make in India" initiative to establish India as a global manufacturing centre. The government's dedication to clean mobility and renewable energy is manifest in the extended subsidies provided under the FAME India Phase II scheme and the investments in EV charging infrastructure, encouraging a greener economy. With a targeted fiscal deficit of 4.4% of GDP for FY 2025-26, down from 4.8%, the government has underscored its commitment to fiscal prudence, ensuring that growth-oriented reforms are implemented sustainably.

Global Power Sector

Global electricity demand rose by 4.3% in 2024, a significant 2.5% growth recorded in 2023, and is forecast to continue to grow at close to 4% out to 2027. Over the next three years, global electricity consumption is forecast to rise by an unprecedented 3,500 TWh. This increase will be driven by improved economic prospects, boosting demand in both advanced and emerging economies. Electrification of residential and transport sectors, along with data center expansion, will further support demand, particularly in advanced economies and China. Electricity's share of final energy consumption reached an estimated 20% in 2023, up from 18% in 2015. While progress has been made, accelerated electrification is crucial to achieving global decarbonisation targets. The IEA's Net Zero Emissions by 2050 Scenario, aligned with limiting warming to 1.5°C, projects electricity's share nearing 30% by 2030.

Global Energy Demand and Consumption Growth

The average growth rate of electricity demand from 2010 to 2023 was 2.7%, which is double the overall energy demand growth during the same period. This increase was driven by heightened electrification across various sectors, benefiting major economies worldwide. China led the growth in electricity consumption, with an increase of over 550 TWh (7%), nearly matching the average global increase over the previous decade. In contrast, advanced economies, which saw a decline of 140 TWh in 2023 due to weak industrial output and milder weather, rebounded in 2024 with a rise of 230 TWh, primarily driven by strong demand for cooling, data center expansion, and a recovery in industrial production. The European Union also experienced a notable improvement, with electricity consumption growing by about 1.5% in 2024, compared to near-zero growth from 2003 to 2023.

Electricity demand continues to rise globally, propelled by industrial activity, urbanisation, and the adoption of energy-intensive technologies. The Asia-Pacific region is the fastest-growing for electricity demand, largely due to economic expansion in India and China. Meanwhile, North America and Europe are witnessing moderate growth as they transition towards renewable energy sources and improve energy efficiency. Emerging markets in Africa and Latin America show strong growth potential, although infrastructure challenges remain a constraint. The global energy landscape is rapidly transforming, with a clear shift towards clean energy, reflected in volatile coal prices influenced by rising renewable energy adoption and international climate commitments, fundamentally changing energy generation dynamics.

Renewable Energy

Global renewable energy capacity grew by a record-breaking 15.1% in 2024 to reach 4,448 GW.

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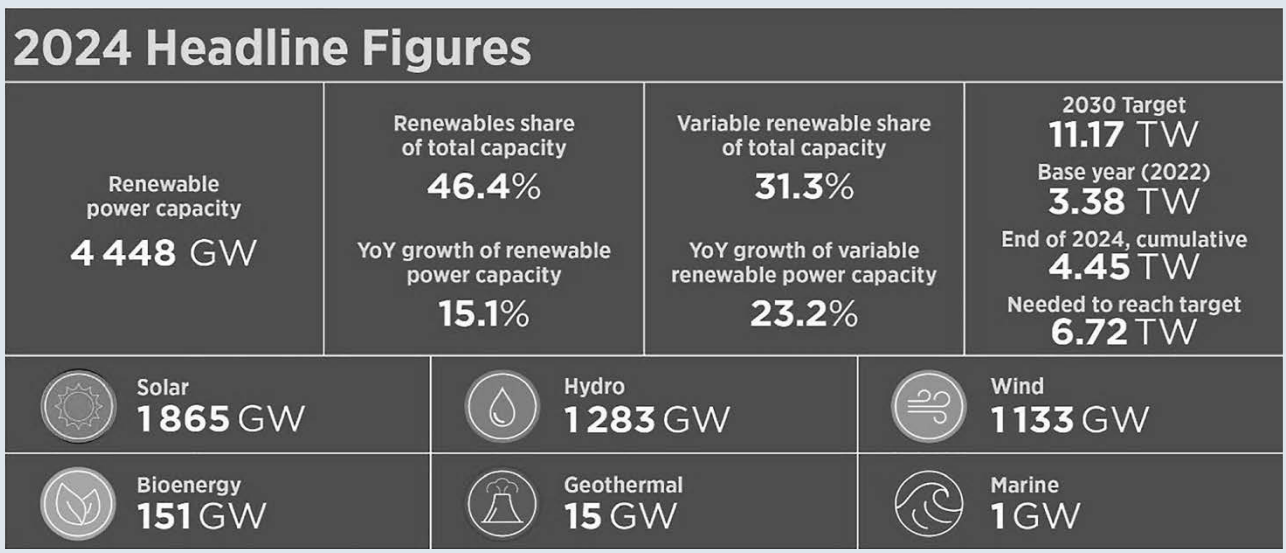
(Source: figures released by the International Renewable Energy Agency (IRENA))

Renewable Capacity Highlights

March 26, 2025



Transmission and Distribution (T&D)

The global power T&D market, valued at USD 344.32 billion in 2024, is essential for delivering electricity. Growth is driven by urbanisation, rising electricity demand, and renewable energy integration, though ageing infrastructure and investment demands pose challenges.

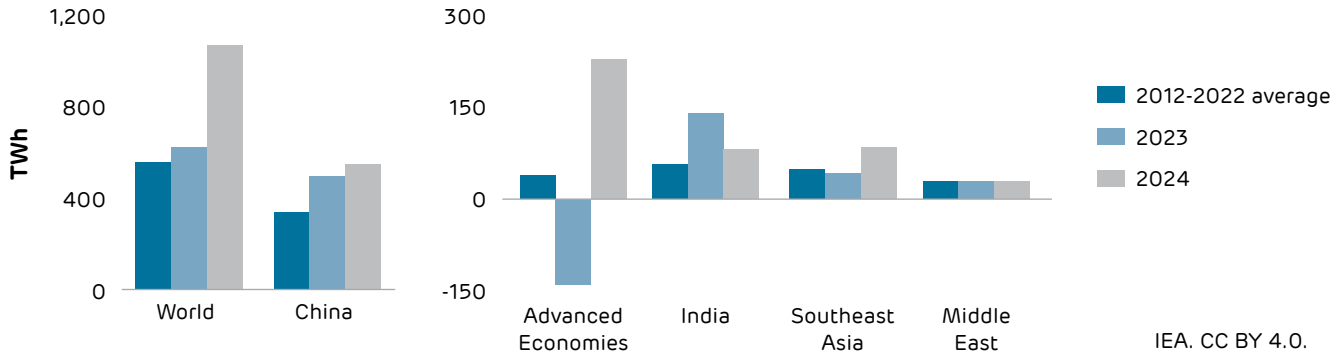
Outlook

The global power sector is projected to invest significantly, with annual investment in renewable capacity to triple, reaching USD 1.5 trillion each year from 2024 to 2030, with renewables accounting for 70% of these investments. Regional trends highlight Asia's dominance in renewable installations, particularly solar and wind, while Europe and North America focus on offshore wind and energy storage. By 2030, the global energy storage capacity is expected to exceed 500 GWh, essential for managing renewable energy intermittency. Challenges such as geopolitical tensions, resource availability for rare earth materials, and ageing grid infrastructure require immediate attention. Emerging markets in Africa and Southeast Asia present untapped opportunities, with potential investments exceeding USD 200 billion annually in these regions.

