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How have India's RE Policies Impacted its Wind and Solar Projects?

Vaibhav Pratap Singh, Meghna Nair, and Sangeeth Raja

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Executive summary

India's renewable energy (RE) sector is a bright spot in the country's efforts to decarbonise electricity generation—the source of around 40 per cent of India's total national greenhouse gas (GHG) emissions in 2016. India's commitment to growing India's RE capacity is more evident than ever - at the recently concluded COP26, the country committed to meet 50 per cent of its electricity requirements from RE by 2030. Presently, with an installed capacity of over 100 GW in August 2021, the Indian RE sector is already the fourth-largest in the world (Press Information Bureau 2021).

RE sources supply around 10 per cent of the total electricity in the country (Ministry of Power 2021). The major contributors to this capacity are wind and solar, each with over 40 GW of installed capacity as of March 2021. The remainder is sourced from smaller capacities of biomass, small hydro, and other technologies (Ministry of Power 2021).

The five-fold increase in installed RE capacity from 2010 to 2020 amongst other factors, can be attributed to supportive RE policies and the rapid reduction

in technology costs over the period. We covered the significant RE policies over the last decade, including their aims and the risks they intended to address, in an earlier work (Rao and Aggarwal 2021). In the current analysis, we look at how project risks and risk perception for wind and solar have evolved from 2011 to 2020 to understand the impact of policies on the RE sector.

Due to a lack of available data to track policy impact using conventional methods based on variability in equity pricing or options across the policy decisions and implementation timelines, we use proxies – such as credit ratings and tariffs to understand changes in the risk perception of the sector over time. We track the credit ratings of wind and solar projects and map them against significant RE policies on a timeline. Additionally, we track tariffs and their drivers to uncover their impact on wind and solar projects.

The impact of RE policies on the project ratings of 141 solar projects in 2012–2020 is starkly visible. All the solar projects tracked in 2012 had a below investment grade rating, but, by 2020, almost 90 per cent of the new projects had an investment-grade rating, with over 60 per cent of the projects being assigned a rating of A and above[1]. This transition showcases how the sector's risk profile marked by strong policy support, availability of track record of performance, improved capital structure, larger investor groups has transcended to less risky and, subsequently, investment flows have increased[2]. Even with falling tariffs, ratings for new projects continued to show an upward trend. Most of the rating notes cite low counterparty risk due to the involvement of intermediaries like the Solar Energy Corporation of India (SECI), and the long tenure of contracts, as the drivers of this improved risk perception.

> **The solar sector has de-risked enormously on the back of constant policy support, reduced technology costs and track record performances.**

> **The Indian solar sector's journey to sub INR 2 tariff can be mapped to continuously reducing technology and financing costs.**

Of the 101 wind projects tracked since 2010, there was an equal split between projects categorised as investment grade and below investment grade in 2010. This went up to almost 95 per cent of projects being ranked investment grade by 2016, indicating a massive reduction in risk for investors. Further, in 2020, of the 45 projects we tracked, 33 had a rating of A and above. However, despite this improvement in risk perception, it is important to note that from 2017 onwards, deployment of wind projects has been relatively low, indicating a general slowdown in the sector.

We look at the tariff trends of solar and wind projects from 2014 to 2020 to understand the impact of policies and the drivers of the decline in tariffs. Drivers like financing costs and initial investment costs help us understand investors' risk perception rolled under tariffs. We also map sovereign bond yields to segregate macroeconomic factors from project financing costs and see how investors exclusively price project and sectoral risks[3].

The Indian solar sector has achieved remarkable progress in reducing tariffs by over 80 per cent—from above INR 10 per unit in 2014 to sub-INR 2 per unit in 2020. A major contributor to this reduction is the decline in investment costs, which led to a reduction in tariffs in 12 of the 13 half-yearly periods between 2014 and 2020. The other significant driver is financing costs, which contributed to a decline in tariffs in 9 of the 13 half-yearly periods. For wind projects, tariffs have declined by almost 60 per cent between the beginning of 2014 and the end of 2020. The decline in tariffs can be attributed to lower financing costs in 9 of the 13 periods tracked.

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1. Credit ratings are a marker of the ability of the project to meet its debt obligations, as estimated by a rating agency. A higher rating means a greater likelihood of the project's underlying cash flows meeting its obligations, thus implying lower risk of the project defaulting. Primarily ratings can be divided into two domains: investment grade and below investment grade (or junk). Investment grade projects are classified as AAA, AA, A, and BBB, while the below investment grade ratings are BB, B, C and D.
2. We found that for most of the projects (both wind and solar), the initial rating assigned and the subsequent assignments in general differed (if any) only by a few notches. The increase of investment-grade ratings in the later years of 2011 to 2020 gives improved investor and rating agency confidence in solar and wind as an asset class even for new projects that were rated above investment grade and followed trends as showcased.
3. Sovereign bond yield and its changes are a good indicator of liquidity and effective interest rates across an economy. The changes in sovereign bond yields capture the changes in investor perception of the economy. The Aggregate secular movements in sovereign yields subsequently reflect in the monetary policy rate changes affecting the general costs of available finance, both debt and equity in an economy. A sustained increase in yields for a considerable period points to an upcoming increase in interest rates in an economy and a sustained decline in yields points to a decline in rates of interest through changes in monetary policy changes.

> **The introduction of SECI was welcomed by investors and bankers. Improved credit ratings validate the positive impact of the policy.**

Concurrently tracking India's sovereign (52 week) bond yields allows us to segregate financing costs due to project-related risks from macroeconomic changes or sovereign risks. We found a reduction in counterparty risk due to the involvement of the SECI from 2017 onwards; this is reflected in the reduction of tariffs from INR 4.75 per unit to INR 2.86 by 2018 1H. Overall, financing costs induced a reduction in the discovered tariff by 10, 6, and 8 per cent, despite India's sovereign bond yield increasing by 99 basis points (Bps) from 6.25 per cent to 7.24 per cent between 2017 1H to 2018 1H, which indicated an increase in economy wide higher interest rates. Investors accepted a lower return on equity (ROE), and bankers looked at projects positively because of this policy change.

