



Assessing Decarbonisation Pathways of India's Power Sector Giants

Transition to Clean Energy Companies Requires More Ambitious Targets to Improve Credibility with ESG Investors

Executive Summary

Indian power sector giants NTPC and Tata Power require massive capital to fund their transformations into clean energy companies. New avenues of fundraising in foreign capital markets, such as sustainability-linked bonds and loans, are available to support companies transitioning to low-carbon business models. However, to unlock this transition finance NTPC and Tata Power will need to establish formal, outcome-based sustainability-linked finance frameworks that align with globally accepted science-based emissions reduction targets to limit global warming to 1.5°C. Under science-based net zero targets, NTPC would need to accelerate decommissioning of coal mines and existing coal-fired power plants and stop building new ones, while Tata Power would need to accelerate decommissioning of its coal-fired power plants prior to their contractual obligations and also disclose and outline plans to exit its investments in Indonesian coal mines.

India's Prime Minister Narendra Modi made a much-awaited announcement at the 2021 United Nations Climate Change Conference, commonly referred to as COP26, in Glasgow – the country will reach net-zero emissions by 2070. The commitment went much further than those at COP21 in 2015. India, the third-largest energy consumer globally, has to cut fossil fuel use for the world to truly begin a low-carbon future. As a result, despite some criticism, Modi's announcement is considered one of the most important outcomes of COP26.

Modi also announced an ambitious Rs100 trillion (US\$1.35 trillion) national infrastructure plan in his 2021 Independence Day speech.¹ The plan aims to make India energy independent by 2047 by cutting reliance on imported fossil fuels and expanding the use of cleaner fuels.

The problem, however, is that the transition to a net-zero economy requires US\$10.1 trillion.² Of this amount, decarbonisation of the energy sector requires US\$8.4 trillion, or 83% of the total investment, according to the think tank Council on Energy, Environment and Water (CEEW).³ The study finds that India will face an investment gap of US\$3.5 trillion and needs US\$1.4 trillion of support until 2070 to

¹ Mint. Independence Day: [PM Modi announces ₹100 trillion PM Gati Shakti Plan](#). 15 August 2021

² A research report from UBS estimates that India would need [US\\$20 trillion to achieve Net Zero by 2070](#)

³ CEEW. [Investment Sizing India's 2070 Net-Zero Target](#). November 2021

mobilise the capital necessary to bridge the gap. Hence, India needs foreign private capital to decarbonise its energy sector to achieve energy independence.

The power sector is a low-hanging sector to decarbonise as there are many proven technologically and commercially viable solutions. In addition, new financing instruments, such as green and sustainability-linked bonds and loans, are available to support companies that are genuinely transitioning to a low-carbon business model. The challenge, however, is that heightened transparency and greenwashing risks have led many foreign investors to scrutinize corporate transition plans and the actions against pledges of green or sustainability-linked debt issuers. Some have shunned issuances and issuers, in some cases, that do not meet their standards.

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Fossil fuels dominate India's power sector with ~60% of the total capacity mix.⁴ While it may seem challenging for Indian power companies to prove their seriousness in decarbonising, it is not impossible. The nation can achieve its goals of clean energy installation and energy independence if India's fossil fuel majors, such as NTPC and Tata Power, take credible steps to become clean energy companies.

To do so, NTPC and Tata Power need to explain how they plan to adapt their business models to transition to a low-carbon future, establish ambitious targets and illustrate how they will finance such plans. While both companies have published plans to decarbonise, they appear less ambitious than their global peers. Further, the targets in the plans seem not as credible as their international counterparts. The two Indian companies also need a clear outcome-based financing framework to quash any doubts about implementing their strategy.

This report compares the current decarbonisation strategies and targets of NTPC and Tata Power against those of their global peer Enel. The Italian energy company has raised billions of dollars to finance its decarbonisation by aligning its energy transition targets with its financing strategy. We identify the gaps, strengths and weaknesses of each company's plan. We find that neither NTPC's nor Tata Power's current greenhouse gas (GHG) emissions reduction targets align with science-based net-zero targets. NTPC's plan to reduce its GHG emissions intensity by only 3% by 2022 and 17% by 2032 is nowhere close to Enel's short-term emissions reduction target of 64% by 2023 and 80% by 2030.

Similarly, Tata Power's emissions reduction target of 12% and 20% by 2026 and 2030, respectively, are well below the science-based emissions reduction target. On the other hand, the clean energy deployment targets of both companies are

⁴ Ministry of Power. [Power Sector at a Glance All India](#). 31 Mar 2022

ambitious, but there is no investment plan to achieve the massive renewable energy deployment targets. We recommend that both companies should establish their formal sustainability-linked finance (SLF, see **Appendix 1. SLFs: A Practice to Link Transition Targets with Finance**) framework as done by Enel and many other global peers. The SLF should have science-based GHG emissions reduction targets and financing strategies aligned with these targets. A credible SLF can help the companies to unlock new avenues of capital by raising green or sustainability-linked debt instruments (see **Appendix 2. Sustainability-Linked Bonds:**).

