

**Financing India's renewable energy sector:  
Accessing capital from pension and insurance funds through credit  
enhancement**

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## 1. Context

India's energy sector contributed to 68% of India's total carbon emission over 2005-2012, out of which electricity generation contributed 77% of carbon emission - ~52% of total carbon emission during this period (CSTEP, 2015). The high contribution of electricity generation in carbon emission reflected the importance of India's plan to change the energy mix in favor of renewable energy. Hence, mobilizing financing for the renewable energy sector is a requisite for India to move towards a low carbon emission pathway and achieve its Intended Nationally Determined Contribution (INDC). The Institute for Energy Economics and Financial Analysis (IEEFA) estimates that India needs an additional capital of \$500-\$700 billion to meet India's 2030 renewable energy target. However, there has been a limited flow of capital into renewable energy sector activities compared to India's requirements. A study by Climate Policy Initiative finds that there is a significant gap between the required and existing flow of financing. Notably, private investment has played a substantial role in accelerating capital flows to India's renewable energy sector; it will continue to play a vital role in scaling up to renew investment in India.

The sheer magnitude of assets under management (AUM) controlled by institutional investors, pension funds, and insurance companies, in particular, makes them an essential source of financing. In India, domestic institutional investors hold AUM of USD 564.1 billion. Globally, foreign pension funds and insurance companies hold AUM of more than USD 70 trillion. It is noteworthy here that banks are not suitable to lend renewable energy due to asset-liability mismatch – renewable energy lending is long term, while banks' liability duration short.

In this paper, we have examined the investment traits of India's renewable energy (RE) sector and assessed the alignment of institutional investors' ( we are focusing on pension funds and insurance companies in this paper) investment objectives with the investment profile of the sector. Since the RE sector is facing severe challenges in attracting capital from institutional investors, we are suggesting how credit enhancement can be instrumental in bringing low-cost and long-term capital into the renewable energy sector.

## 2. Institutional investors' investment objectives

Institutional investors are risk-averse as their objective is to generate at least a minimum amount of return with a high degree of certainty. The ultimate beneficiaries of these classes of investment are insurance policy and pension holders. Since they are risk-averse investors, the investment strategy of them is conservative – exposed heavily towards high-quality, low yield fixed income instruments and maintained diversification in their portfolio. Besides, regulators also restrict these investors to invest in risky assets to protect the interests of beneficiaries since the beneficiaries' ability and willingness to take risk is low.

Usually, domestic Institutional investors also need long - duration low-risk assets with predictable cash flows to meet their medium to long-duration liabilities. Pension funds prefer to hold excess cash or liquid assets to meet contingent claims. High liquid assets, usually listed instruments, allow the pension fund to sell it at a fair price quickly to meet the demands of the beneficiary who want to early retirement and take the option of retirees of a lump-sum payment. Insurance funds also need some liquidity to meet the unforeseen claims of the policyholders. Institutional investors' investment choices are heavily regulated as they want to protect the interests of policyholders, who are not sophisticated to understand riskiness in investment. Hence, these two classes of investors' portfolios are mostly allocated to high quality fixed income securities.

Foreign institutional investors, particularly pension funds, invest in emerging markets to improve their portfolio performance since it is increasingly difficult for them to generate sufficient returns from their home markets to meet their pension obligations. For example, pension funds in developed markets may face increasing funding gaps, and solvency risk as returns in domestic markets decrease considerably in the next 30 years due to low economic growth from declining labor-force participation and sluggish improvement in productivity. According to McKinsey, real equity returns would fall by 140-150bps below the average of the past 30 years (7.9%), while fixed income returns would fall 300 to 400 basis points (from 5%) in high economic growth scenarios for the United States. The fall in expected returns would be similar in Europe too. The expected fall in returns in their domestic markets will force institutional investors to accelerate their investment in emerging markets to uplift their portfolio returns. Specifically, emerging markets like India and China offer higher returns on investment, large market sizes, and diversification benefits. Besides, renewable energy investments provide low risk and fast-growing investment assets, meeting the needs of institutional investors while also meeting the environmental, social, and governance (ESG) principles of some Institutional investors.

Since Institutional investors are liability-driven investors, they are much more concerned about the stability of their return. These classes of investors prefer to invest in stable industries that are more conducive to sustainable value creation, given limited substantial competitive challenges. However, there are limited opportunities for growth. The value migration from one company to another in unstable industries is higher than that of stable industries, making sustainable value creation that much more elusive. Lack of sustainable value creation is a significant risk for liability-driven investors as they need regular cash inflows and / or stable capital appreciation over a long period; unstable industry doesn't have any of them.