For policymakers, it is important to understand how wind and solar will continue to grow once the low-interest rate period comes to an end. Our analysis shows that a 100 Bps increase in financing costs could result in a 5–7 per cent increase in tariffs for both solar and wind if all other conditions remain the same. How can the RE sector continue increasing deployment of both solar and wind without further declines in tariffs in such conditions? What support could be extended to the sector beyond the SECI to mitigate counterparty risk? which, as the analysis shows, investors highly value. But the ability of intermediaries like SECI to support bids is limited, and it can also fail in case of market shocks like Andhra Pradesh's bid to renegotiate power purchase agreements with RE developers.

Another period where macroeconomic factors and project financing costs deviated substantially was in 2019 1H, when sovereign yields reduced by 51 Bps (–7 per cent). Still, finance-related costs induced a tariff increase of 8 per cent for solar and 20 per cent for wind. The increase in financing costs may have been driven by the Andhra Pradesh government's announcement that it intends to renegotiate tenders of existing solar projects; this move significantly increased risk for investors.

In 2020 tariff's reduction can be attributed to increased liquidity in the economy, with sovereign yields declining by 199 Bps over the period and developers using this opportunity to quote lower bids but also consolidate returns on equity. This points to a stabilisation of returns in the sector, where entry barriers are low and ratings are improving.

1. Introduction

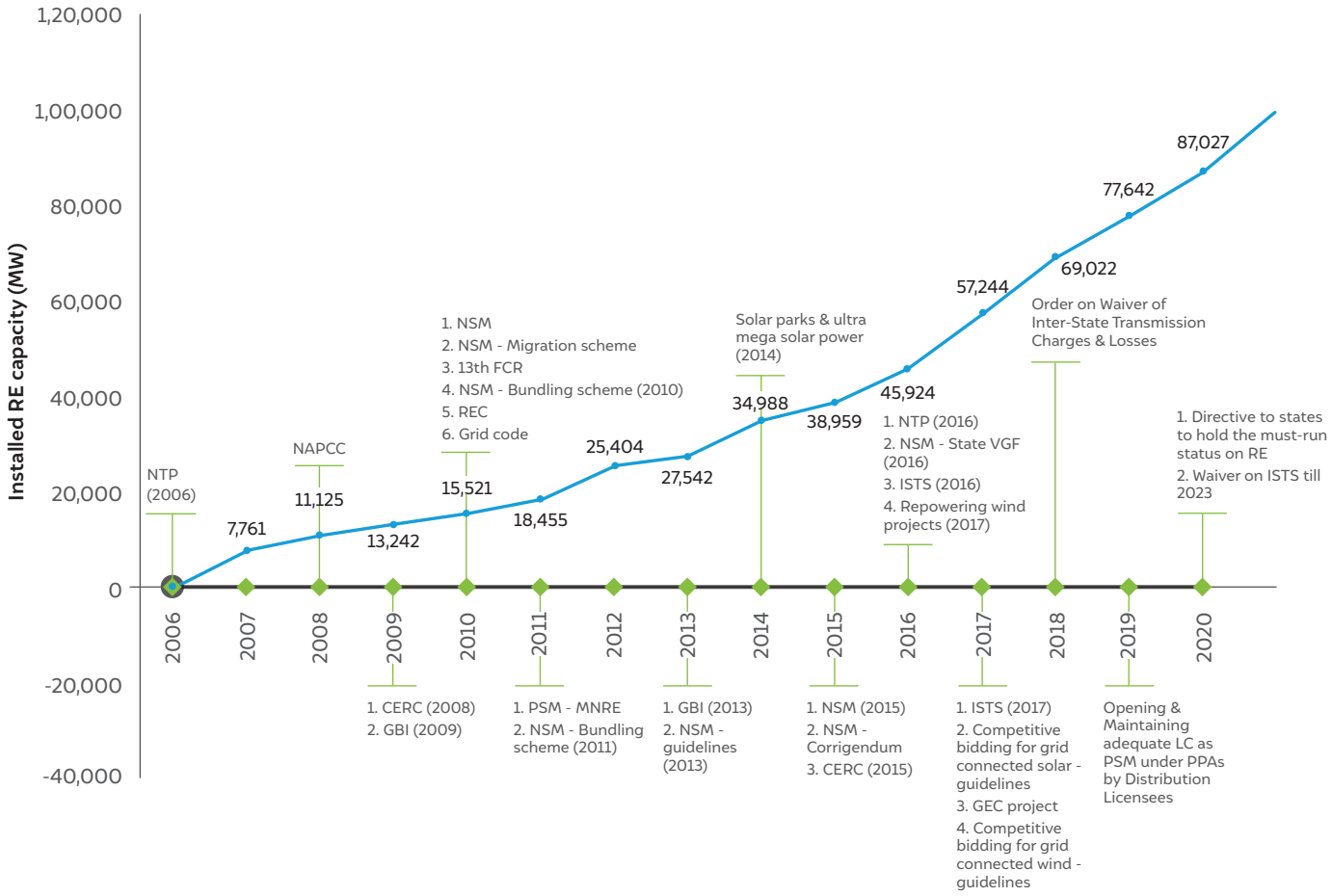
At 100 GW of installed capacity, the Indian RE sector is the fourth-largest in the world. Yet, it will need to grow five times to meet the India's ambitious target of 500 GW of installed capacity by 2030. Historically, among other factors the RE sector's growth has been driven by policy support from the government—both at the central and state levels—but its impact has never been quantified. These policies have helped allay investors' fears, especially those related to counterparty risk, land acquisition, and other risks that continue to impact RE projects. An overview of Indian policies in the RE sector over the last decade, including their purpose and features, is provided in an earlier part of this work series called How India's Solar and Wind Policies Enabled Its Energy Transition.

The rapid increase in India's RE market size can be attributed to the clear vision of policymakers, both in terms of setting targets and establishing supportive environments. In 2015, India announced its intention to grow its RE sector to 175 GW of installed capacity by 2022—an ambitious target for a sector that was only 39 GW large then. The target was then further stretched to 500 GW by 2030. At COP26, India announced that it would not only grow its non-fossil energy to 500 GW, but also meet half of its electricity requirements through RE only by 2030. India has one of the lowest solar and wind tariffs globally. Solar and wind combined supply over 10 per cent of the total electricity to the grid (Jones, Graham, and Tunbridge 2020).