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Building Credibility in the Sustainable Finance Market

Investors are increasingly concerned about the looming physical and climate transition risks on asset pricing.⁵ When engagement with companies fails, investors and financial institutions exit the financing of emissions-heavy companies.^{6,7} This phenomenon was initially thought to be confined to developed markets but is slowly transpiring in large developing markets such as India. For instance, Federal Bank Limited, India's seventh-largest commercial bank, announced that it would discontinue financing of any new coal-related projects.⁸ The International Finance Corporation's (IFC) purchase of a 4.99% stake in Federal Bank for US\$126 million in July 2021 influenced the latter's decision. This is because IFC's investment is conditional on the bank's pledge to exit financing of coal-related activities. Similarly, State Bank of India has held off disbursing a US\$1 billion loan to the Carmichael coal mine in Australia owned by Adani Enterprises Ltd because of significant pressure from investors, such as BlackRock and Norway's Storebrand, and divestment of green bond holding by Amundi.⁹

In a recent public consultation paper,¹⁰ the Reserve Bank of India (RBI) recommended that Indian financial institutions voluntarily mitigate the potential climate risk in their portfolios, requiring its clients in the emissions-intensive industries to set a sustainable energy transition strategy. Furthermore, RBI recommended that Indian financial institutions start factoring in climate risk while investing or lending to energy transition vulnerable sectors in India.

NTPC and Tata Power may meet their capital requirements through traditional financing. However, if the RBI recommendations are implemented, the financing costs of these companies are likely to rise. Further, given global investors' increasing concern over climate risk, it would serve both companies well in the long term to build credibility in the sustainable finance realm of foreign capital markets to access the new pool of funds.¹¹

⁵ The Guardian. [ExxonMobil and Chevron suffer shareholder rebellions over climate](#). 26 May 2021

⁶ IEEFA. [Financial institutions are restricting fossil fuel funding](#).

⁷ IEEFA. [Finance is leaving oil and gas](#).

⁸ Mercom India. [Federal Bank to Discontinue Financing New Coal Projects](#). 8 October 2021

⁹ Bloomberg. [Top India Bank Drags Its Feet on Billionaire Adani Coal Loan](#). 9 April 2021

¹⁰ The Reserve Bank of India. [Discussion Paper on Climate Risk and Sustainable Finance](#). 27 July 2022

¹¹ The fundamental difference between sustainable finance and traditional or conventional finance is that the former is expected to create additional positive impact by mitigating environmental or social issues while the latter does not.

In doing so, NTPC and Tata Power would need to explain how they plan to adapt their business models to transition to a low-carbon future, including their investment strategies, establish science-based transition targets, and illustrate how they will finance the plan.¹² Foreign private investors have become seasoned in scrutinising a company's energy transition plan to determine whether it is ambitious and credible enough for investment. Furthermore, taking the required science-based climate action would help both the companies improve their brand reputation globally, enhance resilience to climate regulations, increase investor confidence and successfully access the growing sustainable debt market.

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How NTPC and Tata Power Compare against Global Peer Enel

As India's leading power companies, NTPC and Tata Power are role models for charting successful pathways to transforming their business models and attracting foreign private capital. However, successfully engaging serious green investors would depend on the companies' ambition and transparency of their transition plans.

To assess the decarbonisation commitments of NTPC and Tata Power, we compare them to Enel, Italy's state-owned electricity and gas utility company.¹³ Specifically, we compare two broad metrics or key performance indicators (KPI) of transition from fossil fuel to clean energy business models: greenhouse gas (GHG) emissions reduction and the clean energy deployment pathway. The comparison assesses the strengths and weaknesses or gaps of existing transition plans of the two Indian energy utilities. The assessment also indicates whether the decarbonisation plans of NTPC and Tata Power are robust enough to access the sustainable finance market.

¹² Explained through the company's sustainability-linked finance framework, a document that is increasingly becoming a norm to outline how the corporate's financing plan aligns with the implementation of its business model transformation.

¹³ Note that this does not indicate that Enel is exemplary. We understand that the decarbonisation of a company cannot be directly compared with another as every company is in a different phase of transition. While the Enel's KPIs are still not perfect, and in the absence of any standardised parameters to compare decarbonisation KPIs across peers, Enel was chosen for the comparison analysis due to its energy profile and progress in the energy transition journey.

We chose Enel for the analysis given its success in financing its energy transition through outcome-based sustainability-linked debt instruments.¹⁴ Enel is a pioneer of sustainability-linked financial structures. It has issued the highest number of sustainability-linked debt instruments, totalling more than US\$33 billion.¹⁵ Enel's total outstanding bonds comprise of 40% SLBs, showcasing its reliance on such outcome-based sustainable debt instruments to finance its decarbonisation goal. Enel plans to decarbonise by 2040. Its Sustainability-Linked Finance Framework (SLF) outlines its KPIs to achieve the decarbonisation target.¹⁶ Most importantly, Enel's KPIs are aligned to climate-science-based emissions reduction as approved by the Science Based Target initiative (SBTi).