Investments in T&D networks are projected to experience the highest growth of between 4-8% per annum, reaching between USD 0.6 trillion and USD 1.2 trillion by 2040, depending on various scenarios. This is especially the case in faster decarbonisation scenarios, where larger grid upgrades are projected to be required to support higher penetration of renewables and higher electric loads from electrified final demand.

Source: Global Energy Perspective 2023: Power outlook by McKinsey

Change in Total Final Consumption of Electricity for Selected Regions, 2012-2024



Note: Total final consumption excludes own use for power plants and industry, and transmission and distribution losses.
Source: International Energy Agency (IEA), Global Energy Review 2025.

Indian Power Sector

India stands as the world's third-largest producer and consumer of electricity, with an installed capacity of 475 GW as of March 2025. The power sector is a key pillar of the nation's infrastructure, driving economic growth and improving the quality of life across the country.

The nation has achieved universal household electrification, significantly enhancing the quality of life for its citizens. Per capita electricity consumption has surged to 1,395 kWh in 2023-24, marking a 45.8% increase from 957 kWh in 2013-14.

The Union Budget 2025-26 emphasises a holistic approach to bolstering the power sector through significant allocations, strategic reforms aimed at enhancing efficiency, and investment in sustainable technology. This framework aims to ensure a robust, resilient, and future-ready power landscape in India, aligning with the country's broader clean energy goals and economic growth. Overall, these initiatives will serve as a foundation for improving the power sector's infrastructure and operational efficiency in the coming years.

Thermal Power: The National Electricity Plan (NEP) projects that the average Plant Load Factor (PLF) of the total installed coal capacity of 235.1 GW is likely to be about 58.4% in 2026-27.

Renewable Energy: Renewable energy has seen significant growth, with its installed capacity (including hydropower) reaching 220 GW by March 2025, contributing 45.5% of the total power capacity. Solar energy leads the renewable segment with 106 GW, followed by wind power at 50 GW, biomass at 10.74 GW, hydropower at 52.8 GW, and waste-to-energy at 0.84 GW.

Outlook

Generation capacity additions of approximately 210 GW are expected during the period 2022-27. This expansion is projected to bring the total installed electricity generation capacity to around 609 GW by the end of March 2027 and 900 GW by FY 2031-32, as outlined in the National Electricity Plan (Generation).

The renewable energy sector is poised for substantial growth, with the government aiming to tender 50 GW of renewable capacity annually until FY 2027-28. To address the intermittency of renewable power, state governments and utilities have proposed Pumped Storage Plants (PSPs), while record-low tariffs have been achieved for battery energy storage projects. In solar manufacturing, the Production Linked Incentive (PLI) scheme is on track to achieve cell and module capacity targets by the end of 2024.

The National Green Hydrogen Mission, with doubled funding to ₹ 600 crore (from ₹ 300 crore last year), aims to establish India as a leader in hydrogen-based energy. This Mission, approved in January 2023 with a ₹ 19,744 crore outlay, targets 5 million metric tonnes of annual green hydrogen production by 2030. MNRE has increased green ammonia production allocation, demonstrating its commitment to fulfilling the domestic demand.

India's growing population, expanding electrification, and increasing per capita electricity consumption are driving a steady rise in energy demand. The country is firmly committed to sustainability, aiming to surpass 500 GW of non-fossil fuel-based installed capacity by 2030, marking a significant step towards a future-ready power ecosystem.

(Source: Indiabudget.gov.in, Mondaq)

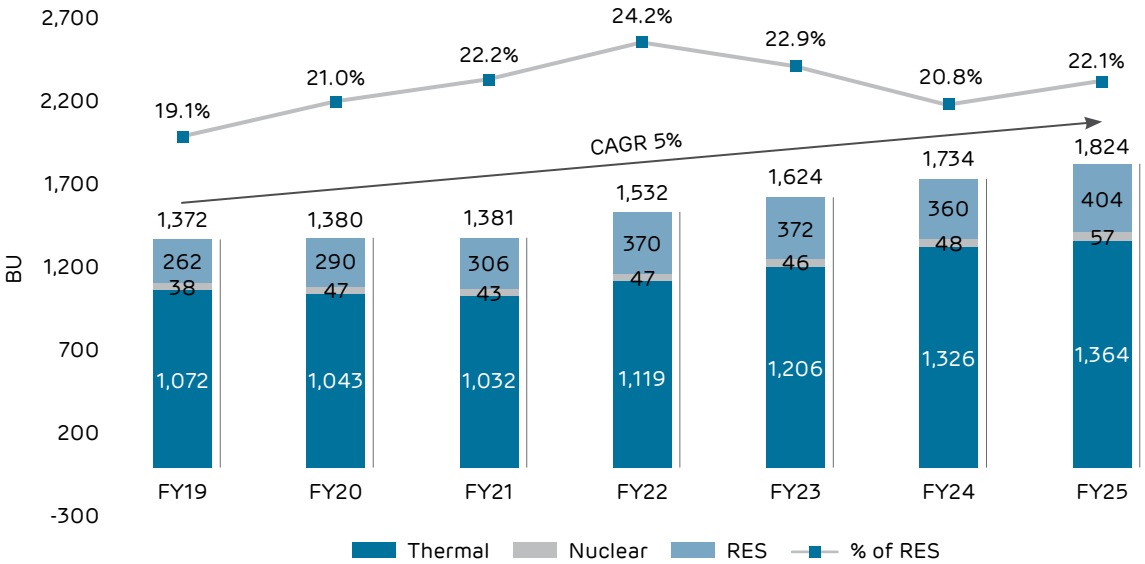
Power Generation Capacity

India's power generation sector is highly diverse, drawing on both traditional sources like coal, gas, and nuclear, as well as renewable sources such as wind, solar, and hydro.

Electricity generation grew from 1,372 BU in FY 2018-19 to 1,824.22 BU in FY 2024-25, reflecting a compound annual growth rate (CAGR) of around 6%. In FY 2024-25, Thermal power continued to dominate, contributing 74% of the nation's electricity. Meanwhile, renewable energy's share has consistently risen, from 19.1% in FY 2018-19 to 22% in FY 2024-25.

