



Diversification on the Cards for State-Owned Enterprises

State-Owned Enterprises Going Green for Growth and to Stay Relevant

The Indian Central Government is leading the country in the adoption of clean renewable energy, driving the uptake and the building of new capacity by state-owned enterprise (SOEs), through learning by doing.

The ambition is clear. The country had already installed 83 gigawatts (GW) of renewable energy capacity as of October 2019,¹ an 80% increase in less than three years. India has also put forward a target of 175GW of variable renewable energy by 2022 to 450GW by 2030, in a bid to clean up the air in its cities and lessen the economy's rapidly growing dependence on imported fossil fuels.

Currently, thermal power plant developers in India are under huge pressure. Existing plants are being underutilised, with the plant load factor (PLF) sitting below 60% over the past two years. Further stress is being caused by excessive financial leverage, fuel supply disruptions, issues in securing competitively priced power purchase agreements (PPAs), and payment delays, which all together ensures debt servicing is extremely difficult.

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In contrast, falling renewable energy prices have led to a recent increase in privately funded renewable projects. The favourable addition of priority grid access, exemption from transmission charges, and increased renewable targets, have further boosted this optimistic sector.

Transitioning of Energy Investment in India

Energy investment by SOEs in India – also called public sector undertaking (PSU) or public sector enterprise (PSE) – has so far largely focused on fossil fuel production. However, the tide is changing, and these government-owned entities are increasingly pivoting towards renewable energy investment to diversify their portfolios, lower their costs of production, and minimise their offtake risk.

Investing in renewables by public and private sector banks has been gathering pace in India. Renewable energy investment topped fossil fuel-based power generation investment for the first time in 2017, totalling around US\$20bn according to the

¹ CEA. [Installed Capacity](#). October 2019.

latest International Energy Agency (IEA) report.² And a recent Centre for Financial Accountability report reveals that of an analysis of 54 energy projects, comprising both coal-fired power stations and renewable energy projects that reached financial close in 2018, 80% of the total lending of Rs30,534 crore (US\$4.25bn³) was attributed to renewable energy projects.⁴ Coal-fired power projects received a meagre 20% of total lending, with primary finance to coal-fired power shrinking by 93% compared to the 2017 value.

Whereas most coal-fired project loans came from majority government and government-owned financial institutions in 2018 – such as SOEs, majority privately-owned commercial banks contributed 75% of all finance towards renewable energy projects.

IEEFA notes SOEs have a role to play in boosting investment in the renewable energy sector while ensuring they remain relevant in an unstoppable technology driven energy transition already well underway.

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Government Giving Support to SOEs to Encourage SOEs to Prioritise Green Projects

In October 2019, the Ministry of New and Renewable Energy (MNRE) asked all SOEs to prioritise renewable projects in their investment plans as part of larger efforts to reduce carbon emissions. The government directed SOEs to either set up their own capacity, or participate in tariff-based bids for renewable energy projects floated by the Solar Energy Corporation of India (SECI). To promote the ‘Make in India’ campaign, the SOEs were also requested to set up manufacturing units or to procure locally manufactured solar photovoltaic (PV) cells/modules.⁵

To address risks in land acquisition and power transmission issues, SOEs are required to acquire more than two lakh hectares of land through fully-owned special purpose vehicles (SPVs) – a subsidiary created by a parent company to isolate financial risk, in order to set up 47GW of green power projects, with PowerGrid tasked with setting up transmission infrastructure for these locations.⁶ Further, state governments are being incentivised with payments of Rs0.02/kWh for

² IEA. [World Energy Investment 2019](#).

³ For conversion 1 USD is equal to 71.69 Indian rupees.

⁴ CFA. [Coal vs Renewables Financial Analysis](#). August 2019.

⁵ ET EnergyWorld. [Give priority to green projects: Renewable Ministry to CPSEs](#). October 8, 2019.