KPI/Targets Related to GHG Emissions Reduction

A company's GHG emissions data is increasingly becoming critical for capital allocation for setting net-zero alignment mechanisms, regulatory reporting, setting portfolio-level carbon footprint targets and designing sustainable investment instruments. Hence, reducing GHG emissions from business activities is the main KPI for carbon-intensive companies, especially those in the power sector. There are several science-based emissions reduction scenarios required for power sector companies to limit global warming to 1.5°C. The Intergovernmental Panel on Climate Change (IPCC) special report estimates the power sector must reduce its emissions by 70%-92% between 2020 and 2035, approaching zero by 2040 and 2045.¹⁷ In terms of emission intensity (gCO₂eq /kWh¹⁸), the reduction needs to be 85% between 2020 and 2035 based on the MESSAGE-GLOBIOM Low Energy Demand scenario. As per SBTi, the minimum threshold for a power sector company to align with 1.5°C is approaching zero emissions by 2040.

Table 1 summarises the emissions reduction targets of Enel, NTPC and Tata Power in the short, medium and long term. Emission intensity (gCO₂eq /kWh) forms the basis of Enel and NTPC's targets, while Tata Power's goals are in terms of absolute emissions reduction.

¹⁴ Anthropocene Fixed Income Institute. [Enel – A case study in transition finance using SLBs](#). 25 July 2022

¹⁵ Capital Monitor. [Why Enel's record-breaking sustainability-linked bond matters](#). 29 June 2021

¹⁶ Enel. [Sustainability-Linked Finance Framework](#). January 2022

¹⁷ Science Based Target Initiative. [Setting 1.5°C-Aligned science-based targets: Quick start guide for electric utilities](#). June 2020

¹⁸ Grams of carbon dioxide equivalent per kilowatt-hour of electricity generated

Table 1: Emissions Reduction KPIs of Enel, NTPC and Tata Power

	Enel	NTPC	Tata Power
Baseline year	2017	2012	Not available
Short-term targets	64% reduction of direct GHG emissions per kWh by 2023, equivalent to approximately 148 gCO ₂ eq/kWh, compared with the baseline year.	3% reduction in CO ₂ emission intensity (gCO ₂ eq /kWh) from the baseline year, reaching 837 gCO ₂ eq /kWh by 2022.	12% reduction in absolute CO ₂ emissions by 2026.
Medium-term targets	80% reduction of direct GHG emissions per kWh by 2030, equivalent to around 82 gCO ₂ eq/kWh, compared with the baseline year.	17% reduction in CO ₂ emission intensity (gCO ₂ eq /kWh) from the baseline year, reaching 714 gCO ₂ eq /kWh by 2032.	20% reduction in absolute CO ₂ emissions by 2030.
Long-term targets	100% reduction of direct GHG emissions per kWh by 2040, equivalent to 0 gCO ₂ eq/kWh.	Not available	35% reduction in CO ₂ emissions by 2040 and carbon neutrality by 2045 or earlier.

Source: Sustainability-Linked Finance Framework of Enel, ESG reports of NTPC and Tata Power

We assess the relative strength of KPIs of the three companies based on their alignment with the science-based targets, historical emissions reduction trends, and current plans to reduce emissions.

Alignment with science-based emissions reduction targets: NTPC's and Tata Power's emissions reduction targets do not align with the MESSAGE-GLOBIOM Low Energy Demand scenario. These reduction targets also do not align with the SBTi's minimum threshold. Both companies' current reduction targets are well below the required science-based targets.

Enel is the only one of the three companies considered in the report whose emissions reduction target for Scope 1 is certified by the SBTi. This makes it compliant with well below 1.5°C scenario.¹⁹ Tata Power has also committed to aligning its emissions reduction targets with the SBTi's target-setting criteria within 24 months.²⁰ On the other hand, NTPC has not announced any such commitments to align its emissions reduction targets with science-based targets.

¹⁹ Science Based Target Initiative. [Companies Taking Action](#)

²⁰ Tata Power. [Tata Power set to reduce emissions in alignment with Science Based Targets initiative \(SBTi\)](#). 26 July 2021

Enel's KPI does not include Scope 3 emissions, a major loophole in its emissions reduction targets as Scope 3 represents 49% of its overall GHG emissions.²¹ Similarly, NTPC has also not declared its Scope 2 and 3 emissions reduction targets. Tata Power has committed to reduce Scope 3 emissions from all sold electricity by ~60% in next 15 years.²²

NTPC's targets are the weakest or least ambitious compared to Tata Power and Enel. A mere reduction of 3% by 2022 and 17% by 2032 is well below the aforementioned science-based targets. Similarly, Tata Power's goals of 12% and 20% emissions reduction by 2026 and 2030, respectively, also do not conform to the science-based targets. These emissions reduction targets are not sufficiently ambitious to put the two companies on track to transform into clean energy companies by 2040.

More than 10,000 companies, organisations and subnational governments have committed to achieving net-zero carbon emissions by at least 2050. However, NTPC has neither committed to achieving net-zero nor set any long-term emissions reduction target. Given that most transition finance investors need to know carbon-intensive companies' long-term emissions reduction pathways, NTPC must clearly outline its long-term GHG emissions reduction plan. On the other hand, Tata Power is the first Indian power sector company to commit to net-zero carbon by 2045 or earlier.²³ However, it should try to achieve net-zero status by 2040 to meet the science-based targets.

More than 10,000 companies, organisations and subnational governments have committed to achieving net-zero carbon emissions by at least 2050.

