POWER SECTOR ANALYSIS

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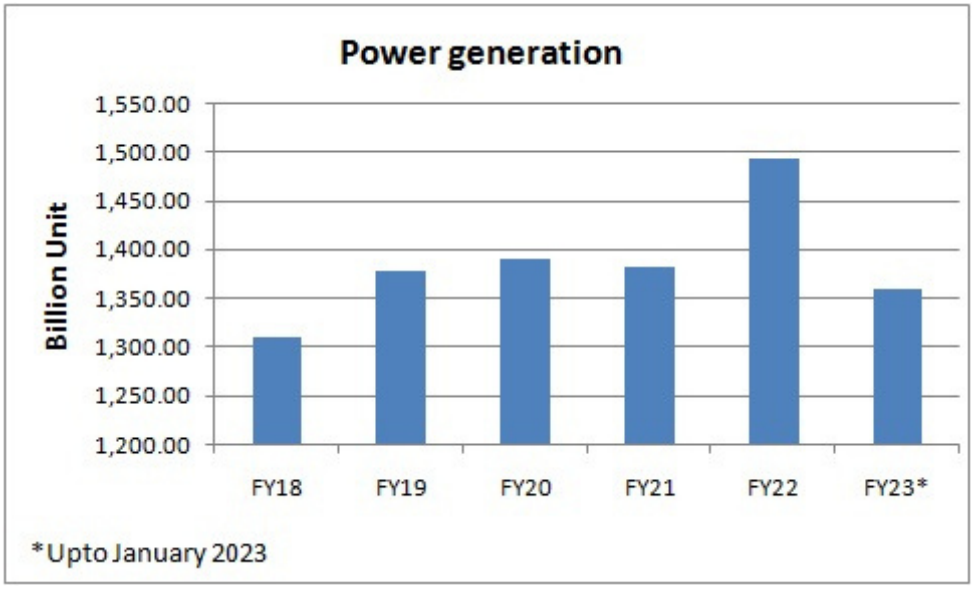
sukhanidhi
INVESTMENT ADVISORS
Equity Research & Advisory Services

India's power sector is one of the most diversified in the world. Sources of power generation range from conventional sources such as coal, lignite, natural gas, oil, hydro and nuclear power to viable non-conventional sources such as wind, solar, and agricultural and domestic waste. India is both a leader in global energy production and consumption, next only to China and the US. India's power system has undergone massive transformation, thanks to significant reforms by the government. These reforms led to the creation of a single national power grid, boosted access to electricity for its citizens and promoted the dynamic growth of renewable energy. In recent times, there has been a visible increase in the deployment of clean renewables and grid-connected distributed generation. Given the expanding demand due to rapid industrialization and urbanization, the Indian power sector presents huge opportunities to global investors.

POWER GENERATION

The overall power generation (Including generation from grid connected renewable sources) in the country has been increased from 1110.46 billion units (BU) during 2014-15 to 1173.60 BU during the year 2015-16, 1241.69 BU during 2016-17, 1308.15 BU during 2017-18, 1376.10 BU during 2018-19, 1389.10 BU during 2019-20, 1381.86 BU during 2020-21 and 1491.86 BU during 2021-22. During April-January 2023, power generation stood at 1,359.22 BU.