### 3. Renewable energy sector investment traits

The renewable energy sector investment profile is like the utility sector – low risk and low return (regulated return). The renewable energy project is capital intensive in the construction and development stage (Year 0) but generates reasonably predictable cash flows over the life of the asset. The foreseeable cash flows generated from the project make the sector less risky compared to other infrastructure sectors; this makes the renewable energy sector attractive for low risk-seeking Institutional investors. The sector can generate a higher return through equity investments at the corporate level since there is an enormous growth opportunity in the sector in India. In the following table, renewable energy sector investment characteristics are outlined.

Investment Characteristics	Description
Predictable return on projects	<ul style="list-style-type: none"> <li>• Attributed to predictable revenue along with low and stable operating expenses, and very low recurring CAPEX</li> <li>• Expected equity return is very similar to the utility sector</li> <li>• Higher performance can be expected from equity investment at the corporate level</li> </ul>
Risk	<ul style="list-style-type: none"> <li>• High perceived risk - Lack of historical performance record makes the sector risky (perceived risky) compared to coal, hydro and gas power sector</li> <li>• Counterparty credit risk – Unwillingness and inability to pay for power purchased or refusal to off-take power by the Distribution companies (DISCOMS)</li> <li>• Unique risk - Transmission, renegotiation of contracts, and size risk (small size of projects)</li> </ul>
Investment Horizon	<ul style="list-style-type: none"> <li>• Long investment horizon (Life of the asset is ~25 years)</li> <li>• Investment stages are also broken down into two phases: Construction and operational; to reduce the cost of capital RE company often refinance at the operational stage</li> <li>• Investment horizon is long in case of investment at the corporate level– the current exit route is mostly through the private market</li> </ul>
Liquidity	<ul style="list-style-type: none"> <li>• Listed Equity: Only three pureplay RE Companies are currently listed in the stock exchange (one is in NYSE and two in India' domestic stock market)</li> <li>• Fixed Income: RE companies mostly raise debt capital from banks or NBFCs, not through the issuance of debt; there is liquidity in RE financing</li> <li>• Alternative listed securities: InvIT route not used in RE sector yet in India</li> </ul>

The RE sector faces some unique risk - instability in the industry by virtue of the high growth rate. The steadiness of market share brings stability to the industry. If companies regularly capture market share from each other, it is unlikely that any of them enjoys a position protected by competitive advantages. As renewable energy, solar in particular is going through a similar phase due to the low entry barriers, thanks to little complexity in setting up the solar plant and low capital requirements. The low entry barrier, along with the growth potential of the sector, is attracting new players into the market resulting in instability in the industry. The intentions of most of the players in capture market share and scale up quickly by reducing the tariff to the point of irrationality destabilize the profitability of the industry. The instability in the sector makes investment in India's RE sector risky.

## 4. Alignment of investment objectives with financial instruments in India's RE sector

In this section, we have evaluated whether India's renewable investment characteristics are matched with the investment objectives of institutional investors. We have identified various financial instruments currently existing in India's renewable energy sector and then examined the suitability of these financial instruments for Institutional investors.

### 4.1 Fixed Income Instrument

Financial Instruments	Suitability	Observation
Corporate / Project Bond	<ul style="list-style-type: none"> <li>• Suitable for as RE sector bonds are characterized by low risk, yield generating, and long duration</li> <li>• Rating is a concern for domestic institutional investors as they are not allowed to invest in weak rated bonds (Usually minimum AA). The bonds issued by the RE sector are mostly below AA.</li> </ul>	RE companies in India rarely issue bonds for their debt financing needs; they heavily depend on banks and NBFC to meet these financing needs. Green bonds have found traction among foreign institutional investors as they have started realizing the climate change mitigating benefits of green bonds. Domestic Institutional investors are not currently incorporating climate change risk in their investment decision making.
Lending	<ul style="list-style-type: none"> <li>• Operational stage lending is suitable for domestic insurance companies and foreign institutional investors as credit risk is low at the operational stage.</li> <li>• However, the duration of lending (5-7 years) is shorter than the liability duration of Institutional investors (5-30 years)</li> <li>• Lending is not suitable for domestic pension funds as they are not allowed to lend in India.</li> <li>• The small size of loans in India's RE sector could be a constraint for FIIs as small size investment doesn't add any substantial value to their large portfolio</li> </ul>	Institutional investors prefer listed fixed income instruments due to their liquidity requirements. Besides, traditional investors (except few) don't have the institutional capacity to originate good quality of loans and analyze them. Traditionally, banks and NBFCs play a better role in lending as they have teams to undertake this job.
Non-Banking Financial Company (NBFCs)	<ul style="list-style-type: none"> <li>• Suitable for Institutional investors as these NBFCs are highly rated and backed by the Government</li> </ul>	Indian Renewable Energy Development Agency Limited (IREDA) is a specialized NBFC exclusively lending to the renewable energy sector. Also, other NBFCs such as PTC Financials and PFC lend heavily to the power sector. Institutional investors can have exposure to the renewable energy sector through their investment in these specialized NBFCs.