The graph below captures India's RE journey, primarily in the wind and solar sectors, since 2006. The clear targets set in 2015 had a significant impact on solar and wind capacity addition. Solar installations have grown at a rapid pace from FY 2014–15 onward. In response to strong policy signals, India's RE sector saw a sharp increase in investment flows in 2016. However, for wind, since then, the sector has seen a slowdown, barring continued tariff reduction over the years until 2020. A year away from our first target checkpoint, the

likelihood of achieving 160 GW of combined solar and wind installed capacity looks slim. Multiple roadblocks stand in the way of our 2030 ambitions, one of which is securing adequate investment flows. According to CEEW-CEF's estimates, India's RE sector will require investments of USD 200 billion to set up the required generation capacity alone (Singh, Dutt, and Sidhu 2020).

Figure 1 Timeline of Indian RE policies vs installed capacity



Source: CEEW-CEF compilation based on table A1.

The purpose of this study is to understand how policies have historically impacted the risks, both actual and perceived, associated with RE projects and the sector at large. To do this, we analyse the credit rating trends of solar and wind projects and map them to policy implementation timelines. We also analyse the factors that helped reduce RE tariffs to quantify the impact of changes in technology and financing costs apart from macroeconomic movements and sectoral changes. This dispersion helps us understand the drivers of energy costs from these projects that is also driven by returns to investors and thus the risk perception towards the sector. Quantifying the driving forces of risk mitigation will help in designing better policies that enable wider adoption of RE and attract the investments needed to meet the current targets.

2. Project methodology

RE Policies directly affect the impact and risk perception of individual projects. However, there exists very little literature that could help determine the impact of policies on risk perception in the sector in the long term This is because only a decade's worth of data on projects is available through the life of most projects is 25 years and above, making projections difficult. Further, only a few RE developers have been listed in equity exchanges and only in recent years; thus, conventional methods of estimating policy impact cannot be used.

BOX Understanding project risk

We can capture project risk and risk perception at the project level through the interest rates charged by debt holders and the desired returns on equity investment for both sets of investors. The investment decision is evaluated using the following risk equation:

Project risk = country risk + sectoral risk + other risks

Project risk is the uncertainty associated with returns to investments in a particular project. The credit rating of the financial instrument associated with a project reflects the risk associated with the underlying cash flows. The project risk includes the country, sector, and other risks. For an investor with foreign currency exposure, a risk premium is added to cover any adverse movement in the local currency vs the investor's own currency. The premium is usually calculated based on prevalent currency hedging costs and the hedging proportion required.

Country risk pertains to all the projects operational in a country. It is usually captured through sovereign ratings or a combination of matrices, including the sovereign rating, MSCI index, Organisation for Economic Co-operation and Development (OECD) reports, and risk perception indices published by different organisations.

Sectoral risk pertains to the uncertainty associated with investment decisions in a particular sector, e.g., investments in the infrastructure sector and in a finance company would behave in completely different ways and are captured separately.

Other risks pertain to anything specific to the project like the leverage of the capital structure, rates of returns under the loan covenants, interest rate, counterparty risks, and other factors that may impact the ability of the project to meet its obligations.

This study aims to assess the impact of India's RE policies, which under the framework described earlier helps to capture the impact as reflected under sectoral risk, focusing on solar and wind projects in particular. We provide an overview of India's RE sector by mapping all significant policies over the last decade. In this analysis, we use the credit ratings of 250+ solar and wind projects (as seen in Table A2) from multiple agencies to monitor movements against the sectoral policies. To further understand the impact of sectoral policies, we also track tariff trends in the solar and wind sectors and how the returns for investors have evolved.

We further investigate the macroeconomic impacts on the sector to isolate the perceived risks of the sector as a whole as well as individual projects. We analyse tariff trends to understand the impact of drivers like investment costs, operational costs, and financing costs. We disaggregate the contribution of financing costs from broader macroeconomic trends by tracking sovereign bond yields. We also capture other financial risks at both the sectoral and project level over the analysis timeline. Finally, we present a thorough sectoral overview and provide recommendations for the sector to realise its investment potential.