Source: CEA, NPP

Power Generation Over the Years

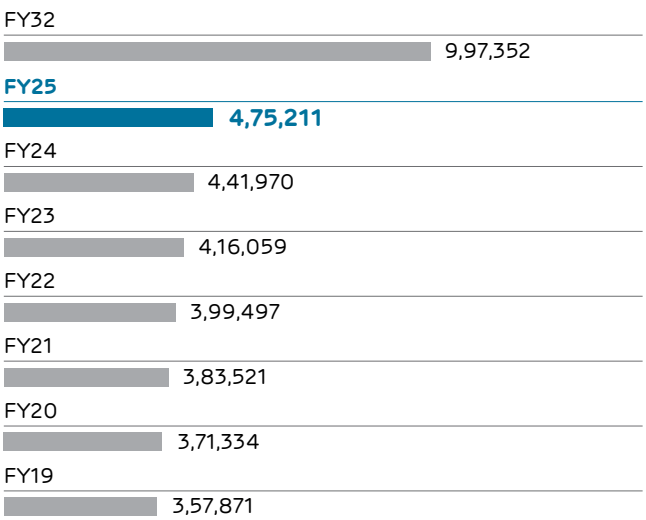


Source: CEA; Other RES including SHP refers to power generated from Hydro (Large), Wind, Small hydro and Bioenergy projects.

As per the Central Electricity Authority (CEA), India's power generation mix is increasingly leaning towards renewable energy sources, which are projected to comprise 64% of the installed capacity by 2030, while coal's share will decrease to 55%. Driven by substantial investments in solar, wind, and hydropower. This shift highlights India's dedication to transitioning to cleaner energy, advancing decarbonisation efforts, and building a sustainable energy future.

India's total installed power capacity surged from 2,48,554 MW in March 2014 to 4,75,211 MW by March 2025. Coal-based power capacity expanded from 1,39,663 MW to 2,46,935 MW, while the renewable energy sector saw an impressive growth, with its capacity rising from 75,519 MW to 2,20,096 MW over this period.

Installed Capacity (in MW)



(Source: https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2038501, CEA - NEP)

Power Demand – Supply

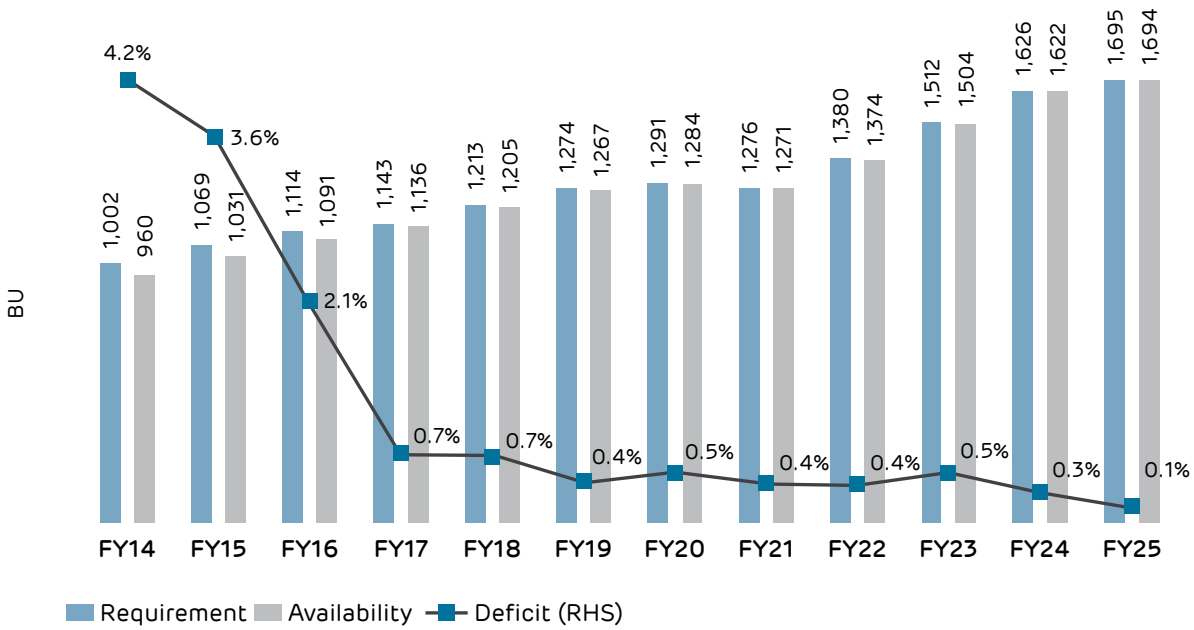
India's electricity requirement has increased significantly, from 1,002 billion units (BU) in FY 2013-14 to 1,695 BU in FY 2024-25, reflecting a CAGR of 5%. In FY 2024-25, demand reached 1,695 BU, a 4% increase compared to the same period last year, with a minimal supply deficit of 0.3%.

The peak unmet demand decreased from 6 GW in FY 2013-14 to 2 MW in FY 2024-25. Energy not supplied fell from 42,428 million units (MU) in FY 2013-14 to 1,589 MU in FY 2024-25. Peak energy demand grew at a CAGR of 5%, rising from 136 GW in FY 2013-14 to 250 GW in FY 2024-25.

Conventional sources, primarily coal and gas, continue to meet most peak power requirements, highlighting their critical role in addressing India's growing energy needs during peak periods. While the share of renewable energy is increasing, the stability and reliability of conventional power generation remain essential for ensuring uninterrupted electricity supply amidst rapid demand growth.

Source: CEA

Power Supply Position in India



Source: Ministry of Power, CEA, CareEdge Research

Renewable Energy

India's renewable capacity has grown exponentially, driven by its 500 GW target by 2030. Solar energy dominates the renewable mix, contributing 106 GW, followed by wind at 50 GW. The PLI scheme aims to boost domestic solar manufacturing to 65 GW by 2025. The Green Energy Corridor (GEC) has facilitated the integration of over 15,000 MW of renewable power into the national grid, enhancing regional energy flow. The National Green Hydrogen Mission plans to support 5 MMT of green hydrogen production annually by 2030, necessitating an additional 125 GW of renewable capacity.

Outlook

India's power sector is on the verge of transformative growth, driven by surging demand, policy reforms, and technological advancements. The country's rapid economic growth, urbanisation and industrialisation are major forces pushing energy needs to unprecedented levels. The Central Electricity Authority (CEA) projects a sharp rise in power demand, predicting the peak electricity demand of 388 GW during 2031-32. This growth places the power industry at the heart of India's development strategy.