SBTi recommends that the base year to calculate emissions inventories be as recent as possible. This is to ensure subsequent emissions reduction targets can be more robust and meaningful. NTPC's base year is 2012, which is not recent enough as recommended by SBTi. Tata Power has not disclosed its base year to calculate the emissions reduction targets in future. Both these companies need to choose the most recent year as the target base year.

Overall, we suggest that both the Indian companies, especially NTPC, need to establish more stringent emissions reduction targets, including for Scope 2 and 3, to showcase their ambitions to transform into low-carbon companies. Moreover, these targets should align with science-based targets contributing to the goal of 1.5°C, which foreign private investors increasingly demand to ensure that issuers'

²¹ While ENEL has publicly committed to become net zero across all scopes (1, 2 and 3) by 2040, only its Scope 1 targets are certified by SBTi and included in its transition KPIs. It will seek SBTi certification for its Scope 2 and 3 net zero targets in 2022.

²² CDP. Tata Power Climate Change Score. 2021

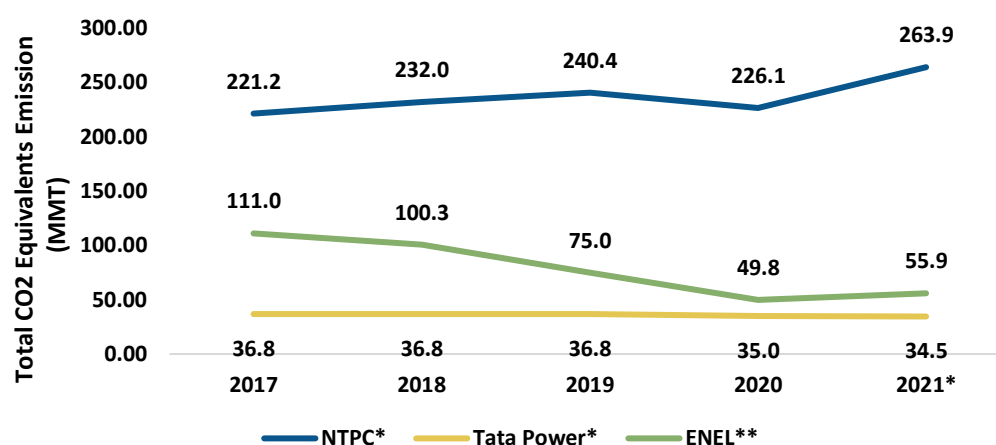
²³ Tata Power. [Integrated Annual Report](#). 2021-22

strategies conform to the Paris Agreement.²⁴ Finally, the baseline year used for emissions reduction targets should be as recent as possible.

Historical performance on emissions reduction: The historical performance of NTPC, Tata Power and Enel shows the steps they took to transition into low-carbon companies. In addition, if a company's KPIs are stronger than its historical performance, it indicates to the investor that the KPIs are not simply incremental but additional enough to create the required positive impact.

Figure 1 shows the total carbon emissions of the three companies in the last five years:

Figure 1: Historical Total CO2 Equivalent Emissions (in Million Tonnes)



*Month reported: March

**Month reported: December

Source: ESG rating data from Refinitiv-EIKON, companies' Annual Integrated Reports and CDP Data

As shown in the figure, NTPC's total carbon emissions have increased consistently in past five years, except in 2020 owing to reduced energy demand during the pandemic. It is not surprising given that NTPC is the largest owner of coal power plants in India. It owns an operational thermal capacity of 48 gigawatts (GW) and an additional 7.8GW through joint ventures or subsidiaries.²⁵ It also owns 6.5GW of gas-based power plants directly or through joint ventures, further adding to its emissions levels.²⁶ Furthermore, NTPC has a significant presence in the coal mining sector. It has been allotted ten coal blocks with a geological capacity of over 7.3 billion tonnes and a production potential of approximately 113 million tonnes per annum.²⁷ While this is strategically beneficial for NTPC's coal-fired operations, it

²⁴ IR Magazine. [Investors urge 1,600 companies to set science-based targets for carbon emissions.](#) 29 September 2021

²⁵ Source: [NTPC – Coal Based Power Stations](#)

²⁶ Source: [NTPC - Gas Based Power Stations](#)

²⁷ NTPC. [Press Release.](#) 10 September 2019

contradicts its plan to become a low-carbon company in the intermediate to long term.

Enel has been at the forefront of reducing its carbon emissions. It has reduced its total emissions by more than 50% by 2020, i.e., within four years from its baseline year, albeit with a slight increase in 2021. Tata Power's emissions have also fallen in the past three years but the reduction rate is nowhere close to meeting the targets recommended by the IPCC or SBTi. Finally, the rate of emissions reductions by Tata Power and NTPC needs to increase significantly to showcase a stronger commitment to transition and send the appropriate signal to global transition finance investors.