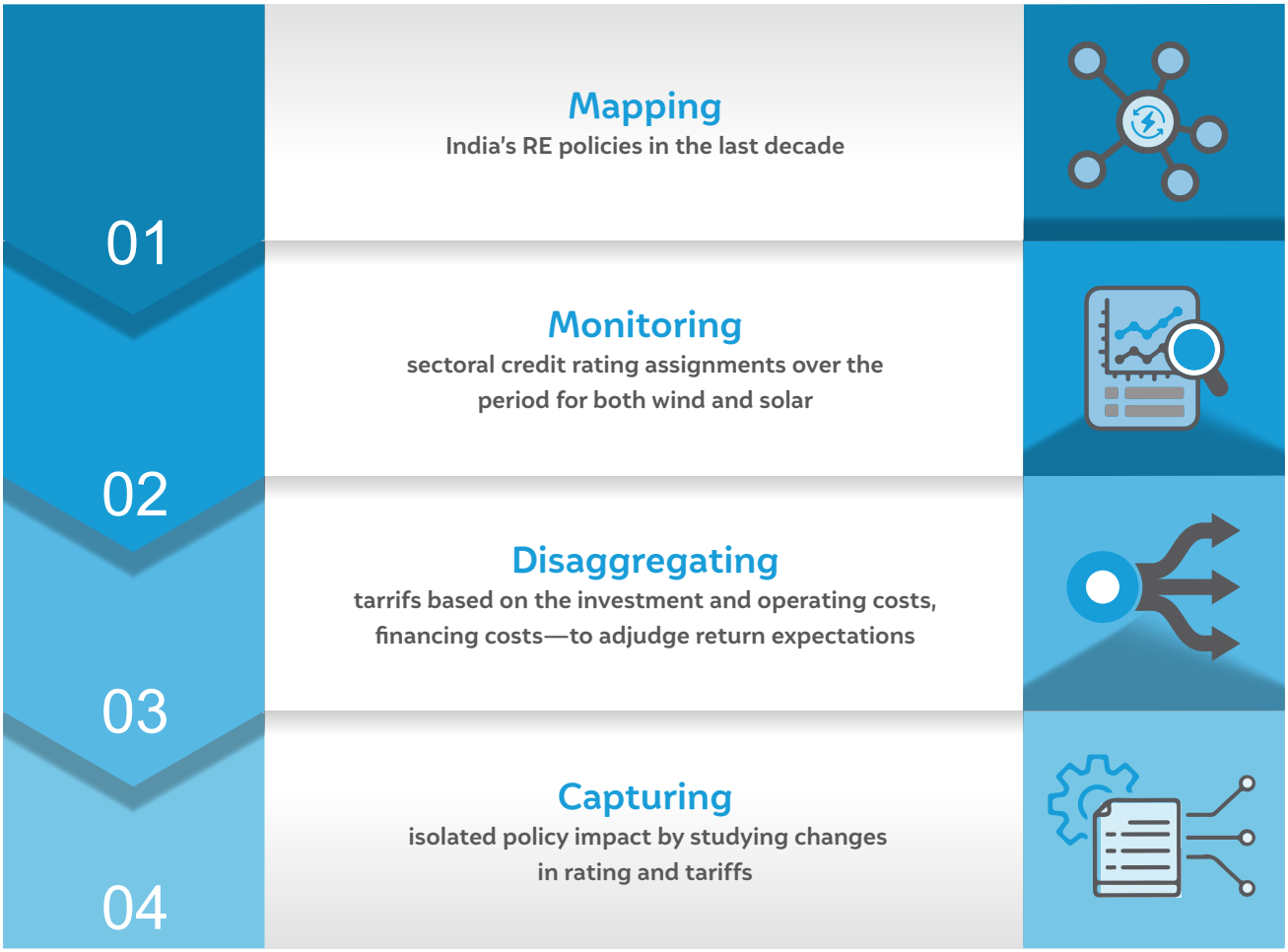
3. Analysis

We begin by tracking the credit ratings assigned to wind and solar projects by various rating agencies between 2011 and 2020. This helps us track the general flow of investor interest, project viability, and risk perception across India's solar and wind projects.

Wind projects

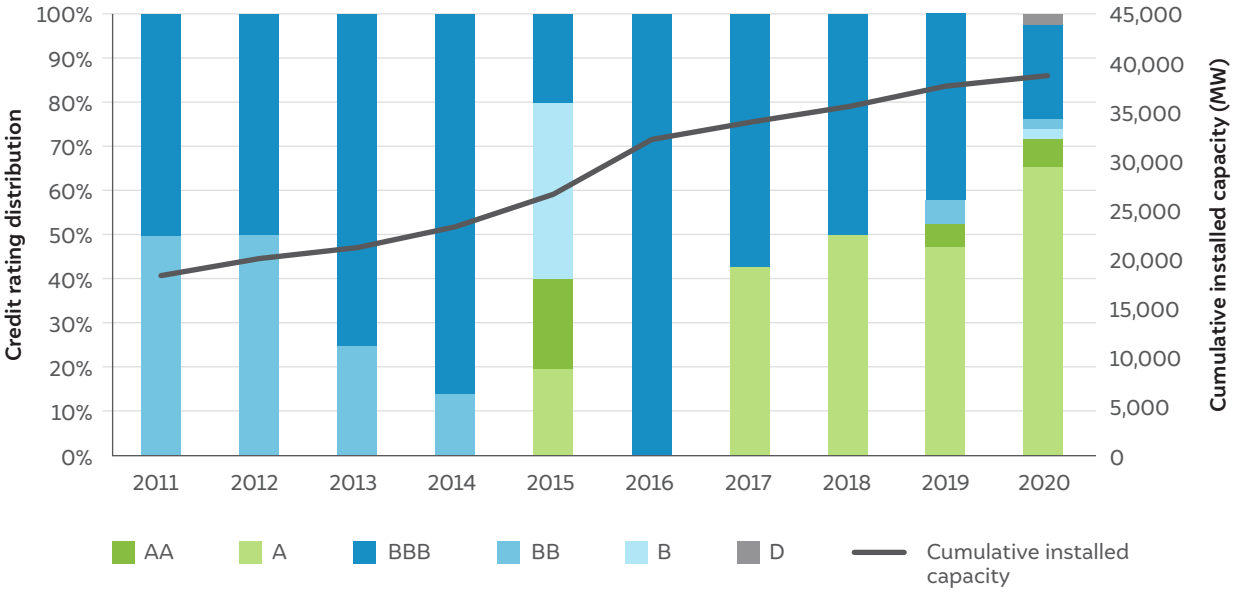
An analysis of credit ratings assigned to 101 wind energy projects between 2011 and 2020, with a cumulative debt of INR 42,000 crore, reveals the trends shown in Figure 3. Interestingly, from 2017 onwards, the ratings show an upward trend with a large share (approximately 50 per cent) of projects rated A, while none of the projects before 2015 had a rating above BBB. Of the 46 projects with a rating in 2020, 30 had an A rating and 10 had a BBB rating assignment.

Figure 2 Methodology flow



Source: CEEW-CEF compilation

Figure 3 The credit ratings of wind projects have moved primarily into the investment-grade domain, but the installation rate has flattened since 2017