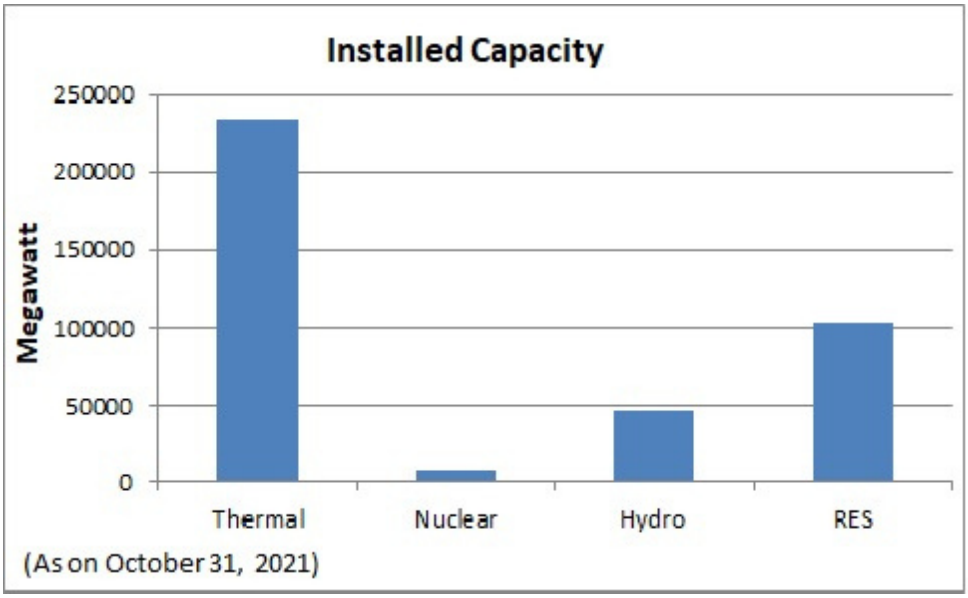
The growth of power generation in India has been more of a mixed bag in the last 10-15 years. During the 2010-19 period power generation witnessed steady growth with a CAGR of 6.2 per cent. However, it registered almost flat growth during FY20 and FY21 due to the covid pandemic. But, the sector bounced back strongly in FY22, with energy generation registering a growth of 8 per cent.



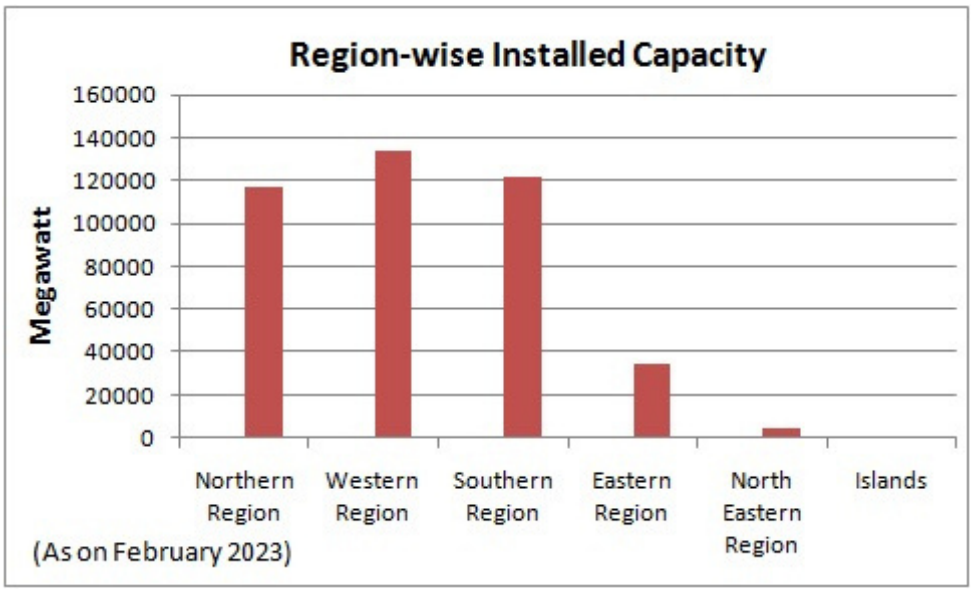
INSTALLED CAPACITY

India's total installed power generation capacity stood at 412212.14 megawatt (MW) as on February 2023. As the country has large reserves of coal, thermal sector contributed maximum towards the total installed capacity. As on February 2023, total thermal installed capacity in the country stood at 236468.91 MW. Besides, Nuclear installed capacity stood at 6780 MW, while the hydro installed capacity was 46850.17 MW. RES (Renewable Energy Sources) installed capacity stood at 122113.06 MW. RES include Small Hydro Project, Biomass Gasifier, Biomass Power, Urban & Industrial Waste Power, Solar and Wind Energy.

The electricity generation target of thermal, hydro, nuclear & Bhutan import for the year 2022-23 was fixed at 1459.37 BU comprising of 1257.38 BU Thermal; 150.66 BU Hydro; 43.324 Nuclear; and 8.00 BU Import from Bhutan.