Current plans for achieving the emissions reduction targets: NTPC has outlined several plans to decarbonise its energy portfolio. Most importantly, it has decommissioned 1,385 megawatts (MW) of coal-based power plants. Furthermore, it has committed not to add any new coal-fired projects.²⁸ It also has plans to decommission a greater number of older coal-fired power plants by 2032. However, NTPC is constructing around 11.8GW of coal-based power plants, of which 4GW will use ultra-super critical technology, 7.3GW capacity will use super critical technology, and 540MW will use sub-critical technology. While super and ultra-super critical technologies-based power plants are more efficient, the emissions reduction is merely 3.3% compared to sub-critical technologies. These coal-fired plants will not only weaken its low-carbon transition ambition but also add huge capacity with a significant risk of getting stranded in the intermediate to long term. Furthermore, NTPC should note that global environment, social and governance (ESG) investors shy away from investing in anything related to coal.²⁹

While super and ultra-super critical technologies-based power plants are more efficient, the emissions reduction is merely 3.3% compared to sub-critical technologies.

Tata Power has committed to not adding any new coal-based capacity and to completely phasing out its ~9GW of coal-based power capacity by 2045, once the asset life is over or existing power purchase agreements (PPAs) expire. However, Tata Power has significant stakes in coal mines in Indonesia, which provide a hedge against price fluctuation in imported coal prices for the company's existing coal-

²⁸ NTPC. [Leading Energy Transition through ESG Integration](#). January 2022

²⁹ Bloomberg. [Green Bond Seller Investing in Coal Shows ESG Can Be Tricky](#). 26 May 2021

based power plants. It owns 30% of PT Kaltim Prima Coal³⁰ and 26% of PT Baramulti Suksessarana Tbk.³¹ Tata Power does not mention exiting from these coal mines in its decarbonisation plans. We expect that once it completely decommissions its existing coal thermal power fleet, it will sell its stakes in the coal mines. However, it needs to clearly specify its formal plan to exit these coal mines in its decarbonisation strategy.

Enel's transition plan appears more ambitious than Tata Power and NTPC. It has committed to exiting its coal assets by 2027 and gas assets by 2040. Moreover, it is accelerating the closure of its coal power plants in Italy and other parts of the world. Enel decommissioned around 1.9GW of coal-fired power plants in Italy by 2021³² and is in the process of closing all other such plants around the world.³³ Compared to Tata Power, Enel is retiring many of its coal-based power assets well before their useful life. One of the learnings the two Indian fossil fuel-based companies should adopt from their global peer is accelerating the closure of existing coal-based power capacity. Furthermore, both these companies would need to be mindful of voluntary early retirement trends as it is a key consideration for ESG investors when making financing decisions.³⁴

KPIs Related to Clean Energy Deployment

Fossil fuel-based companies have a significant role in combating climate change through the accelerated deployment of renewable energy sources. Hence, replacing carbon-intensive fossil fuel assets with clean energy sources for power generation is the second main KPI of such companies. This KPI aligns with the United Nation's Sustainable Development Goals (SDG) 7, which focuses on affordable and clean energy. Enel has declared ambitious targets to deploy massive clean energy assets. We compare Enel's clean energy deployment targets with those declared by NTPC and Tata Power in their decarbonisation plan. Table 3 provides the details of renewable energy deployment targets of each of these companies:

³⁰ Business Standard. [Tata Power to buy coal worth Rs 12,000 cr from Indonesian miner in FY23](#). 17 June 2022

³¹ Tata Power. [Tata Power acquires 26% stake in large mines at PT Baramulti Suksessarana Tbk \("BSSR"\), Indonesia](#). 8 November 2012

³² Enel. [Enel continues its energy transition with the closure of the La Spezia coal-fired power plant in Italy](#). 2 December 2021

³³ Enel. [Enel disconnected Unit I of coal plant Bocamina three years before date set in Chile's National Decarbonization Plan](#). 4 January 2021

³⁴ Bloomberg. [Billionaire Cannon-Brookes Says AGL Must Quit Coal by Mid-2030s](#). 15 June 2022

Table 2: Clean Energy Development KPIs of Enel, NTPC and Tata Power

	Enel	NTPC	Tata Power
Short-term targets	To have 65% of its total installed capacity from renewables by the end of 2024	Not Available	Not Available
Medium-term targets	To achieve 80% of total installed capacity from renewables by the end of 2030.	To install a renewable energy capacity of 60GW by 2030 from the current installed capacity of 5.1GW.	To have a clean energy proportion of 80% of the total generation mix by 2030, i.e., reaching 25GW by 2030 from the current installed renewable energy capacity of 4GW.
Long-term targets	Fully decarbonise its technology mix by 2040	Not Available	Reach 100% clean energy assets by 2040-2050

Source: Sustainability-Linked Finance Framework of Enel, ESG reports of NTPC and Tata Power

Relative strength of renewable energy installation targets: Enel plans to reach 60GW of renewable energy capacity by 2023 and 129GW, including 9GW of battery storage, by 2030 from 50GW in 2021. This requires an average yearly renewable energy installation of ~7.8GW till 2030. As a result, it will have a 100% decarbonised generation capacity by 2050.