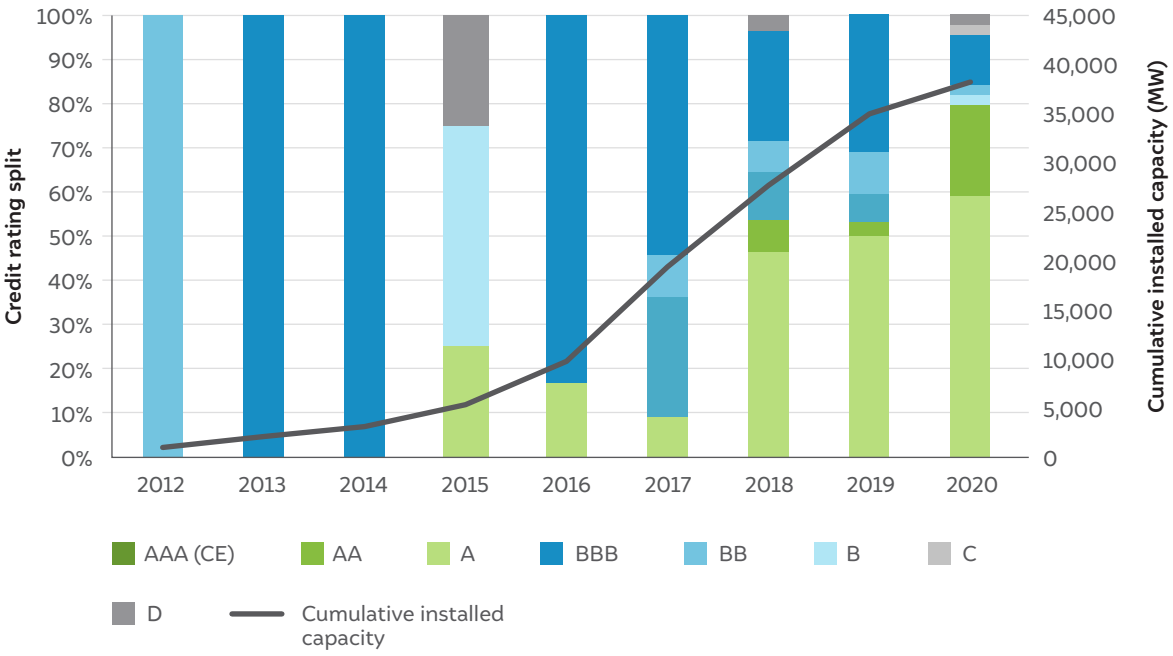


Source: CEEW-CEF analysis

Our analysis reveals the following:

- **Higher investor confidence in wind projects:** The trend points to the stabilisation of wind project ratings in the region of BBB and above, especially from 2017 onwards. This indicates high investor interest and improved confidence among rating agencies with regard to project debt repayment capabilities.
- **Increased confidence in the policies and their implementation:** The rating trend also indicates increased confidence in policy support and how wind as a sector has evolved since the start of the decade, when it had a mix of both investment and below investment grade projects.

Figure 4 The credit ratings of solar projects have moved primarily into the investment-grade domain and have a steeper installation growth as compared to wind



Source: CEEW-CEF analysis

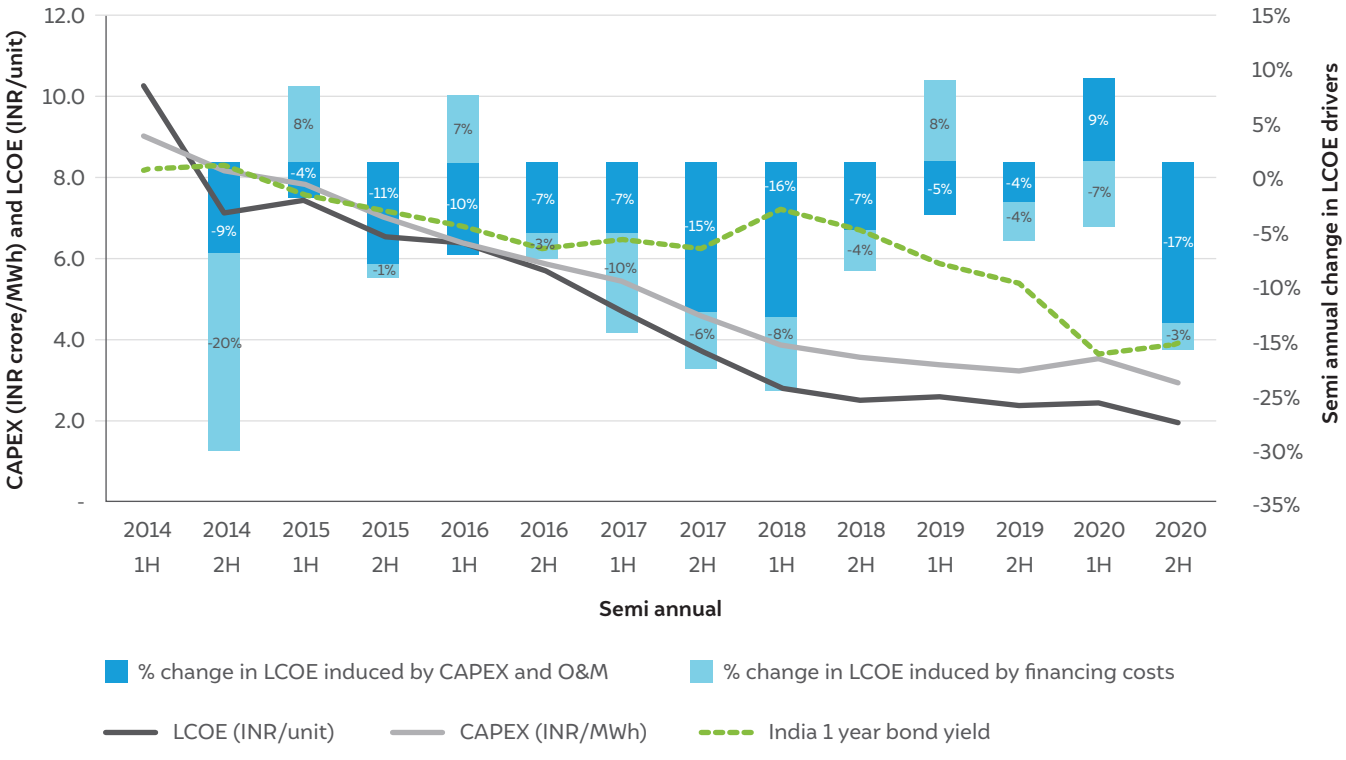
Solar projects

- **Higher investor confidence in solar projects mapped by high credit ratings of new projects:** A similar analysis was conducted of historical trends in credit ratings for 143 solar projects, with a cumulative debt of INR 38,000 crore, rated between 2012 and 2021. Like wind projects, solar too moved to investment-grade ratings as early as 2013. The trends show that by 2020, almost 26 of the 44 projects evaluated were rated A, 9 issuances had an AA rating, and 5 BBB, i.e., almost 90 per cent of projects were investment grade. The change in ratings from all the tracked issuances being below investment grade in 2012 to almost 90 per cent of issuances in 2020 being above investment grade is significant.
- **40X growth in installed capacity of solar sector:** The growth in solar deployment from almost 1,000 MW to around 40,000 MW of installed capacity has been steeper than that of wind; despite improved ratings, the wind sector is not moving at the solar sector's pace.