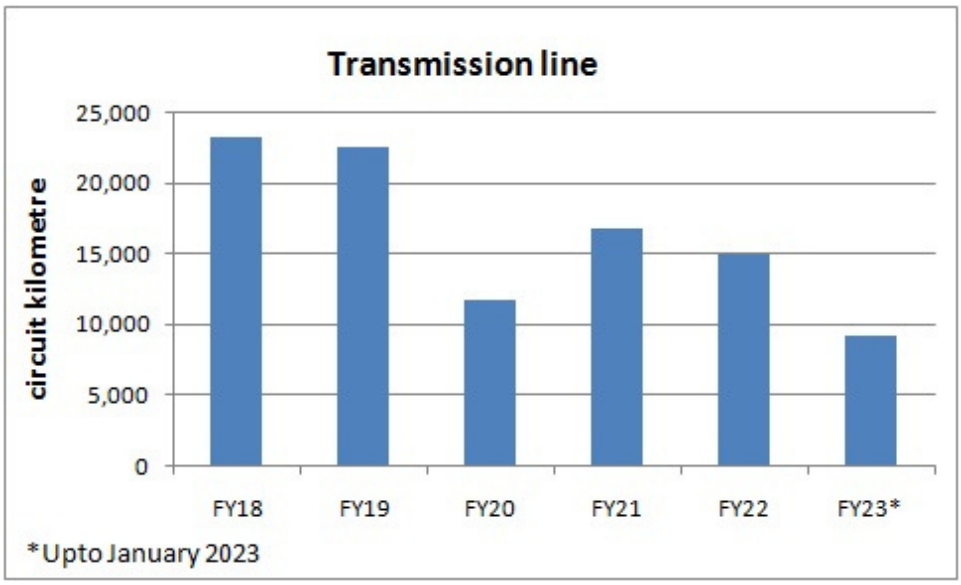
As on February 2023, the maximum generation capacity was added in Western region i.e. 134278.82 MW, followed by 121770.67 MW in Southern region and 116891.50 MW in Northern region, while capacity of 34339.28 MW and 4773.9 MW were added in Eastern and North Eastern regions respectively.



TRANSMISSION LINE

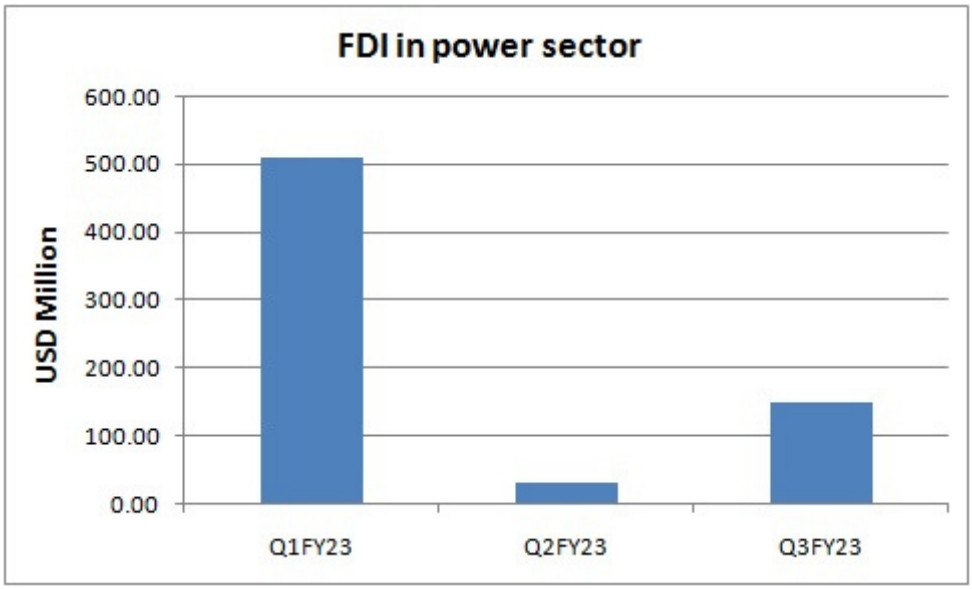
India added 14,895 circuit kilometres (ckm) of transmission lines in FY22, which was 11 per cent lower than the 16,750 ckm added in FY21. In FY22, no HVDC lines were commissioned. As against this, over 3,800 ckm of such lines were installed in FY21, entailing the Raigarh-Pugalur UHVDC line. There was significant addition of 765kV lines in FY22, amounting to 4,933 ckm, as against just 1,237 ckm in FY21. The proportion of 765kV lines in the total quantum of conventional AC lines added in FY22 stood at an impressive 33.1 per cent in FY22 as compared with just 7.4 per cent in FY21.