⁶ The Times of India. [Power PSUs to acquire over 2 lakh hectares for solar parks](#). November 20, 2019.

electricity generated from the projects over their lifetime, to facilitate the requisite clearances.⁷

The SOE strategy builds on previous initiatives. In 2017, to encourage SOEs to install renewable energy, the government established a scheme for 1000MW of grid-connected PV projects to be funded by central public sector undertakings (CPSU). Under this scheme, viability gap funding (VGF) was provided through SECI at a fixed rate of Rs1 crore/MW (US\$0.14m/MW) for projects where domestically produced cells and modules were used, and Rs50 lakh/MW (US\$0.07m/MW) in cases where domestically produced modules were used.⁸

In March 2019 the government announced the second phase of this initiative: the setting up of 12GW of grid-connected PV projects over a period of four years from financial year (FY) 2019/20 to 2022/23, with a VGF of Rs8,580 crore (US\$1.2bn). Energy generated has to be used by government organisations, either directly or through power distribution companies (DISCOMs).

In August 2019, SECI floated a tender to set up 2GW of grid-connected PV projects under tranche I of the scheme, with a maximum fixed tariff of Rs3.50/kWh (US\$0.049/kWh). NTPC emerged as the largest winner with 769MW of capacity with a VGF of Rs70 lakhs (US\$0.09m).⁹ NTPC also launched a 1GW tender under this scheme.

Diversification of Public State-Owned Entities

In the last few years, many fossil fuel dominated SOEs have begun diversifying and venturing into the clean energy space, including grid-connected renewable energy projects and behind-the-meter solar rooftop.

The diversification is not only being undertaken by energy producers but also equipment suppliers and end users. And due to the increasing pressure by government for companies to take responsibility for reducing climate risk, many are committing to also becoming carbon neutral.

**SOEs have begun diversifying
and venturing into
the clean energy space.**

Previously coal-dominated SOEs are now building renewable energy portfolios in order to remain relevant, as renewable energy is becoming increasingly competitive, and to meet government policy priorities addressing climate change, energy security, sustainability, air pollution, and water scarcity.

⁷ Live Mint. [Govt to give renewables their moment in the sun](#). September 11, 2019.

⁸ PIB. [MNRE. Schemes launched by the Government to promote Solar Energy in the country](#). December 28, 2017.

⁹ Mercom India. [SECI's Auction for 922.4 MW Out of its 2 GW CPSU Solar Tender Sees NTPC as the Biggest Winner](#). September 26, 2019.

Coal India (CIL)

In light of the Paris Agreement and consequent changes in the world energy scenario, Coal India (CIL) is diversifying its operations towards lower cost domestic renewable energy sources.

CIL has announced plans to set up 20GW of solar capacity over the next ten years, entailing investment of Rs100,000 crore (US\$14bn).¹⁰ It is also investing in other energy sources like coal bed methane (CBM) and the more problematic underground coal gasification (UCG). CIL will continue to remain a dominant energy player in India.

NTPC Limited

NTPC is diversifying its portfolio and adding more renewable energy to remain profitable.

NTPC is an integrated power major with a variety of fuel sources and a growing presence across the power value chain. It has a target to become a 130GW company by 2032 with a diversified fuel mix and a 600 billion units (BU) company in terms of generation. Coal will continue as the predominant fuel, but will be progressively reduced to a 65% share of total portfolio capacity (70% including 'natural' gas). Non-fossil fuel based capacity will achieve a 30% share.¹¹

The company aims to invest Rs25,000 crore (US\$3.5bn) to set up the world's largest proposed solar park at Kutch in Gujarat.¹² The solar park will be developed in phases over the next five years with an end target of 5GW. NTPC also plans to bundle generation of power from renewable energy sources with coal-based generation, and shut coal-based plants during the day when solar energy is available.

NTPC participated in the CPSU Scheme Phase II and issued a tender for 1GW of solar projects in June 2019. The end user of the power generated from these projects will be CPSUs, state PSUs, government entities either directly controlled by the central or state government or under the administrative control of the state or the central government, or a company in which the government has a controlling shareholding.¹³

NHPC Limited

NHPC is a government-owned hydropower generator with a 50MW solar project in operation in Tamil Nadu, a 50MW operational wind power project in Jaisalmer, Rajasthan and 1,096 kWp of rooftop solar power plants installed at various NHPC

¹⁰ Financial Chronicle. [CIL sees future prospects in renewable energy](#). March, 2018.