Tariffs to decode the project risks in the wind and solar sector

Another way by which we can understand the risk perception of projects and the sector at large is by analysing the tariffs quoted for projects. Disaggregating tariffs and studying trends can shed light on risk drivers and perception at the project level as well as the impact of policy decisions and their implementation. This could open the discussion on what could be done to achieve universal objectives like higher renewable penetration at a sustainable and economical pace. Based on the project risk assessment, the investor charges a premium on top of their own costs of funds. The risk premium charged is easily traceable through the financing costs of the project, which is a driver for tariffs. To understand the impact of risks, we analyse how the project's capital, financing, and operational costs over the investment timeline influence the project's tariffs. To understand the impact of each, we use half-yearly data trends of the levelised cost of energy (LCOE), capital expenditures, and operating costs using the Central Electricity Regulation Commission (CERC) benchmark costs and Bloomberg New Energy Finance (BNEF) trends. To understand the impact of sovereign risk and associated macroeconomic factors, we analyse the yields of 52-week Indian sovereign bonds throughout the analysis period. The sovereign yields help separate the sector's risk perception from that of the wider economy to isolate the impact of sectoral policies.

Figure 5 Reduced financing costs and CAPEX costs have been the primary drivers of reduced solar tariffs



Source: CEEW-CEF analysis

Solar projects

India made tremendous progress in lowering the LCOE from over INR 10/unit to sub-INR 2/unit between 2014 and 2020. The major drivers of this over 80 per cent decline in solar tariffs are the following:

CAPEX and operating costs: As shown in Figure 5, lower initial investments and operating costs drove a significant reduction in the LCOE in the half-yearly periods studied. Only in one instance, in 2020 1H, the increase in CAPEX costs contributed to an equivalent increase of 9 per cent in the LCOE over the tariffs in 2019 1H. However, the overall impact on tariffs was only a minor increase of 2 per cent due to a concurrent reduction in financing costs, equivalent to a 7 per cent decrease in tariffs. This shows that the consistent decline in the cost of solar panels and operating costs have helped reduce the cost of solar projects and, thereby, their tariffs.

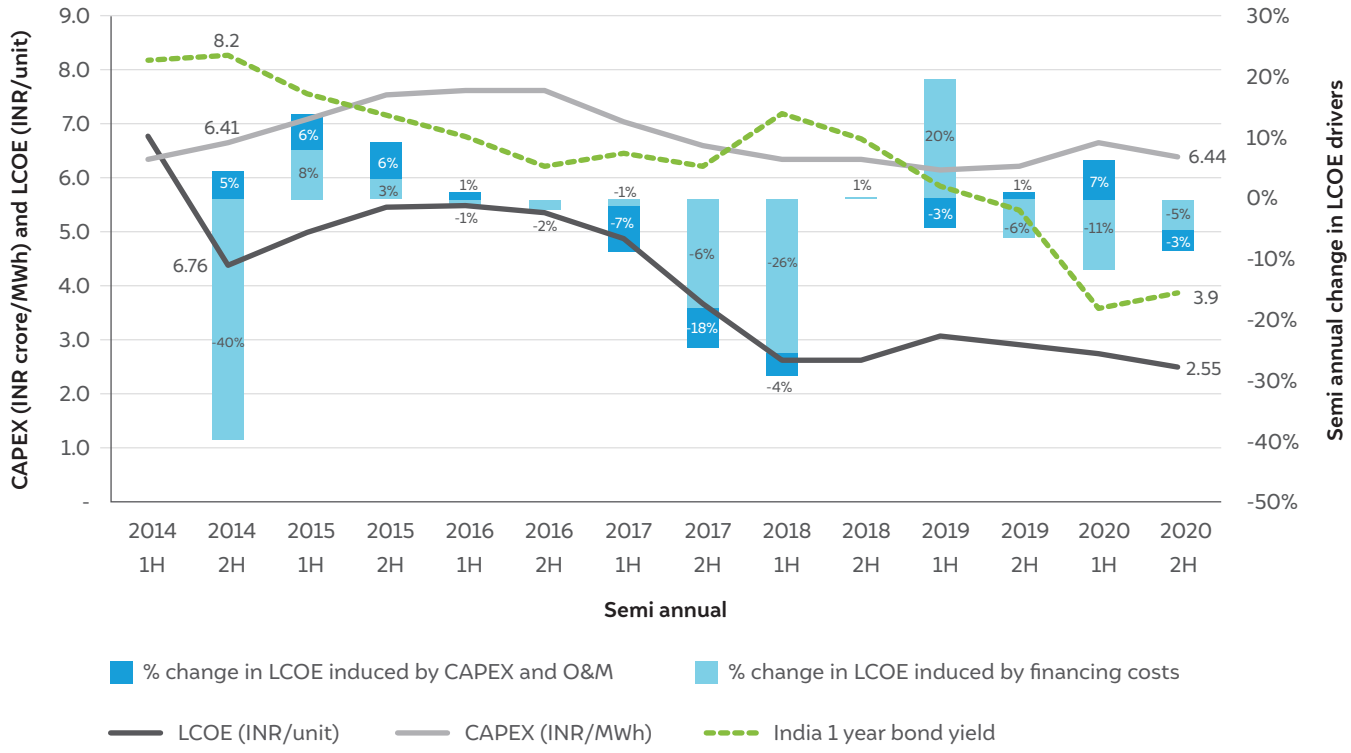
Financing costs: These costs have been the other primary driver in lowering the LCOE, with only three half-yearly instances in 2014–2020 where they contributed to an increase in tariffs by 7 to 8 per cent. This, however, was mitigated by a concurrent lowering of CAPEX costs in those periods as highlighted in Figure 5. A closer look at financing cost contributions also points to the fact that between 2014 and 2018, sovereign bonds yields (52 W) reduced by 147 basis points (Bps), contributing to an 18 per cent reduction in yields—from 820 Bps to 673 Bps by the end of 2018. Which explains the partial lowering of the interest rates due to increased liquidity in the economy over this period. However, most of the changes in the financing costs' contribution over 2014–2018 were driven by improved risk perceptions in the sector and less by increased macroeconomic liquidity and lower interest rates. This reduction in investor risk perception for solar projects is also reflected in the improved ratings of solar projects over this period, with 15 of the 28 solar projects in 2018 being rated A and above vs all the tracked projects in 2014 being rated BBB. This rating transition indicates the reduction in financing costs in addition to improving economy-wide interest costs.