- **Renewable Energy Integration:** India aims to achieve 500 GW of non-fossil fuel capacity by 2030, emphasising renewable energy's role in its transition. The integration of solar, wind and other renewable sources is essential for reaching the sustainability targets and reducing carbon emissions. However, due to the intermittent nature of renewable sources, maintaining a reliable base-load power supply is vital for grid stability and energy security.
- **Incremental Thermal Power Capacity:** To meet the rising energy demand and support renewable integration, India plans to add an extra 80 GW of coal-based thermal power by FY 2031-32. This new capacity will be crucial to stabilising the energy grid, especially during peak demand periods or when renewable generation is low. The adoption of ultra-supercritical and supercritical technologies ensures this expansion will be environmentally efficient, with lower emissions intensity per unit of electricity produced.
- **Technological and Operational Advancements:** The sector is experiencing significant technological advancements, including the implementation of smart grids, digital energy management systems, and enhanced monitoring frameworks. These innovations improve operational efficiency, minimise transmission losses, and facilitate the integration of diverse energy sources into the grid. Furthermore, improved project management practices are enabling faster execution of power generation and transmission projects.
- **Policy and Investment Support:** Government schemes are driving the growth of the power sector. Increased private sector involvement and foreign direct investment (FDI) are further accelerating the sector's expansion.
- **Challenges and Opportunities:** While challenges such as financial strain on distribution companies (DISCOMs) and the need for energy storage solutions persist, these also present opportunities for innovation and investment. Enhanced energy storage technologies, such as lithium-ion batteries and pumped hydro storage, is essential to ensuring a more reliable and sustainable power supply.

India's power industry stands at a pivotal moment, balancing the urgent need to meet rising demand with the transition towards cleaner energy solutions. The strategic addition of 80 GW of thermal power and the continued integration of renewable energy are key to ensuring that the sector remains reliable, resilient, and future-ready.

Indian Transmission and Distribution Sector

India's Transmission and Distribution sector saw significant activities in FY 2024-25. Rising energy demand and the push to integrate renewable power drove efforts to expand and strengthen the grid. Modernising infrastructure, particularly in distribution, was a key focus, backed by policies aimed at boosting efficiency and deploying advanced technology. The year highlighted the ongoing drive to build a robust network ready for India's evolving energy needs.

Transmission

As of March 2025, India's transmission network showcased considerable strength and expansion. The total transmission line capacity operating at 220 kV and above stood at an extensive 4,94,424 circuit kilometres, complemented by a total transformation capacity of 1,337 GVA nationwide.

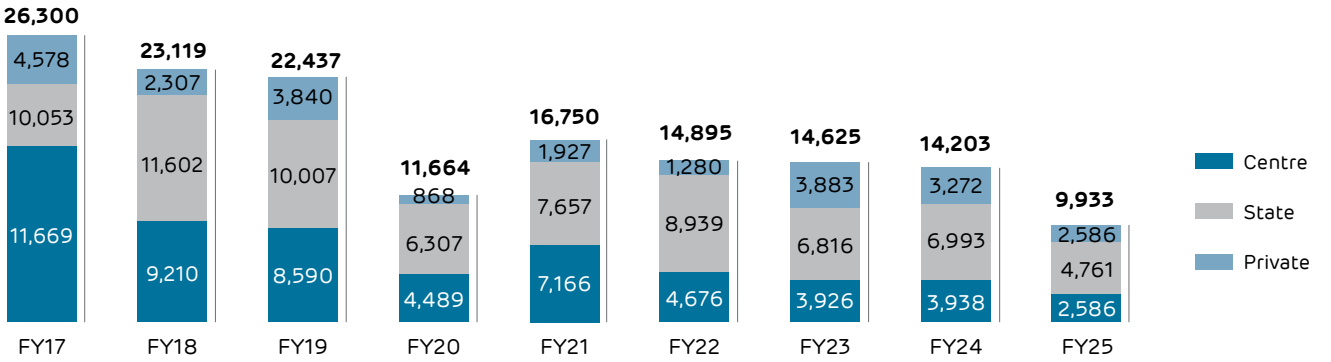
This considerable infrastructure base was significantly bolstered by additions during FY 2024-25, including 8,830 circuit kilometres of new transmission lines and an impressive 86,433 MVA of transformation capacity, collectively boosting the grid's overall capability and reach.

The National Grid's inter-regional transmission capacity reached 119 GW, supporting energy flow between surplus and deficit regions.

As on January 2025, the government has approved 50.9 GW of Inter-State Transmission System (ISTS) projects, with a total investment of ₹ 60,676 crore. These projects are part of a broader initiative to connect 280 GW of variable renewable energy (VRE) to the ISTS by 2030. So far, 42 GW has been completed, 85 GW is currently under construction, and 75 GW is in the bidding phase, with an additional 82 GW expected to be approved in the future.

(Source: PIB.gov.in)

Transmission line addition in CKM over Fiscals 2017-2024



Source: CEA

Outlook

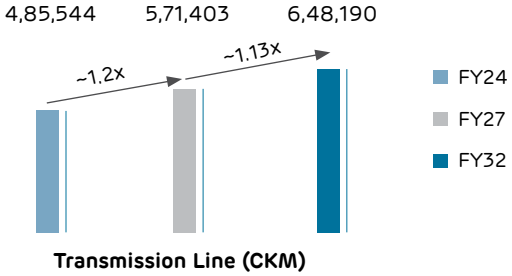
During FY 2025-29, investments are projected to rise to between ₹ 3.0 trillion and ₹ 3.2 trillion, primarily driven by the expansion of renewable energy projects, as the government aims to achieve 500 GW of renewable capacity by 2030, transmitting same to customer requirements additional capacity in the national grid, 1,14,687 ckm of transmission lines and 7,76,330 MVA of substation projects are targeted to be added from FY 2022-27. Further, approximately 76,787 ckm of transmission lines and 4,97,855 MVA of transformation capacity in substations at voltage levels of 220 kV and above are planned for installation during the period from FY 2027-32. The CEA released the National Electricity Plan (Volume II: Transmission), reviewing the transmission system's development from Fiscals 2017-22 and outlining plans for Fiscals 2022-27, with some insights for Fiscals 2027-32.

Transmission Lines and Transformation Capacity under ISTS and Intra-state

		At the end of 2021-22 (March 31, 2022)	Planned addition during 2022-27	At the end of 2026-27 (March 31, 2027)	Planned addition during 2027-32	At the end of 2031-32 (March 31, 2032)	Total
Transmission lines (ckm)	ISTS	2,00,036	51,185	2,51,221	43,324	2,94,545	**6,48,190**
	Intra-State	2,56,680	63,502	3,20,182	33,463	3,53,645	
Transformation capacity (MVA)*	ISTS	4,60,965	4,72,225	9,33,190	3,48,165	12,81,355	**24,11,885**
	Intra-State	6,43,485	3,05,105	9,48,590	1,81,940	11,30,530	

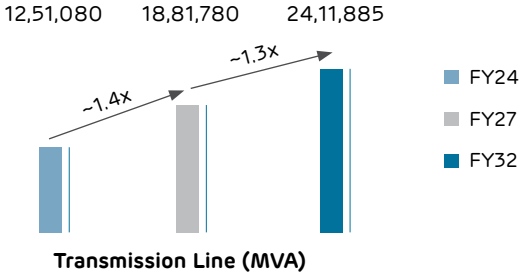
*including HVDC bi-pole/back-to-back capacity

Total Transmission Line Capacity Outlined as per NEP



Source: CEA

Total Transmission Substation Capacity Outlined as per NEP



Source: CEA

To achieve the connectivity targets award of these projects, shall be done by TBCB method. Tenders for these lines will be issued by central government agencies, open to both government-owned and private players. The top ten states are expected to contribute approximately 82% of the InSTS transmission line additions planned during 2022-27, with Gujarat leading at nearly 15%, followed by Uttar Pradesh at 14% and Maharashtra at 13%.