In FY21, a total of 5,389 ckm of 400kV lines were commissioned. In FY22, this metric fell to 4,068 ckm. However, this drop can also be explained by the growing proportion of 765kV lines. The total addition of 220kV lines (largely a state government prerogative) was 5,894 ckm in FY22 as against 6,305 ckm in FY21 – a fall of 6.5 per cent.



FDI IN SECTOR

100% FDI in the power sector in India is allowed for generation from all sources (except atomic energy), transmission and distribution of electric energy, and Power Trading under the automatic route. During October-December quarter of FY23, the country has attracted $150.80 million FDI in Power sector, showing around five-fold jump as compared to $31.24 million in previous quarter.



GOVERNMENT INITIATIVES:

- **Govt launches Revamped Distribution Sector Scheme:**

The government has launched the Revamped Distribution Sector Scheme (RDSS) with an outlay of Rs 3,03,758 crore and estimated GBS from Central Government of Rs 97,631 crore for the duration of 5 years i.e. from (FY 2021-22 to FY 2025-26). The Scheme aims to reduce the Aggregate Technical & Commercial (AT&C) losses to pan-India levels of 12-15 per cent and Average Cost of Supply (ACS)-Average Revenue Realised (ARR) gap to zero by 2024-25. The Scheme has two major components: Part 'A' – Financial support for Prepaid Smart Metering & System Metering and upgradation of the Distribution Infrastructure and Part 'B' – Training & Capacity Building and other Enabling & Supporting Activities. Financial assistance to DISCOMs is provided for upgradation of the Distribution Infrastructure and for Prepaid Smart Consumer Metering & System Metering based on meeting pre-qualifying criteria and achieving basic minimum benchmark in reforms.

- **Govt signs MoU with DRDO:**

The government has signed a Memorandum of Understanding (MoU) with Defence Research and Development Organization (DRDO), Ministry of Defence for Implementation of Early Warning System for Vulnerable Hydro Projects/Power Stations. The government and DRDO will jointly work towards developing suitable mitigation measures against avalanches, landslides, glaciers, glacial lakes and other geo-hazards. The expertise of DRDO will also be utilized in developing comprehensive Early Warning System for vulnerable hydro projects/ power stations in hilly regions. Separate and specific tasks will be formulated between DRDO & respective project developer(s) in agreement with broad understanding developed through this MoU.

- **Govt launches Green Energy Open Access portal:**

The government has launched the Green Energy Open Access Portal. The portal can be accessed at https://greenopenaccess.in/ for processing of applications related to green energy open access by the stakeholders including open access participants, traders, Power Exchanges, National / Regional / State Load Despatch Centres, Central/State transmission utilities. The portal provides a transparent, simplified, uniform and streamlined procedure for granting open access to green energy that will be key to facilitating deepening of electricity markets and enabling integration of Renewable Energy (RE) resources into the grid.

- **Govt approves construction of 540 Megawatt Kwar Hydro Electric project through Chenab valley Power Projects**

The government has approved the investment of Rs 4526.12 crore for 540 Megawatt (MW) Kwar Hydro Electric Project located on river Chenab, in Kishtwar district of Union Territory of Jammy and Kashmir. The project will be implemented by Chenab Valley Power Projects (CVPPL) a joint venture company between NHPC and JKSPDC with equity contribution of 51 per cent and 49 per cent respectively. The project shall generate 1975.54 million units in a 90 per cent dependable year. The government is extending grant of Rs 69.80 crore towards cost of Enabling Infrastructure and also supporting the Union Territory of Jammu & Kashmir by providing grant of Rs 655.08 crore for Equity contribution of JKSPDC (49 per cent) in CVPPPL. NHPC shall invest its equity (51 per cent) of Rs 681.82 crore from its internal resources. The Kwar Hydro Electric Project shall be commissioned with a span of 54 months. The Power generated from the Project will help in balancing of Grid and will improve the power supply position.