NTPC announced it intends to reach 60GW of renewable energy capacity by 2030 from 5.1GW currently. This requires an average yearly renewable energy capacity addition of 6.1GW till 2030. While these are commendable targets and comparable to Enel, NTPC will still be a primarily fossil fuel-based company in 2030. This is because fossil fuels will fire 55% of its assets in 2030.³⁵

Tata Power's renewable energy installation targets are also admirable. Tata Power plans to increase its renewable energy capacity almost six-fold to 25GW by 2030 from 4GW. This requires Tata Power to add 2.3GW of renewable energy capacity annually till 2030. Furthermore, once it closes all of its coal power plants, it will be a 100% clean energy company in terms of power generation by 2045.

Current plans for achieving the clean energy installation targets: Enel has published a roadmap and corresponding investment plan outlining how the company aims to achieve its clean energy installation targets. Enel plans to invest approximately €45 billion (US\$45.83 billion) into renewable energy and allied infrastructure in 2022-2024 and €170 billion (US\$173 billion) by 2030. It also plans to add battery storage of 9GW for its renewable energy projects by 2030 and

³⁵ NTPC. [Renewable Energy](#)

requires an investment of €5 billion (US\$5.1 billion). Furthermore, Enel plans to add 2GW of green hydrogen capacity by 2030.³⁶

NTPC aims to diversify its current portfolio mix of renewables and coal-based generation to a portfolio of green hydrogen, electric vehicle transportation, waste-to-energy and biomass, power trading, and distribution.³⁷

In addition to its targeted 60GW renewable energy capacity by 2030, NTPC has also announced plans to become one of the largest green hydrogen and green ammonia/methanol producer in Asia. To meet its renewable energy capacity target, it would roughly require Rs237 billion (US\$3.2 billion).³⁸ In October 2020, NTPC incorporated a wholly owned subsidiary, NTPC Renewable Energy Limited, whose sole objective is accelerating the deployment of clean energy projects in India. Furthermore, NTPC is setting up 1,000 charging stations across India, with 141 already installed to achieve India's vision of enhanced e-mobility transportation.

Tata Power is also venturing into several climate change mitigation projects to establish itself as India's premier clean energy company. It plans to develop a portfolio of diverse clean energy technologies, including solar, wind, hybrid, floating solar, offshore wind, battery storage, and hydrogen fuels. In addition, it has established itself as one of the leading developers of electric vehicle charging stations, with over 2,200 charging stations in more than 352 cities in India.³⁹

Tata Power is also venturing into several climate change mitigation projects to establish itself as India's premier clean energy company.

The clean energy deployment plans of both NTPC and Tata Power are noteworthy and need significant capital expenditure. However, none of the Indian companies has laid a formal investment strategy to raise capital to achieve these targets. This is where these companies can draw important learnings from Enel's strategy of tapping massive sustainable finance capital. Enel outlined its plan to finance its new investments in its Sustainability-Linked Finance Framework.⁴⁰ It has used the framework to structure its sustainability-linked debt issuances, which have raised more than US\$30 billion of debt for Enel. It has outlined a capex plan of €170 billion (US\$180 billion),⁴¹ which aligns fully with its 2040 net-zero targets. The two Indian companies should also establish a formal sustainable finance framework given the

³⁶ Enel. [Sustainability-Linked Finance](#)

³⁷ NTPC. [Leading Energy Transition through ESG Integration](#). January 2022

³⁸ IEEFA. [Funding Requirements and Avenues for Three Leading Energy Companies](#). October 2021

³⁹ Tata Power. [Integrated Annual Report](#). 2021-22

⁴⁰ Enel. [Sustainability-Linked Finance Framework](#). January 2022

⁴¹ S&P Global. [Enel targets €170B capex plan, brings net-zero goal forward to 2040](#). 24 November 2021

success of their global peers in raising billions of dollars to finance their transition using such a framework.

Recommendations

Overall, while both NTPC and Tata Power have published plans to decarbonise, they should also create a formal outcome-based financing framework such as SLF to accompany their strategies. The lack of financing frameworks raises questions about whether the plans are implementable. They can do this by establishing a transition finance framework that formalises the structure of their decarbonisation plans, enhances their disclosure practices, and, most importantly, sends a credible signal and guidance to global ESG investors. If done well, any sustainable debt issuance linked to the framework are likely to garner foreign investors' interest.

Additionally, the KPIs selected in the proposed frameworks should be material to the sector, ambitious, transparent and additional enough to create the desired positive impact. The decarbonisation targets should comply with science-based targets, a condition that has become commonplace among serious ESG investors.

We find that there are several gaps in the decarbonisation plans of NTPC and Tata Power, especially related to the emissions reduction targets:

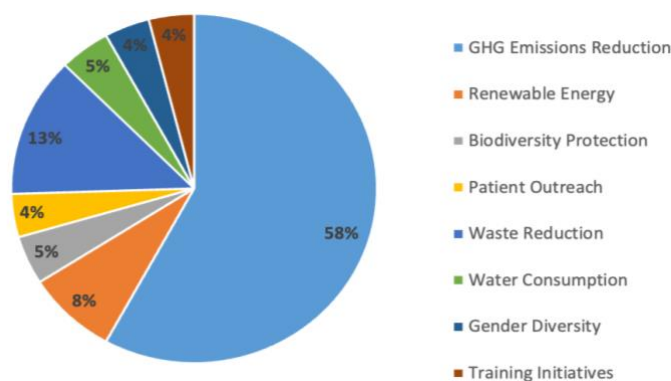
- NTPC's decarbonisation plans are not aligned with the IPCC's proposed emissions reduction pathway or with the SBTi's recommendations to limit the temperature rise below 1.5°C. It should join the UN Race to Zero campaign by committing to achieve net-zero across Scope 1, 2 and 3 emissions by 2040 or earlier, as recommended for power sector companies. To achieve these targets, it will have to accelerate the decommissioning of its existing coal-based power plants, stop constructing new ones, including the ongoing 11.3GW of ultra-super critical and super critical projects, and start getting out of the coal mining business. Furthermore, it should change its current base year of 2012 to a more recent year to set material emissions reduction targets as recommended by SBTi.
- Tata Power's plans also do not appear to be aligned with the IPCC's emissions reduction pathway, especially in the short-to-medium term. It also needs to disclose its current stakes in a few coal mines in Indonesia and associated exit plans, if any. It also needs to explicitly commit to achieving carbon net-zero across Scope 1,2 and 3 emissions by 2040 or earlier. Given the fact that Tata Power has already committed to SBTi targets, we expect that the company will soon revise its emissions reduction targets to get SBTi certification of science-based target alignment.

Appendix 1. SLFs: A Practice to Link Transition Targets with Finance

A Sustainability-Linked Finance (SLF) framework is a detailed document laying out the guidelines the company will follow in issuing new sustainability-linked financing instruments. The objective of the SLF is to guide investors on how the issuer has integrated sustainability into its financing strategy. It highlights the mission of the issuing company and its commitment to integrating the United Nations' Sustainable Development Goals (SDGs) in its financing plans. The SLF mentions an issuer's Key Performance Indicators (KPIs) to measure its SDGs, which are then assessed against the pre-defined Sustainability Performance Targets (SPTs).

An SLF establishes KPIs that should be material to the sector, quantifiable, measurable and how they compare with their peers. For instance, for a company looking to transition to a clean energy company, the KPIs relate to two main SDGs – SDG 7, regarding affordable and clean energy for all, and SDG 13, i.e., climate action. Broadly these KPIs are about reducing greenhouse gas (GHG) emissions and increasing the share of clean energy assets in the short, intermediate and long term. These are the ultimately required outcomes of energy transition. The SLFs of such companies provide a detailed transition plan and corresponding investment strategies.

Figure A1: Share of Key Performance Indicators Among SLBs, 2020-2021



Source: S&P Global Ratings Data as of 9 April 2021

The high GHG emitting sectors, including industrial and fossil-fuel-dependent industries, are at the centre of the economy-wide climate transition. KPIs relating to climate goals, such as GHG emissions reduction and clean energy capacity addition (Figure A1), back around 64% of sustainability-linked bonds (SLBs).⁴² This indicates the evolving role that SLF-backed SLBs play in solving the dilemmas of transition finance. Hence, establishing an SLF framework will also help Indian fossil fuel companies to be ready to access this growing pool of transition finance capital.

⁴² S&P Global. [Sustainability-linked bonds in 'rapid growth' as more firms tap ESG debt market.](#) 23 June 2021

Appendix 2. Sustainability-Linked Bonds: An Outcome-Based Structured Bond

Sustainability-linked Bonds (SLB) are a relatively new entrant in the labelled bond market, especially among companies with set climate transition roadmaps but do not have adequate green capital expenditure to issue a green bond.

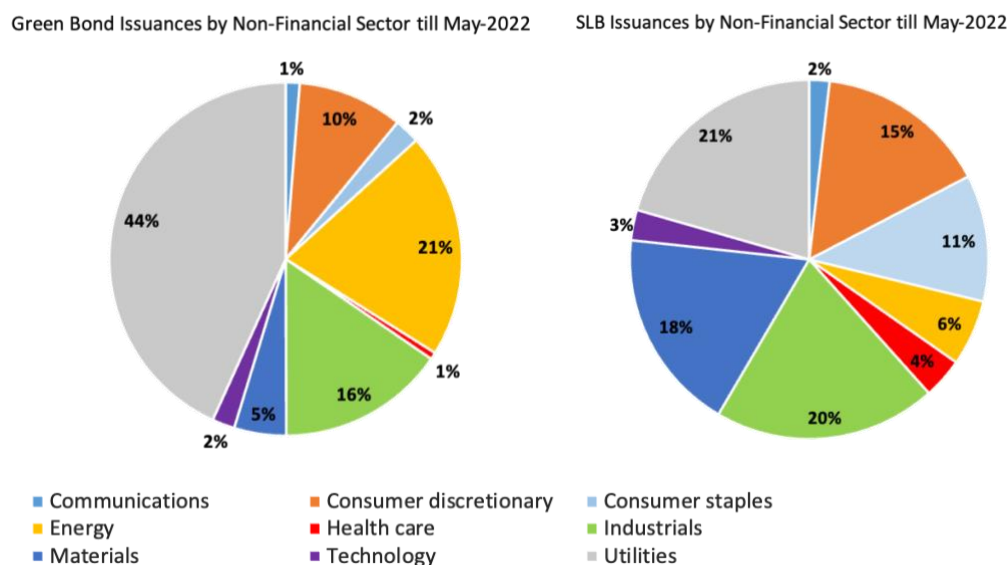
SLBs are performance-based instruments for which the proceeds are not necessarily specified to green projects and can be used for general purposes. Accordingly, issuers structure these bonds around the pre-defined KPIs, which measure their sustainability goals. Investors assess these KPIs against the pre-defined Sustainability Performance Targets (SPTs).⁴³

The KPIs are forward-looking performance indicators that make all SLBs inherently an instrument about transition, whether related to climate change or social infrastructure goals. Thus, these instruments are becoming popular among companies looking to transform into clean energy or low carbon companies by linking their net-zero targets with bond structure.

