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Lucrative Renewable Energy Investment Options: An Analysis of Financing Options

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ABSTRACT

The investment in the renewable energy sector has tremendously increased across the globe in the last decade. The rise in solar and wind energy build-up assets since 2012 has brought in light the potential of India to attract investment in the clean energy technologies. The increasing figures of cash flow may not simply imply that the growth trajectory shall not be interrupted. Since the clean energy technologies involves commensuration of risk and funds at right stage of the project, the flow of funds at correct time and in appropriate mode is a significant decision. As the trends indicate, private investors are hesitant of investing in the early stage of the project. While the project becomes operational the uncertain nature of investment modes results in reduced return on investment and thereby discouraging a continuous investment renewal in the sector.

This resistance comes ahead of regulatory and financial constraints. This research work aims to study the viability of the Alternate Investment Fund (AIF) options for private investors in the clean energy technology and infrastructure. The work also proposes to highlight the policy concerns in the capital and securities market for specifically upcoming investors in the energy sector.

To channelize the multilateral power trading network as a solution to high figures of losses in Generation and transmission sector, we need to engage in a multi-pronged discussion on the modes of investment. Investment decision thus involves consideration of risks associated and the policies governing these modes. Both foreign and domestic venture capital funds have been on rise post 2005 and thereby, SEBI has brought forward regulations to incentivize the private sector investors. This research work tries to carve out the role of SEBI to foster long term efficient investment goals in this area. The scope of this work is limited to the private equity prospects in the renewable energy infrastructural development.

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I. INTRODUCTION

Indian Renewable Energy sector less than a decade old has proved to be an attractive resource potential hub. India energy sector has faced huge losses in the previous 2 decades. The Privatization and unbundling regime brought in 2003 changed not only the regulatory regime but also changed the commercial structure of the sector. The Power sector was initially unbundled into 3 sub-sectors viz. Generation, Transmission and distribution. This was primarily done with the motive of bringing fair amount of systematic investment and efficiency in the returns. However, the figures in the coming years weren't as efficient as was anticipated.

The top 5 and top 10 players (in terms of share of projects sanctioned each year) have accounted for over 40% and over 60% respectively of the shares of sanctioned projects for both solar and wind generating capacity each year between 2014 and 2017.[3] With the advent of cleaner sources of energy like solar and wind energy[4], the small-scale private sector players were supposedly expected to step in. However, most resisted, those who did headed towards serious financial crunch and ultimately, death of the investment. The death of investment is not just a one-time action. It's a gradual process that not only hampers private entity at stake but also messes with the economic growth of the country. The losses that originated in the generation sector and subsequently spread across the electricity supply chain were ultimately attributed to the distribution sector. Hence, the policy change and commercial regime mainly focused on the distribution sector. The foundational challenge that lies in the generation sector was lack of systematic investment. This scattered and unmanageable system also suffered when the economies across the globe were shifting to non-conventional sources of power generation. Renewable power grew by 17%, higher than the 10-year average and the largest increment on record (69 mtoe).[5] The renewable energy sources viz. solar energy, wind energy, hydropower, bio-fuel, nuclear energy sources are potentially aimed at.

II. ENERGY TRANSITION

The trends of transition in energy sector have been usually welcomed. As R&D quotient of different countries strengthened, the alternative options for power were being discovered. As the renewable energy sector has grown in the region, the capital mix and the range of financing institutions engaged have also evolved.[6] From an operational viewpoint, renewable energy utilization reduces the demand for conventional energy forms. Thus, in performing economic and financial analyses, there is no significant distinction between renewable energy

[3] IEA, *World Energy Investment*, CEEW/IEA, Paris 12 (2019).

[4] DTI, *Our Energy Future—Creating a Low Carbon Economy*. HMSO London (February 14, 2003) *Available at* https://fire.pppl.gov/uk_energy_white paper_feb03.pdf (Last visited on March 05, 2020).

[5] BP Statistical Review of World Energy 2018 *Available at* https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2018-full-report.pdf (Last visited on February 13, 2019).