(Source: NEP)

Distribution

In FY 2024-25, India's power distribution sector achieved significant milestones, reflecting the nation's commitment to enhancing energy accessibility and reliability. A notable accomplishment was the reduction of the energy supply deficit to a mere 0.1%, a substantial improvement from the 4.2% recorded in 2013-14.

The availability of power supply witnessed remarkable progress. Rural areas experienced an increase in supply from an average of 12.5 hours in 2015 to 21.9 hours in 2024, while urban areas saw an enhancement to 23.4 hours. This advancement underscores the effectiveness of initiatives aimed at strengthening the distribution infrastructure.

(Source: PIB.gov)

To further bolster the distribution network, the Central Electricity Authority (CEA) introduced the Draft Distribution Perspective Plan 2030. This comprehensive plan outlines strategies for modernising the distribution sector, focussing on the integration of advanced technologies and the adoption of smart grid solutions. The plan aims to enhance operational efficiency and ensure the system's resilience to evolving energy demands.

(Source: CEA)

In alignment with these objectives, the Revamped Distribution Sector Scheme (RDSS) was launched with the goal of reducing Aggregate Technical and Commercial (AT&C) losses to a pan-India level of 12-15% by FY 2024-25. Additionally, the scheme seeks to eliminate the gap between the Average Cost of Supply (ACS) and the Average Revenue Realised (ARR), thereby promoting financial sustainability within the distribution sector.

(Source: Press Information Bureau)

Under the Revamped Distribution Sector Scheme (RDSS), aimed at enhancing the operational efficiency and financial sustainability of DISCOMs, a total of 19.79 crore prepaid smart meters, 52.52 lakh DT meters, and 2.10 lakh feeder meters have been sanctioned at a cost of ₹ 1.30 lakh crore. Loss reduction works totalling ₹ 1.46 lakh crore have also been approved, with ₹ 18,379.24 crore already disbursed.

Key Government Initiatives

- **Smart Meter National Programme (SMNP):** Targets completion of smart meter rollout by 2025, enabling real-time energy management.
- **Integrated Power Development Scheme (IPDS):** Focusses on modernising urban distribution networks, reducing technical losses.
- **Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY):** Strengthens rural networks to support 24x7 power access.
- **Revamped Distribution Sector Scheme (RDSS):** Aims to reduce AT&C losses to 12-15% while installing 250 million smart meters by 2025.
- **Ujwal DISCOM Assurance Yojana (UDAY):** Has improved DISCOM financials, reducing losses by 35% since inception.
- **National Infrastructure Pipeline (NIP):** Allocates USD 200 billion for power infrastructure, including grid expansions and clean energy projects.

Outlook

The T&D sector is expected to attract USD 100 billion in investments by 2030. By that time, India aims to reduce AT&C losses to below 12% and expand inter-regional transmission capacity to 150 GW. Smart grid technologies, including IoT-enabled sensors and AI-driven analytics, will revolutionise operational efficiency and ensure grid stability. Private sector participation, particularly in state-specific distribution reforms, will be critical. With enhanced rural electrification and the adoption of advanced technologies, the sector is set to ensure reliable, efficient and sustainable power delivery across India.

(Source: ET)

Adani Energy Solutions Company Overview

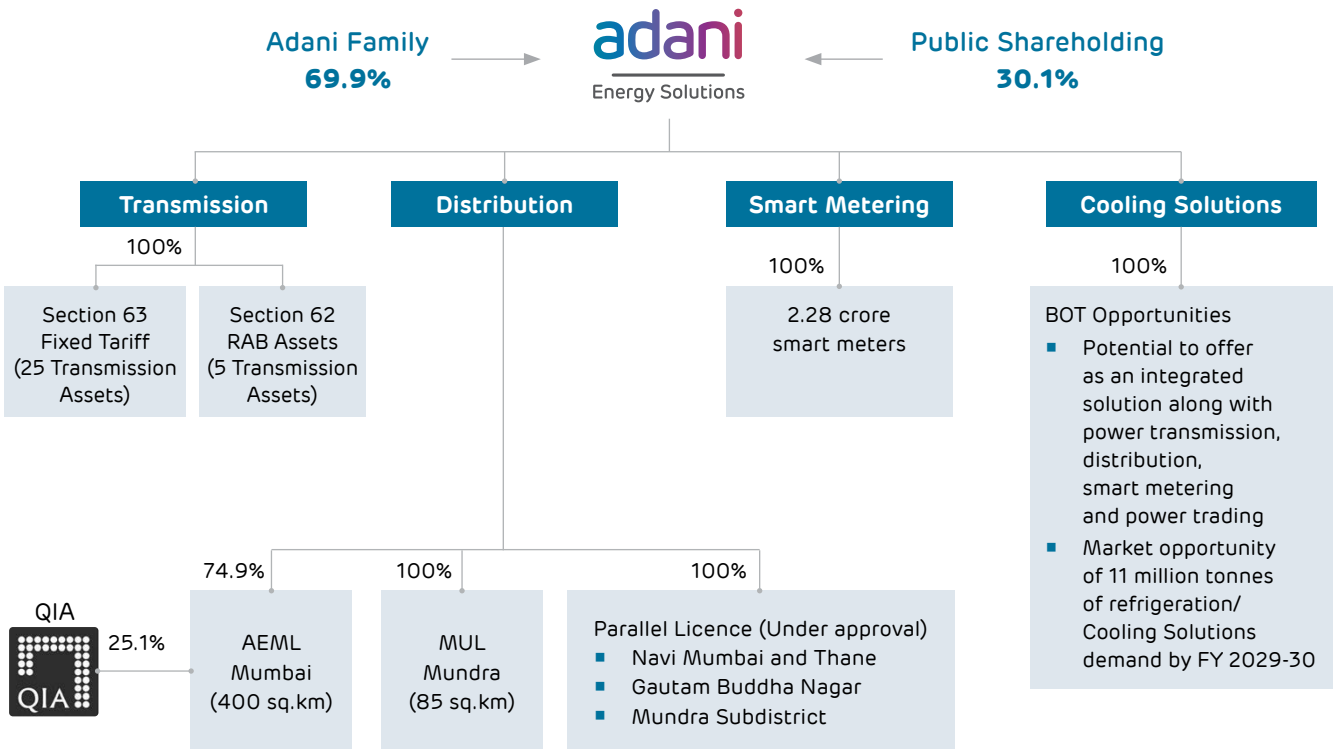
Adani Energy Solutions Limited (Adani Energy Solutions), the transmission and distribution arm of the Adani Group, has emerged as India's largest private sector integrated player, solidifying its position as a key enabler of India's energy security and self-sufficiency. The company plays a crucial role in strengthening India's energy infrastructure by focussing on expanding its presence across transmission, distribution and smart meter business and rapidly evolving, Commercial & Industrial power solutions. Another emerging sector is requirement of energy-efficient cooling for industries, residential & commercials, while at Adani Energy Solutions, we already develop cost-effective energy solutions, integrating it with the cooling systems give us an edge in providing end-to-end efficient Cooling-as-a-Service to customers.