## 4.2 Structured Finance

Financial Instruments	Suitability	Observations
Alternative Investment Fund (AIF) -	<ul style="list-style-type: none"> <li>The domestic pension fund can invest up to 2% of their corpus in AIFs, while insurance companies can invest 3% of their corpus in AIFs.</li> <li>FII, who do not have direct investment team in India can invest through debt and equity AIFs (through Category II AIF)</li> </ul>	<ul style="list-style-type: none"> <li>AIFs can invest in unlisted renewable companies or projects, so address the illiquid barrier</li> <li>AIFs can address the size issues of the RES sector as they are more conducive to smaller aggregate sizes.</li> <li>AIF can invest in RE projects which are stable and operational, so generating stable cash flows.</li> <li>The dividend policy of an AIF can be changed according to the needs of the investors.</li> </ul>
Infrastructure Debt Fund (IDF)	<ul style="list-style-type: none"> <li>Domestic Institutional investors are suitable to invest in IDFs given their high credentials (reflected from their high credit rating) and long duration of bonds.</li> <li>FII may not be interested in investing in IDFs, given their low yield.</li> </ul>	IDF is an attractive intermediary to source long term capital from Institutional investors to fund infrastructure projects, including renewable energy. For instance, the National Pension System (NPS), a private scheme, allows investors to allocate 5% (of their assets) at the fund level and 2% at the portfolio level to an alternative investment fund (AIF). IDF, which is characterized as an AIF's asset vehicle, having an AAA rating, makes it an ideal fit from a regulatory standpoint.
Infrastructure Investment Trust (InvITs)	<ul style="list-style-type: none"> <li>Suitable FII since InvITs have yield generating features but return higher than traditional debt securities.</li> <li>InvIT, as they are listed, can all also address illiquidity risks.</li> </ul>	RE InvIT has not started yet in India, but a few renewable energy companies are contemplating raising capital through this investment vehicle.

## 4.3 Listed Equity

Financial Instruments	Suitability	Observations
Listed Equity	<ul style="list-style-type: none"> <li>Non-availability of listed equity - Only one pureplay renewable energy company is listed in the domestic market.</li> </ul>	Domestic insurance companies are not allowed to invest in listed securities that have paid less than 10% of the dividend in the last two years. Some RE companies planning to get listed may not fulfill these criteria as these companies would likely redeploy profit (operating in a fast-growing sector) rather than paying dividends. It will be better suited for foreign investors, given their long investment horizon and limited regulatory restrictions.

## **5. Hedging climate Risk through investment in the RE sector**

Institutional investors still focus on the historical performance of companies and industries to estimate risk, while neglecting long-term risks, such as climate change, environmental regulation, and innovation, which are rarely factored into investment decision making. Given the long-term investment horizon of institutional investors, they are more exposed to long term risk factors. So, historically, institutional investors don't consider climate change risk as a material risk to their portfolio, hence view it as a weak investment proposition. However, climate change risk – coal, and oil and gas stranded asset for example- is currently recognized as a systematic risk to financial stability and potentially affect the performance of the portfolio exposed to carbon-emitting and polluting sectors. Climate change risk is going to adversely affect long term institutional investors, more so than the short term as this risk will be realized in the long term. They were naturally attracting the attention of long-term investors. As the renewable sector is considered to be climate mitigating, the addition of the renewable energy sector in institutional investors' portfolios could hedge the portfolio performance against climate change risk and potentially improve adjusted return.

## 6. Renewable energy sector financing: Accessing capital market through credit enhancement

Our analysis suggests that fixed income securities, primary bonds, are the best suitable financial instrument for Institutional investors since it addresses most of their investment objectives – risk, return, liquidity, and regulations. But, India's RE generating companies don't issue bonds instead rely on banks and NBFC for debt financing as ratings of these bonds, thanks to structural issues in India's power sector. The challenge to accessing the capital market **is the low rating of the bonds issued by the RE sector** – most of the bonds issued by this sector have below AA rating. Current regulations do not allow domestic institutional investors to buy debt securities having less than AA rating. The lean towards high rated bonds reflects from the structure of the bond market – ~90% of outstanding corporate bonds are AA or higher. So, the risks associated with RE companies and projects need to be brought down to the level, which can attract low risks seeking investors. Credit enhancement can help the borrower to reduce the risk to a lower level, which can improve ratings of the bonds by the RE sector, thereby enable access to market borrowings. Credit enhancement can be structured in a such as way, which could lead to mutual benefits for the issuer and investors.