¹¹ NTPC. [Diversified Growth](#).

¹² ET EnergyWorld. [NTPC to invest Rs 25,000 crore to set up solar park](#). September 19, 2019.

¹³ Mercom India. [NTPC Issues Tender Inviting Government Entities to Procure Power from 1 GW of Solar Projects](#). June 6, 2019.

projects/power stations.¹⁴

In 2015, the company signed a memorandum of understanding with SECI to set up 250MW of solar projects across the country. In April 2019, NHPC issued an engineering procurement and construction (EPC) contract for developing 40MW of grid-connected solar power at Ladeihil village in the Ganjam district of Odisha.¹⁵

In September 2019, the company issued a tender inviting bids for entering into a PPA for 25 years for 2GW of solar power. The company has set a tariff ceiling of Rs2.95/kWh (US\$0.04/kWh) and a PLF of at least 19% for developers.¹⁶

NLC India

NLC India has set up total renewable energy capacity exceeding 1GW, including 1GW of solar capacity and 51MW of wind capacity.¹⁷ The company plans to increase its installed solar capacity to 4GW by 2022.¹⁸

In the first quarter of FY2019/20, NLC India sold 265 million units of solar power, resulting in revenue of Rs. 88.6 crore (US\$12.4m) and profit before tax (PBT) of Rs24.6 crore (US\$3.4m). For its wind power projects, the company sold 26.0 million units, resulting in revenue of Rs10.4 crore (US\$1.4m) and PBT of Rs5.0 crore (US\$0.7m).¹⁹

Bharat Heavy Electricals Limited (BHEL)

Bharat Heavy Electricals Limited (BHEL) diversified its engineering portfolio by venturing into new areas like solar power and electric vehicle charging in FY2018/19. As a result, the company registered a significant ~30% increase in profits, with PBT increasing to Rs. 2,058 crore (US\$0.28bn) in FY2018/19 from Rs1,585 crore (US\$0.22bn) in FY2017/18.²⁰

GAIL India Ltd

GAIL India has installed India's second largest rooftop solar power plant with a 5.76MWp capacity at its petrochemical complex at Pata in Uttar Pradesh. The plant is targeted to generate over 79 lakh kWh of electricity at 15% PLF for captive use of India's largest gas-based petrochemicals plant. The captive power plant will help GAIL reduce carbon emissions by 6,300 tonnes per annum.²¹

¹⁴ NHPC Limited. [New Initiatives – Renewable Energy](#).

¹⁵ Mercom India. [NHPC Invites EPC Contractors to Construct a 40 MW Solar Project in Odisha](#). May 21, 2019.

¹⁶ Mercom India. [NHPC Issues Tender for 2,000 MW of Solar Projects with a Tariff Ceiling of ₹2.95/kWh](#). September 4, 2019.

¹⁷ NLC India Ltd. [About Company](#).

¹⁸ PV Magazine. [NLC commissions 100 MW solar plant in Tamil Nadu](#). August 8, 2019.

¹⁹ Business Line. [NLC India's renewable power capacity exceeds 1 GW](#). September 11, 2019.

²⁰ ET EnergyWorld. [BHEL plans to increase biz in non-coal sector](#). May 28, 2019.

²¹ ET EnergyWorld. [GAIL commissions India's second largest rooftop solar plant in UP](#). January 1, 2018.

Indian Oil Corporation (IOC)

India Oil Corporation (IOC) plans to diversify its business verticals in clean energy projects like solar, wind, biomass and solar panels at its filling stations. The company plans to make significant investments to the tune of Rs25,000 crore (US\$3.5bn).

The company has already installed solar capacity of 14.2MW during FY2017/18 and the installation of another 13MW is in progress. It owns more than 14,000 solar panel operated fuel stations with a cumulative installed capacity of 77MW. Further, the company recently tendered a 3MW ground-mounted solar PV project to be constructed at Indian Oil Kadapa Bottling Plant's premises located in the state of Andhra Pradesh.²²

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IOC is preparing for further technology disruption in the energy industry, aiming to invest Rs200,000 crore (US\$28bn) in the next few years to develop future-ready corporations that provide comprehensive energy solutions.