Adani Energy Solutions is a key contributor to the integration of renewable energy into the national grid, aligning with India's target of achieving 500 GW of renewable energy capacity by 2030, which is also critical from national energy security point of view. By investing in modern grid technology and energy storage solutions, Adani Energy Solutions is enabling the transition to a low-carbon economy.

Adani Energy Solutions is not only focussed on transmission and distribution but also actively diversified into Cooling Solutions and Smart Metering. These segments align with the company's vision of delivering sustainable and efficient energy solutions.

Adani Energy Solutions has ventured into district cooling systems, which provide energy-efficient cooling for urban developments and industrial complexes. These systems work by centralising cooling through large plants and distributing chilled water to multiple buildings, reducing energy consumption by up to 50% compared to conventional air-conditioning systems. This technology is particularly relevant for urban areas experiencing rapid growth, as it helps lower greenhouse gas emissions while meeting the increasing demand for cooling.

In line with India's push for a Smart Grid ecosystem, Adani Energy Solutions has deployed smart metering technologies to modernise electricity distribution. These meters enable real-time monitoring of electricity consumption, besides enhancing transparency and supporting demand-side management for consumers. As part of the Smart Meter National Programme (SMNP), Adani Energy Solutions has been instrumental in replacing conventional meters with smart meters, which help reduce energy theft, minimise losses, and empower consumers to optimise their consumption patterns.



Business Outlook

- The company has a substantial under-construction pipeline worth ₹ 59,936 crore in Transmission and ₹ 27,195 crore in Smart Metering
- Distribution: The company is expanding into new geographies through parallel licences in Navi Mumbai, Greater Noida, and Mundra Subdistrict
- The company anticipates strong growth potential in the Smart Metering business
- The company has expenditure plan of ₹ 16,000 crore to ₹ 18,000 crore in FY 2025-26, with ₹ 1,600 crore for AEML, ₹ 4,000 crore for smart meter and ₹ 12,000 crore to ₹ 13,000 crore for the transmission business

Operational Performance

Transmission

1) Asset-Wise Transmission Availability

±500 kV Mundra - Mahendragarh HVDC Transmission System (ATIL - Asset-1 HVDC)

(%) Availability			
FY25	97.50	98.69	1.19
FY24	97.50	98.60	1.09
FY23	97.50	99.96	2.46

±500 kV Mundra-Mahendragarh HVAC Transmission System (ATIL – Asset-1 HVAC)

(%) Availability			
FY25	98.50	99.96	1.46
FY24	98.50	99.89	1.39
FY23	98.50	99.87	1.37

400 kV Mundra-Sami-Dehgam Transmission System (ATIL - Asset 2 HVAC)

(%) Availability			
FY25	98.50	99.79	1.29
FY24	98.50	99.72	1.22
FY23	98.50	99.64	1.14

400 kV Tiroda-Warora Transmission System (ATIL - TW)

(%) Availability			
FY25	98.00	99.45	1.45
FY24	98.00	99.84	1.84
FY23	98.00	99.88	1.88

Maharashtra Eastern Grid Power Transmission Company Limited (MEGPTCL)

(%) Availability			
FY25	98.50	99.87	1.37
FY24	98.50	99.85	1.35
FY23	98.50	99.85	1.35

Chhattisgarh-Western Region Transmission Limited (CWRTL)

(%) Availability			
FY25	98.00	99.95	1.95
FY24	98.00	99.89	1.89
FY23	98.00	99.94	1.94

Raipur-Rajnandgaon-Warora Transmission Ltd. (RRWTL)

(%) Availability			
FY25	98.00	99.83	1.83
FY24	98.00	99.90	1.90
FY23	98.00	99.75	1.75

Sipat Transmission Ltd. (STL)

(%) Availability			
FY25	98.00	99.82	1.82
FY24	98.00	99.89	1.89
FY23	98.00	99.66	1.66

Western Transmission (Gujarat) Ltd. (WTGL)

(%) Availability			
FY25	98.00	99.75	1.75
FY24	98.00	99.67	1.67
FY23	98.00	99.75	1.75

Western Transco Power Ltd. (WTPL)

(%) Availability			
FY25	98.00	99.90	1.90
FY24	98.00	99.64	1.64
FY23	98.00	99.89	1.89

Adani Transmission Bikaner Sikar Private Ltd. (ATBSPL)

(%) Availability			
FY25	98.00	100	2.00
FY24	98.00	100	2.00
FY23	98.00	100	2.00

Adani Transmission (Rajasthan) Ltd. (ATRL)

(%) Availability			
FY25	98.00	99.95	1.95
FY24	98.00	99.97	1.97
FY23	98.00	99.96	1.96

● Normative ● Actual ● Above Normative

Aravali Transmission Service Company Ltd. (ATSCL)

(%) Availability

FY25	98.00	99.96	1.96
FY24	98.00	99.91	1.91
FY23	98.00	99.75	1.75

Maru Transmission Service Company Ltd. (MTSCL)

(%) Availability

FY25	98.00	99.94	1.94
FY24	98.00	99.89	1.89
FY23	98.00	99.97	1.97

Alipurduar Transmission Ltd. (ApTL)

(%) Availability

FY25	98.00	100	2.00
FY24	98.00	99.94	1.94
FY23	98.00	99.98	1.98

Warora Kurnool Transmission Ltd. - Western Region (WKTL - WR)

(%) Availability

FY25	98.00	99.96	1.96
FY24	98.00	99.94	1.94
FY23	98.00	100	2.00

Warora Kurnool Transmission Ltd. - Southern Region (WKTL - SR)

(%) Availability

FY25	98.00	99.61	1.61
FY24	98.00	98.59	0.59

Ghatampur Transmission Limited (GTL)

(%) Availability

FY25	98.00	98.82	0.82
FY24	98.00	98.42	0.42
FY23	98.00	98.27	0.27

Obra-C Badaun Transmission Limited (OBTL)

(%) Availability

FY25	98.50	99.45	0.95
FY24	98.50	99.54	1.04
FY23	98.50	99.51	1.01

Fatehgarh Bhadla Transmission Limited (FBTL)