The use of credit enhancement has been quite extensive in global financial markets and covers a wide variety of financial obligations, including loans, bonds, receivables, and swaps. The core objectives of the credit enhancement facility have two folds: 1. strengthen the credit profile of at least one of participants in a financial transaction; 2. attract new sources of financing, thereby lowering the expectation on bank capital to be made available from the banking system. Several studies have found that credit enhancement provides financial additionality by increasing the availability of credit and / or improves borrowing terms (e.g., longer tenor, lower rates, etc.). There are three conditions under which credit enhancement scheme works efficiently, i.e., the guarantor has information advantage and enforcement power, the ability to spread and diversify risks and regulatory arbitrage.

### 6.1 Challenges with existing credit enhancement instruments

Partial credit guarantee (PCG) is one of the popular credit enhancement products. To improve bond ratings and, in turn, drive Institutional investors' investments in the infrastructure sector, IIFCL provides PCGs to investors; this PCG is counter guaranteed by the Asian Development Bank (ADB). IIFCL and ADB do not have information advantage and enforcement power, but ADB can spread and diversify risks among different types of borrowers and geographies. Also, ADB and IIFCL have regulatory arbitrage over traditional

banks to offer this guarantee. However, the PCG program has not been successful yet; only two RE issuers (Renew and Hindustan and Power) have used this instrument to raise funds. The failure of PCG is attributed to two reasons: the investors are still not clear about the transaction structure, and the yield of bonds are still not attractive given the quantum of guarantee (27.5% of principal amount). Also, the borrowers have alternative sources of funding (banks, NBFCs, IDFs) at the same or competitive rate, so they have little to no incentive in using this product.

With existing risk coverage under PCG (27.5%), theoretically, bond ratings would improve by two notches resulting in interest cost savings of 150bps. The cost of credit guarantee is in the range of a 0.5%-0.75% of borrowing, while the annualized cost of the transaction (rating + due-diligence+ structuring cost listing fee) would be more than 0.5% of borrowing. So, borrowers must bear the minimum additional charge of 1%. Hence, the maximum savings of 0.25%-0.5% would not give enough incentives to borrowers to use this structure.

Also, the investors did not show any appetite to buy these bonds. The underwriter of these two bonds took several months to off-load these bonds from their book, possibly at a loss. The lower appetite of the bonds reflects the pricing, and the structure of the bond is not attractive enough for investors. **So, the net savings given in the table may not reflect the actual savings. This product neither excites investors to buy this bond nor incentivize borrowers to issue bonds instead of bank financing for their debt capital requirement.**

Rating without PCG	BBB	Interest Rate: 10.0%
PCG Coverage	27.5%	
Rating with PCG	AA	Interest Rate: 8.5%
Savings in Interest rate		150 BPS
Credit Guarantee Fees		50-75 BPS
Rating + due-diligence+ structuring cost +Listing costs (BPS)		50 BPS
<b>Net Interest Savings</b>		<b>25-50 BPS</b>

Source: Available publicly available information

## 6.2 Structuring credit guarantee products

Pricing of credit guarantee product depends on probability default, loss given default, and size of the regulatory capital required to support credit enhancement. IFCL has used credit rating of the project in deriving the loss given default instead of estimating the loss given default of the project themselves. Historically, credit rating agencies have overestimated loss given default of infrastructure projects, which makes most of the infrastructure projects, including renewable energy projects, rated BBB or below. This erroneous methodology makes partial credit guarantee instrument commercially infeasible since higher assumption

of the probability of default (P) and loss-given-default (LGD) translates into a higher price of credit enhancement guarantee.

The solution is to price credit enhancement products appropriately and set up an institution with adequate capital, which can offer this product at a competitive price – incentivizing borrowers to issue bonds instead of lending. Besides, the Government can subsidize a portion of transaction costs, which can help the credit enhancement product to scale up. The above two incentives will improve the infrastructure sector to issue much needed long-term bonds to institutional investors at a lower cost. With the increase in the size of the credit enhancement product along with diversification, the pricing of this instrument can be more competitive. There is enough evidence which suggested that Government-funded guarantee schemes have been extensively used by Governments and DFIs to increase access to credit to unserved segments. Since the transition to less-carbon intensive requires a change in the energy mix in favor of the RE sector, usage of public capital can be justified for a sector, which is generating positive externalities.

**By subsidizing the credit enhancement instrument, bonds rated below AA can be notched up to AA or higher, and thereby attract large institutional investors. This kind of structure will help the renewable energy sector to raise much needed long term debt capital from these institutional investors at a lower rate.**

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