The role of the SECI as an intermediary from 2017 onwards, in reducing sectoral risk perception, is also reflected in the reduction of discovered tariffs from INR 4.75 per unit to INR 2.86 per unit by 2018 1H. The move helped reduce counterparty risk exposure, and the financing costs between 2017 1H to 2018 1H it induced a reduction in discovered tariffs equivalent to 10, 6, and 8 per cent of the tariffs. However, India's sovereign bond yields indicate that general interest rates increased by 99 Bps, from 6.25 per cent to 7.24 per cent in the same period. That is, investors accepted a lower ROE, and bankers looked at projects positively since the policy move. But, from 2019 till 2020, sovereign bond yields (52 W) dipped to as low as 366 Bps and settled at 390 Bps, i.e., a further dip of 283 Bps. This shows that COVID-19 related lowering of interest rate yields was a significant factor in lowering financing costs between 2019 and 2020.

Calculating the LCOE for solar for 2020 shows that a 100 Bps decline in the cost of capital (financing costs) drives the LCOE down by 6 to 7 per cent. That is, during the COVID-19 pandemic, especially January–December 2020, when quantitative easing resulted in the softening of bond yields by 153 Bps, the change in the LCOE has been 17 per cent while the finance-driven impact on the tariffs is a 7 per cent and 3 per cent in 2020 1H and 2020 2H, respectively. At the same time, the initial investments contributed a 9 per cent increase and a 17 per cent decrease in the tariffs, respectively. That means that either the change in the interest rate has not passed to the developers or that they have used this period to consolidate margins or a combination of both.

The impact of the reduced interest rate in lowering debt liabilities is also visible in the ratings of these projects as they moved towards credit ratings of A and above over this period though the absolute LCOE has moved south.

Figure 6 The reduced costs of financing lowered onshore wind tariffs



Source: CEEW-CEF analysis

Wind projects

Our analysis of wind projects during 2014–2020 indicates a sharp fall in wind tariffs from approximately INR 6.7/unit to approximately INR 2.6/unit by 2020, i.e., a reduction of 62 per cent. Over this period, the initial CAPEX costs remained almost at constant levels in INR while varying between INR 6.4 crore/MW and INR 6.5 crore/MW, with an instance when the costs went up to INR 7.6 crore/MW in 2017. This major transition in tariffs was the result of two factors:

1) The lowering of financing costs throughout the analysed period
2) The introduction of reverse auction regime in 2017, resulting in increased competition and a lowering of tariff bids

Financing costs and the curious case of reverse bidding: Between 2014 and 2020, the financing costs contributed to a changes in tariffs varying from approximately 40 per cent (in 2014 2H over 2014 1H) induced reduction to an induced increase in tariff of 20 per cent in (2019 1H over 2018 2H). Over the period between 2014 1H to 2020 2H, nine instances of an induced reduction in tariff due to lowering of the financing costs were noted. A closer look at the financing cost contributions shows that in 2017 2H and 2018 1H, over prior periods, financing costs induced a decline in tariff equivalent to 18 per cent and 26 per cent, respectively. However, the change in Indian sovereign 52 W bond yields in 2017 2H was 22 Bps (–3 per cent), and, in 2018 1H, the yield increased by 97 Bps (or 15 per cent) to 7.24 per cent i.e. is interest rates in the economy were not lower from the prior periods but stood even higher. However, during these periods, the reverse auction regime increased competition, which drove prices lower and convinced investors to accept a lower return on equity. Over 2018 2H and 2019 1H the sovereign bond (52 W) yields softened by another 51 Bps and 84 Bps, respectively. The overall financing costs induced an increase of 1 per cent and 20 per cent in the tariffs discovered for the projects. Disregarding any changes in the power load factor between the sites, the promoters sought higher returns from the projects as financing costs contributed to an increase even when the interest rates softened over the period in the wider economy.

Subsequently, India's sovereign bond yields softened further by 41 per cent between 2019 2H and 2020 2H to 3.9 per cent. In the same period, wind tariffs declined 5, 5, and 9 per cent in 2019 2H, 2020 1H, and 2020 2H, respectively. This implies that wind power developers

were passing on the full benefits of improved liquidity to lower tariffs and even beyond from their margins charged over prior period.

Calculating the change in LCOE for wind shows that a 100 Bps decline in cost of capital drives the LCOE down by 5 per cent to 6 per cent or INR 14 to 16 paise/unit. Thus policy measures will need to continue address the investors' concern to help reduce the tariffs.

4. Conclusion

The analysis reveals that India's RE sector has made significant progress on the back of policies that have helped mitigate several risks (Rao and Agarwal 2021). The policy support enabled the market to cross the 100 GW of installed capacity milestone in August 2021. However, India will need to pick up the pace to meet the 500 GW installed capacity target by 2030.

India's RE policies have helped reduce risks associated with counterparty defaults and payment delays, which continue to impact non-renewable projects. This is reflected in the improved credit ratings of these projects to A and above for almost 50 per cent of solar projects and above BBB for all considered wind projects in 2020.