(%) Availability

FY25	98.00	99.97	1.97
FY24	98.00	99.89	1.89
FY23	98.00	100	2.00

North Karanpura Transco Limited (NKTL) nset - (partially operational)

(%) Availability

FY25	98.00	99.93	1.93
FY24	98.00	99.96	1.96
FY23	98.00	99.96	1.96

Bikaner-Khetri Transmission Limited (BKTL)

(%) Availability

FY25	98.00	99.53	1.53
FY24	98.00	99.77	1.77
FY23	98.00	98.48	0.48

Jam Khambhaliya Transco Limited (JKTL)

(%) Availability

FY25	98.00	99.85	1.85
FY24	98.00	99.55	1.55
FY23	98.00	99.99	1.99

Lakadia Banaskantha Transco Limited (LBTL)

(%) Availability

FY25	98.00	99.70	1.70
FY24	98.00	99.87	1.87
FY23	98.00	99.19	1.19

● Normative ● Actual ● Above Normative

WRSS XXI A Transco Limited (WTL)

(%) Availability

FY25	98.00	99.92	1.92
FY24	98.00	99.94	1.94
FY23	98.00	99.87	1.87

PPP-8 Hadoti Power Transmission Limited (HPTSL)

(%) Availability

FY25	98.00	99.95	1.95
FY24	98.00	99.90	1.90
FY23	98.00	99.86	1.86

PPP-9 Barmer Power Transmission Limited (BPTSL)

(%) Availability

FY25	98.00	99.92	1.92
FY24	98.00	99.92	1.92
FY23	98.00	99.85	1.85

PPP-10 Thar Power Transmission Limited (TPTSL)

(%) Availability

FY25	98.00	99.98	1.98
FY24	98.00	99.90	1.90
FY23	98.00	99.87	1.87

MP Power Transmission Package II Ltd (MP II)

(%) Availability

FY25	98.00	99.86	1.86
FY24	98.00	99.96	1.96

Karur Transmission Line (KTL)

(%) Availability

FY25	98.00	99.93	1.93
FY24	98.00	100	2.00

Kharghar Vikhroli Transmission Limited (KVTL)

(%) Availability

FY25	98.00	99.77	1.77
FY24	98.00	100	2.00

Khavda Bhuj Transmission (KBTL)

(%) Availability

FY25	98.00	99.80	1.80
FY24	98.00	99.35	1.35

Adani Energy Solution Mahan Limited (AESML)

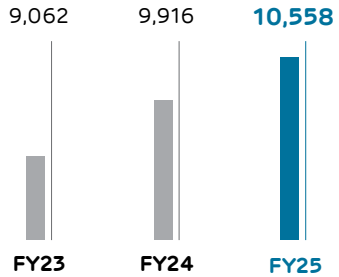
(%) Availability

FY25	98.00	99.58	1.58

● Normative ● Actual ● Above Normative

Distribution (AEML)

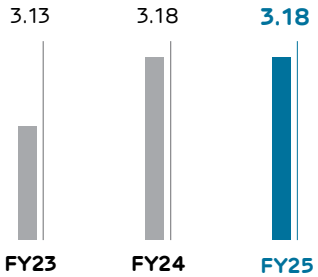
Network Sales (million units)



Description

The network sales have shown consistent growth over the past three financial years. In FY 2022-23, sales were recorded at 9,062 million units (MUs), which increased to 9,916 MUs in FY 2023-24, reflecting a steady rise. By FY 2024-25, network sales surged significantly to 10,558 MUs, demonstrating strong performance and expanding demand.

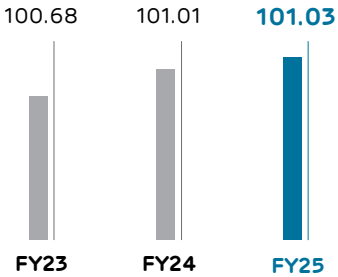
Customer Base (million)



Description

The customer base expanded positively from 3.13 million in FY 2022-23 to 3.18 million in FY 2023-24, reflecting the company's growing appeal. In FY 2024-25, the customer base held strong at 3.18 million, demonstrating sustained loyalty and a solid foundation for future growth. This consistent performance highlights the company's ability to retain its valued customers.

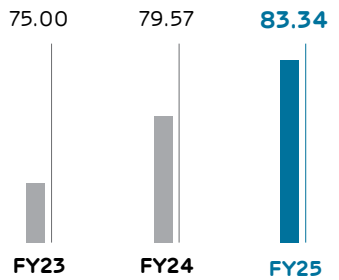
Collection Efficiency (%)



Description

The collection efficiency has shown a consistent upward trend over the past three financial years. In FY 2022-23, it stood at 100.68%, slightly increasing to 101.01% in FY 2023-24, and further improving to 101.03% in FY 2024-25. This steady rise reflects improved billing and payment recovery processes.

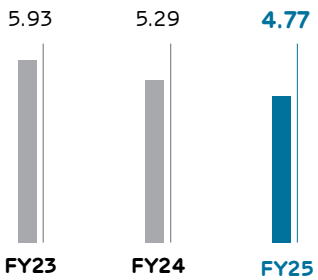
E-payment (%) (% of total collection)



Description

The adoption of e-payments as a percentage of total collection has shown consistent growth over the past three years. In FY 2022-23, e-payments accounted for 75.00% of collections, which increased to 79.57% in FY 2023-24. By FY 2024-25, this figure rose further to 83.34%, reflecting a strong shift toward digital transactions.

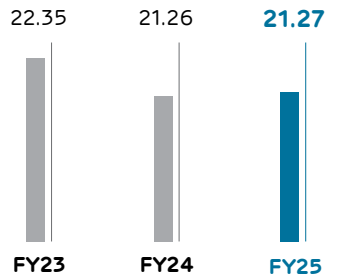
Distribution Loss (%)



Description

The distribution loss percentage has shown a consistent decline over the past three financial years. In FY 2022-23, the loss stood at 5.93%, which decreased to 5.29% in FY 2023-24. By FY 2024-25, it further reduced to 4.77%, reflecting improved efficiency in the distribution network.

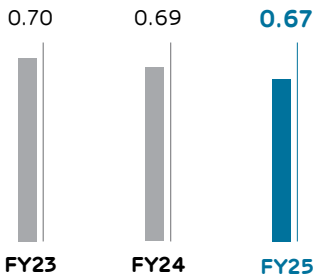
SAIDI (mins)



Description

System Average Interruption Duration Index indicates the average outage duration for each customer served.

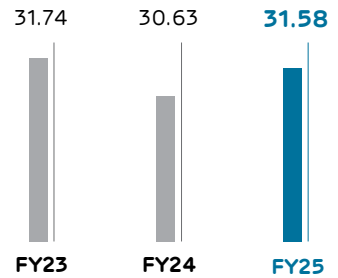
SAIFI (nos.)



Description

System Average Interruption Frequency Index indicates an average number of interruptions.

CAIDI (mins)



Description

Customer Average Interruption Duration Index indicates the average time required to restore service during a predefined period.