In contrast to green bonds, a market in which utilities or power generation companies focused on clean energy generation projects dominate, many companies have issued SLBs. As Figure A2 shows, utilities have issued 52% of the total green bonds issued by non-financial companies to date, followed by energy sector companies standing at a distant second with 12% of the total issuances. On the other hand, no one sector dominates SLB issuance. Instead, a diverse and broad set of companies, especially from the hard-to-abate sectors such as industrials and materials, have issued a significant proportion of SLBs to date.

⁴³ International Capital Market Association (ICMA) defines SLBs as any structured bond instruments where certain bond characteristics such as the coupon, maturity, repayment amount can vary based on whether the issuer achieves pre-defined sustainability goals (Sustainability / Environmental and/or Social and/or Governance) objectives within a timeframe, and which are aligned with the five core components on the [Sustainability-Linked Bond Principles \("SLBP"\)](#).

Figure A2: Green Bonds and Sustainability-Linked Bonds Issued by Non-Financial Sector Companies till Date (as of May 2022)



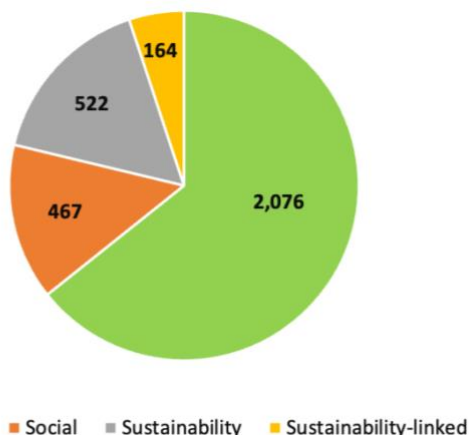
Source: BNEF and IEEFA calculations as of May 2022

Investors focussed on company-level sustainability performance are finding these structured bonds more suitable for their investment. However, the investors are also concerned that SLBs can be a potential source of greenwashing for the issuers, given the difficulty in assessing the credibility of KPIs.

Sustainability-Linked Bond Market

Sustainable financial instruments are new ways to finance clean energy projects and a wider set of sustainability projects. These instruments comprise green, social and sustainability (GSS) bonds and sustainability-linked bonds (SLB). The most dominant and mature of these labelled bonds has been the green bond, which is based on the 'Use of Proceed (UoP)' principle. Green bonds have mobilised investment of around US\$2.1 trillion into green projects, constituting 64% of the overall GSS bond and SLB market (Figure A3) by the end of 2021.

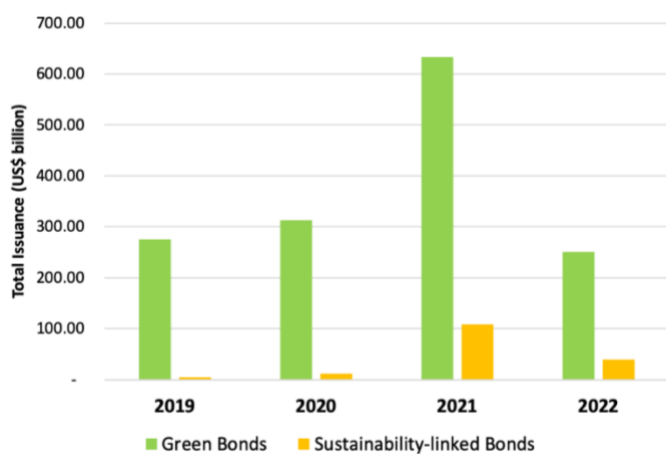
Figure A3: Green, Social, Sustainability and Sustainability-Linked Bonds Issued as of May 2022



Source: BNEF and IEEFA calculations as of May 2022

SLBs have witnessed rapid growth within a very short span since the first SLB, which was issued in 2019 by Enel. Total issuance rose nearly 32x from 2019 to US\$164 billion till May 2022. In 2019, total issuances were US\$5 billion and US\$11.3 billion in 2020.

Figure A4: Green Bond and Sustainability-Linked Bond Issuances, 2019-2022 (US\$ billion) as of May 2022



Source: BNEF and IEEFA calculations as of May 2022

Corporates, sovereigns, and financial companies in European countries have successfully issued nearly 54% of total SLB issuances to date. Italy (US\$32 billion), France (US\$18 billion) and the USA (US\$16 billion) are the top three countries where SLB proceeds have flown. While India has attracted significant capital (US\$18.57 billion) via green bonds, only three Indian companies have issued SLBs, totalling US\$1.2 billion till May 2022.

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The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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