Indian Railways

Indian Railways is expanding its usage of renewable energy with the aim of becoming carbon neutral by 2030. Currently, it has 26MW of wind projects at Jaisalmer, Rajasthan, 10.5MW at Tirunelveli (Tamil Nadu), and 3MW of solar capacity on Indian Railway's unused lands. Another 50MW of wind and solar capacity is under implementation in Maharashtra and Madhya Pradesh respectively.

Indian Railways aims to harness 500MW of land-based solar power and 200MW of wind energy for traction. In the past few months, Indian Railways has invited various bids for 2MW of solar projects along the Delhi-Ambala railway track; 60MW of rooftop solar PV capacity to be set up on the rooftops of offices, buildings, and railway establishments across the zonal railways in India; and 4.7MW of rooftop installations by Northern Railways etc. Indian Railways and RITES Limited, have also invited bids to set up 140MW of wind-solar hybrid projects.²³

Delhi Metro Rail Corporation (DMRC)

Delhi Metro Rail Corporation (DMRC) has installed 28MW of rooftop solar at its premises to meet auxiliary requirements such as lighting and air conditioning of stations and depots. In April 2019, DMRC started receiving 27MW of solar power from the Madhya Pradesh-based Rewa solar power project for the operation of its

²² Mercom India. [Indian Oil Corporation Plans to Invest ₹250 Billion in Renewable Energy Projects](#). August 22, 2019.

²³ Mercom India. [Indian Railways Ramps Up its Efforts to Utilize Solar Power](#). June 28, 2019.

trains.²⁴ This will result in huge cost savings for DMRC as it is currently buying power at Rs7/kWh (US\$0.09/kWh), double the cost of solar power from the Rewa project of Rs3.67/kWh (US\$0.05/kWh), including the transmission charges.²⁵

Way Forward

The Government of India is targeting installation of 175GW of renewable energy capacity by 2022, implying addition of 30GW of renewables projects per year. To help achieve this, the government is increasingly pushing SOEs to prioritise green growth by putting more investment into renewable energy projects. IEEFA notes this would help the nation achieve its climate goals and other social and economic goals. The government is also providing support to SOEs in the form of VGPs, the creation of SPVs to address land acquisition and transmission risk, and through incentivising discoms to absorb more renewable energy.

In the last 12-18 months, the Indian renewable energy sector has witnessed a setback on account of confusion surrounding the newly introduced Goods & Service Tax (GST), and the chaotic introduction of an import duty on solar equipment. The offtake of renewable energy power requires grid strengthening, and the creation of demand through open-access platforms in the situation when discoms are violating the PPAs. Further, non-payment by discoms is adding to the woes of renewable energy developers. As per the CEA's September 2019 report, discoms owe Rs9736 crores (US\$1.3bn) to renewable energy developers.²⁶

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In order to revive the renewable energy sector and attract further investment, policy certainty and strict enforcement of and compliance with PPAs is required to rebuild investor confidence. A robust payment security system must be built requiring adequacy and validity of Letter of Credit (LC) to cover the payments due on account of drawl of power. There is also the need for grid strengthening, improved interstate transmission capacity, and ideally a stronger price signal to incentivize peaking power supply to reward fast ramping and on-demand peak supply.

India also needs additional storage and demand side measures to supplement the

²⁴ The Economic Times. [Delhi Metro trains to now run on solar power too; DMRC gets 27 MW power from Rewa project](#). April 18, 2019.

²⁵ India TV. [Delhi Metro to get green power from MP-based Rewa solar plant in two months](#). July 15, 2018.

²⁶ CEA. Renewable Project Monitoring Division. [Report on Payment dues of RE Generators up to 31.07.2019](#). September 2, 2019.

increasing share of low cost but variable renewable energy into the grid. India will then be able to address the growing issue of air pollution and the associated adverse impacts on health, while providing a clean and reliable supply of energy to avoid climate disaster.

About IEEFA

The Institute for Energy Economics and Financial Analysis conducts research and analyses on financial and economic issues related to energy and the environment. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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