Operational Highlights FY 2024-25

Transmission

Maintained robust system availability of 99.7%.

Added 695 ckm of transmission lines during the year and with total transmission network at 26,696 ckm.

Smart metering

- We have received an Operational Go-live Certificate for 8 Projects till date and expected to receive the Go-live for Balance one Project
- Total Capital Expenditure incurred for the year is ₹ 2,015 crore, with this our Meter Installation number will crossed ~31 lakh for the year
- Consumer Awareness Initiatives (Awareness camps and demonstrations) across country for spreading awareness about Smart Meters

AEML Distribution Business

- AEML has maintained No.1 ranking in the Integrated Rating & Ranking of power DISCOMs for three consecutive years conducted by the Ministry of Power
- Adani Electricity shines in National Consumer Service Ratings with an impressive 'A+' rating by CSRD FY 2023-24, released by the Ministry of Power, GoI
- AEML has managed to curtail Power purchase cost at ₹ 4.86/unit for FY 2024-25 despite nationwide increase in demand & high international coal prices against ₹ 5.03/unit of FY 2023-24 (Excludes an exceptional cost of ₹ 301 crore due to change in law in FY 2024-25)
- Adani Marvels has won the prestigious Brandon Hall Gold Award in the USA for the Best Leadership Development Program
- AEML has been honoured with the Gold Award in the "Best Learning Culture in an Organisation" category by Economic Times
- AEML has achieved 35.2% renewable energy mix (clean energy), as committed in Sustainability Linked Bonds
- In FY 2024-25, we achieved strong operational growth, maintaining a robust customer base of 3.18 million despite competition, and increasing units sold from 9,916 million to 10,558 million. Distribution losses dropped to a historic low of 4.77% from 5.29%, while reliability soared with transmission availability at 99.31% and ASAI at 99.996%. System interruptions also improved, with SAIDI at 21.27 minutes and SAIFI at 0.67, reflecting enhanced efficiency and stability

Financial Performance

Particulars	FY 2022-23	FY 2023-24	FY 2024-25
Operational Revenue (₹ crore)	12,149	14,217	17,057
Total EBITDA (₹ crore)	6,101	6,323	7,746
Adjusted PAT (₹ crore)	1,071	1,196	1,810#**

Note:

#Adjusted for an exceptional item due to carve-out of the Dahanu power plant of ₹ 1,506 crore

*Adjusted for regulatory income of ₹ 148 crore in T&D segments and net one-time deferred tax reversal of ₹ 469 crore in AEML distribution business

Description

Revenue

Operating revenue increase by 20% is on account of the contribution of the newly operationalised transmission assets (MP Package–II, KVTL, KBTL, WKTL lines), contribution from acquired Mahan Sipat line and an increase in energy sales led by positive demand growth in distribution business at Mumbai and Mundra and growing contribution from smart metering business.

EBITDA

Consolidated EBITDA for FY 2024-25 increased by 23% to ₹ 7,746 crore resulting from strong revenue growth, steady regulated EBITDA of ₹ 2,611 crore in distribution business which grew in line with the RAB expansion, regulatory income of ₹ 148 crore and higher treasury income.

Key Ratios

Particulars	FY 2022-23	FY 2023-24	FY 2024-25
Debt-Equity Ratio	2.68	2.70	1.75
Return on Equity/ Net Worth	10.78	9.0	5.02
Net Debt/EBITDA	4.0	3.8	3.2

Debt equity ratio improved because of issuance of Share capital (QIP) during the year 2024-25 which has corresponding impact on return on equity/net worth.

Economic Value Generated & Distributed

Particulars	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Total revenue [A]	**10,458.93**	**11,861.47**	**13,840.46**	**17,218.31**	**24,446.55**
Income from Generation, Transmission & Distribution Business	9,169.70	10,435.61	12,537.07	15,577.77	22,386.65
Other income	532.6	603.95	547.74	610.95	679.46
Revenue from Trading	756.63	821.91	755.65	1,029.59	1,380.44
Regulatory Deferral Account Balances-Income **[B]**	582.81	682.47	1,035.58	-460.01	-1340.75
Total distribution [C]	**8,423.29**	**9,881.04**	**11,817.51**	**13,501.25**	**18,814.02**
Operating costs	4,998.78	6,123.07	7,743.33	9,429.18	14,272.25
Employee wages and benefits	930.76	885.07	986.65	951.70	1,032.94
Payment to providers of capital [interest]	2,116.99	2,364.95	2,781.47	2,766.51	3,259.16
Rate & Taxes	21.18	20.07	12.03	13.11	10.79
Payment to government	330	465	260.94	298.59	195.04
Community investments [CSR]	25.26	23.14	33.09	42.16	43.84
Economic value retained [A+B-C]	**2,618.45**	**2,662.9**	**3,058.53**	**3,257.05**	**4,291.78**

Risk Management

Adani Energy Solutions effectively manages risks through a collaborative and multi-layered approach, involving the Board of Directors, key committees, and dedicated risk management professionals.

Risk oversight is a core function of the Board, with the Audit Committee and the Risk Management Committee (RMC) playing crucial roles. These committees, in conjunction with the Management Risk Committee (MRC), oversee the risk management framework, including the review of risk functions, policies, practices, guidelines, and procedures.

The Chief Risk Officer (CRO), reporting directly to the CEO, serves as the custodian of the risk identification and management process. At the operational level, dedicated risk management teams, including the Business Risk Team (BRT) and Function Risk Committees (FRCs), actively engage in the risk management process, strengthening the company's overall risk mitigation capabilities.

Read more about our Risk Management on **Pg. 84 - 99**

Human Resources

Adani Energy Solutions' industry prominence is reinforced by its human resource practices. The Company invests in both formal and informal training, as well as on-the-job learning. It emphasises on promoting employee engagement through initiatives such as creating an enriched workplace, offering challenging job profiles, and facilitating regular dialogues between the employees and the management. This approach has resulted in one of the highest employee retention rates within the industry, enabling the company to cultivate strong internal leadership and strengthen its long-term prospects. As of March 31, 2025, the company employed a consolidated workforce of 1,881 permanent employees.

Read more on our human resource management on **Pg. 198**

Internal Control Systems and their Adequacy

Adani Energy Solutions maintains effective internal control procedures commensurate with its size and operational scope. The Board of Directors bears ultimate responsibility for the internal control systems, ensuring their adequacy, effectiveness, and proper implementation. The Company's internal control framework is designed to enhance management efficiency, maintain the accuracy and reliability of the financial and operational information, ensure compliance with all applicable laws and regulations, and safeguard the Company's assets.

This stringent framework aims to proactively identify and effectively manage the diverse range of risks faced by the company, encompassing operational, compliance-related, economic, and financial risks.

Cautionary Statements

The statements made in this section describe the company's objectives, projections, expectations, and estimations, which may be 'forward-looking statements' within the meaning of applicable securities laws and regulations.