In the case of solar, a clear and consistent policy stance has helped lower finance-related costs, which in turn along with reducing technology costs have lowered tariffs by over 80 per cent since 2014. To lower costs further to enable broader adoption of renewables, the solar sector will need the government to continue designing policies that mitigate the risks and expand the market for solar. For these projects, counterparty risk mitigation will continue to hold importance. The policy moves to mitigate the risk using guarantees and intermediaries helped lower solar tariffs to sub-INR 3/unit from around INR 5/unit, even when interest rates moved upwards, with India's sovereign 52W bond yield moving up by 99 Bps between 2017 1H to 2018 1H.

> **Policy support has enabled 100 GW of installed capacity as of August 2021. However, India will need to pick up the pace to meet its COP26 commitments.**

5. Recommendations

For continued solar deployment, India will need to find long-term solutions that transcend short-term arrangements like the SECI acting as an intermediary. This is essential since timely payments and a strong counter-party, as shown previously, are two features that helped reduce tariffs and the inherent risk of RE projects even when macroeconomic rates of interest were up.

India will need to de-risk the sector further for wind projects, in line with its 2017 policy push. The increased competition resulting from the reverse bidding system helped reduce the LCOE initially. But with improved learnings, the developers began charging a higher interest premium, as reflected in the higher bids. The tariffs dipped marginally when interest costs declined due to increased liquidity at the macroeconomic scale, which was reflected in falling sovereign bond yields. Given the increasing share of RE in India's energy mix, India may explore policy options that help negate problems like the risk of curtailment, which may manifest once the penetration level increases further.

Annexure 1

Table A1 Major central policies, targets, and risks mitigated

Year	Name	Risks to be mitigated	Targets	Installed capacity (MW)[4]
2006	*National Tariff Policy*	Demand risk and policy uncertainty		
2007				7,761
2008	*National Action Plan for Climate Change (NAPCC)*	Renewable Purchase Obligations (RPO) and Renewable Energy Certificates (REC) related risks		11,125
2009	CERC – Terms & Conditions for Tariff Determination from RE Sources	RE pricing related risks		13,242
	Generation Based Incentive (GBI) – Grid-Interactive Wind Power Projects	Financial risks	Till max. capacity of 15,000 MW attained	
2010	*National Solar Mission (NSM)*	Offtake risk and policy uncertainty	Phase I: 1000 MW grid-connected, 100 MW rooftop and small solar plants and 200 MW off-grid solar applications	15,521
	NSM – Migration Scheme	Offtake risk		
	13th Finance Commission Report	Demand creation		
	NSM - Phase I, Batch I (Bundling scheme)	Offtake risk	Solar PV: 150 MW; Solar thermal: 470 MW	
	REC			
	Grid Code	Transmission and offtake risk		
2011	Payment Security Mechanism – MNRE			18,455
	NSM – Phase I, Batch II (Bundling Scheme)	Offtake risk	Solar PV: 350 MW	
2012				25,404
2013	GBI – Grid-Interactive Wind Power Projects	Financial risks		27,542
	NSM – Phase II, Batch I - Guidelines for Implementation	Mitigate offtake risk and create financial support	750 MW (375 MW reserved for projects with domestic content requirement	
2014	*Scheme for the Development of Solar Parks and Ultra Mega Solar Power*	Delays and roadblocks relating to land (identification, aggregation, acquisition, approvals, and clearances), risks of conflict from environmental and social impact assessments, and risks relating to the high cost of supporting infrastructure	40,000 MW for 50 solar parks by 2021–22	34,988
2015	NSM - Phase II, Batch III	Mitigate offtake risk and create financial support	2000 MW or INR 2100 crore budget (250 MW will be DCR projects)	38,959
	CERC – Forecasting & Scheduling Regulations			

4. Installed capacity as of 31 March of each year.

Year	Name	Risks to be mitigated	Targets	Installed capacity (MW)[4]
2016	*National Tariff Policy*			45,924
	NSM - Phase II, Batch IV (state specific viability gap funding (VGF) scheme)	Mitigate offtake risk and create financial support	5000 MW with 1250 MW in each financial year	
	1000 MW ISTS Scheme – Wind Power			
	Policy for Re-Powering Wind Projects			
2017	*1000 MW ISTS Connected Wind Power*			57,244
	Guidelines for Tariff Based Competitive Bidding Process for Procurement of Power from Grid Connected Solar PV Power Projects	Mitigate offtake risk (including payments and curtailment), land risks, quality constraints, and lower high tariffs		
	Green Energy Corridor Project			
	Guidelines for Tariff Based Competitive Bidding Process for Procurement of Power from Grid Connected Wind Power Projects			
2018	Order on Waiver of Inter-State Transmission Charges & Losses	Financial risks		69,022
2019	Order on opening & maintaining adequate letter of credit (LC) as payment security mechanism (PSM) under power purchase agreements (PPAs) by Distribution Licensees	Offtake risk		77,642
2020	Directive to states to hold the must-run status on RE			87,027
	A waiver on ISTS charges and losses till June 30, 2023			
2021	A waiver on ISTS charges till June 30, 2025			94,434 (100,000 as of Aug 2021)

Source: CEEW-CEF analysis

See Annexure 2 here.

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The authors

Vaibhav Pratap Singh
vaibhav.singh@ceew.in | @tweetvaibhav1

Vaibhav is a Programme Lead with the CEEW Centre for Energy Finance (CEEW-CEF). His focus is on developing financing pathways to advance the energy transition. Before joining CEEW, he was with the Climate Policy Initiative, where he designed financial instruments. Prior to that, he worked with CARE Ratings, where he oversaw ratings of banks and the NBFC sector.

Meghna Nair
meghna.nair@ceew.in | @Meghna2297

Meghna, a Research Analyst at the CEEW Centre for Energy Finance works on tracking market and policy developments in India's clean energy space, with a special focus on electric vehicles.

Sangeeth Raja
sangeethraju@gmail.com

Sangeeth earlier with CEEW, is a Masters Student at the Hertie School in Berlin and works on the intersection of the political economy of the energy transition, energy finance and environmental economics.

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COUNCIL ON ENERGY, ENVIRONMENT AND WATER (CEEW)
Sanskrit Bhawan, A-10, Qutab Institutional Area
Aruna Asaf Ali Marg, New Delhi - 110067, India
T: +91 (0) 11 4073 3300
info@ceew.in | ceew.in | @CEEWIndia | ceewindia