- **Govt approves amendment in Mega Power Policy 2009 for Provisional Mega Power Projects:**

The government has approved the time extension (36 months) to identified 10 Provisional Mega certified projects for furnishing the final Mega Certificates to the Tax authorities. Extension of time period for furnishing final mega certificate will enable developers to competitively bid for future PPAs and get tax exemptions as per Policy terms. The increased liquidity will boost the overall growth of the country and also ensure the revival of various stressed power assets. The time period for the 10 Provisional Mega projects which are commissioned/ partly commissioned for furnishing the final Mega certificates to the Tax authorities has been extended to 156 months instead of 120 months from the date of import. During this extended period, bids for firm power (combination of intermittent renewable energy, storage and conventional power) will be invited in co-ordination with Ministry of New & Renewable Energy (MNRE) and Solar Energy Corporation of India (SECI) and these Mega projects will be expected to participate in such bids to secure PPAs. The government will also develop an alternative in this period, based on present electricity markets while ensuring that benefits are passed onto consumers in a competitive manner.

- **Govt notifies Green Hydrogen/ Green Ammonia Policy:**

The government has launched the National Hydrogen Mission on India's 75th Independence Day (i.e. August 15, 2021). The Mission aims to aid the government in meeting its climate targets and making India a green hydrogen hub. This will help in meeting the target of production of 5 million tonnes of Green hydrogen by 2030 and the related development of renewable energy capacity. Hydrogen and Ammonia are envisaged to be the future fuels to replace fossil fuels. Production of these fuels by using power from renewable energy, termed as green hydrogen and green ammonia, is one of the major requirements towards environmentally sustainable energy security of the nation. The government is taking various measures to facilitate the transition from fossil fuel / fossil fuel based feed stocks to green hydrogen / green ammonia. The implementation of this Policy will provide clean fuel to the common people of the country. This will reduce dependence on fossil fuel and also reduce crude oil imports.

- **Govt issues revised consolidated Guidelines and Standards for EV charging infrastructure:**

The government has issued the revised consolidated Guidelines and Standards for Electric Vehicle (EV) charging infrastructure on January 14, 2022. The government has undertaken multiple initiatives to promote the manufacturing and adoption of electric vehicles in the country. With the considerable expansion in the public EV charging infrastructure, the electric vehicles have started penetrating the Indian market. The government has made 360-degree efforts to enhance public charging infrastructure by involving private and public agencies (BEE, EESL, PGCIL, NTPC, etc.). Many private organisations have also come forward to install EV charging stations to develop convenient charging network grid to gain consumers' confidence. The government has planned that charging stations should be in an area of 3×3 km grid. Currently, India has a total of 1640 operational public EV chargers.

- **Govt dedicates Automatic Generation Control to the nation:**

The government has dedicated Automatic Generation Control (AGC) to the nation. This is expected to facilitate achieving the government's ambitious target of 500 GW non-fossil fuel-based generation capacity by 2030. The AGC is being operated by Power System Operation Corporation (POSOCO) through National Load Despatch Centre (NLDC). Through AGC, NLDC sends signals to more than 50 power plants in the country every 4 seconds to maintain the frequency and reliability of the Indian Power System. This will ensure more efficient and automatic frequency control for handling variable and intermittent renewable generation.

Outlook

Indian power sector is likely to remain optimistic in coming time, as government policies and support for electricity generation and the increase in investments for electricity transmission will drive the power market. The Electricity Amendment Bill, 2020 if passed, will allow for new market entrants, favoring private sector players, and increasing scope of green energy. The government is keen to reform the Indian power sector by increasing privatization, inviting technology transfers through greater foreign investment, and reducing the extent of distribution and transmission losses. India is poised to add 27,000 ckm of inter-state power transmission networks by 2024 as it has already added 6,500 ckm or almost one-fourth of the target. The power transmission network expansion has been planned keeping in mind the ultimate goal of having 500 GW of non-fossil fuel based electricity generation capacity in the county.

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