[6] Power generation from renewable sources has seen considerable growth in the past few years, with its share in total energy mix rising to about 17% in FY18; Resurgent India, "Renewable Energy Sector Funding, Analysis" (2015).

technologies and measures designed to improve the efficiency of conventional energy utilization.[7] Beginning with a key role for development finance backing large-hydro, geothermal and bio-energy projects before 2000, followed by increasing private sector investments supported through public-private partnership models and carbon markets. Recently, the diversity of financial actors engaged in the sector has grown providing equity and debt financing, while also setting the stage for unlocking capital through less developed avenues such as green bonds and climate funds. The commercial reforms witnessed in past 20 years were supposedly investment friendly but the sectoral regime was insufficient to retain and multiply the finances.[8]

The vital resource for any transition move is connected to the financial flow in that sector. Finance is a cornerstone of the energy transition. [9] What is more important is that the economy of the country must fructify from the investment, both domestic and foreign. Well-established industry players with access to favorable sources of finance through foreign sources of capital, balance sheet strength or by virtue of being state-owned enterprises have been instrumental in driving renewable energy deployment in India.[10] As India is looking forward to the next energy phase, the modes of investment determine the success and pace of this transition.

Late 1980s witnessed a paradigm shift towards non-conventional sources of energy. Coupled with rising population and industrial demand for energy, efficiency was required. In 1992, the World Bank established the Asia Alternative Energy Program (ASTAE) to bring renewable energy and energy efficiency into the Bank's power sector lending in Asia.[11] Alongside the LPG regime India consented to, fostered our energy requirements and also investment. Significant sector specific regulatory changes were introduced.

US based Institute fir Energy Economics and Financial Analysis has in its report while addressing India's need for investment minimum of $500bn to achieve 2022 target production said that international investors are ready to investment in India'as renewable energy infrastructure.[12]

The concentration in investment decisions for both solar PV and wind generating capacity is unsurprising.[13] Given that one of the major sources of competitive advantage in these

[7] Hillary Brown, "Towards A Circular Energy Economy: Cross-Sector Successes in Brazil and India" *Consilience: The Journal of Sustainable Development* 21(2018); David Jhirad, "Renewable Energy in Developing Countries: Priorities and Prospects", 8 *The Energy Journal*, 105-123 (1987).

[8] K. Neuhoff, "Large-Scale Deployment of Renewables for Electricity Generation", 21(1) *Oxford Review of Economic Policy* 88-110 (March 1 , 2005).

[9] Jens Lowitzsch(Ed.), *Energy Transition: Financing Consumer Co-Ownership in Renewables (*Palgrave Macmillan, Switzerland, 2019).

[10] CEEW Kanika Chawla, Michael Waldron Et. Al, **"**Clean Energy Investment Trends**:** Evolving Landscape For Grid-Connected Renewable Energy Projects In India" 9 (2018).

[11] BP Statistical Review of World Energy 2018 *Available at* https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2018-full-report.pdf (Last visited on February 13, 2019).

[12] IEEFA Tim Buckley, "International Capital awaits Robust policy environment in India's Renewable infrastructure sector" 2 (2019).

[13] CEEW, Kanika Chawla and Manu Aggarwal, "Anatomy of a Solar Tariff" (2016).

markets is access to finance on favorable terms, with the cost of finance accounting for over 60% of solar and wind power purchase tariffs.[14]

Investors are mainly interested in the profits that can be obtained by RES investments.[15]

Out of top private players the position[16] each of them hold in the market is not constant across the years and therefore, the fluctuations in the market position clearly is an indicator of fear of minimal returns on investment and subsequently death of the investment. The large institutional investors must be complimented by small scale private investors to enrich the renewable energy projects. Since R&D is the primary component of renewable energy innovation, it must be kept in mind that the project cost is facilitated by adequate if not continuous rate of returns.

III. MOVING FROM DEBT FINANCE

The Debt finance while has been pertinently seen as a viable solution for the problem of renewable energy projects financing, it cannot be ignored that the economic condition of the Banks is not substantially worthy of providing significant and continuous finance flow to the project. The effectiveness of the Bank in following through on its ambitious agenda fundamentally rests on the willingness and commitment of developing countries to pursue these strategies and the degree to which renewable energy applications are seen to serve countries' development priorities.[17] Even where fairly high levels of competitive banking activity exists, bankers may view risks and other uncertainties with regard to new types of energy projects as prohibitively large and hence making private capital basically unavailable.[18] Thus, India witnesses the need for alternate funds to the project.

The projects that are yet to be operational need specifically more attention in terms of continuous and adequate cash flow. Following the ideal 70:30 ratio taken, the debt from the banks and other market bonds is usually turned into a bad debt, since the under-construction projects indicate highest risk patterns and thereby no rate of returns.

Thereby begins the discussion to increase the equity funds. The equity market is also not well-developed for early-stage investment[19], due to high-risk appetite of these technological projects making it thus unfeasible mode of financing. Not only does sourcing from private sources invite high interest rate but is also an obstacle when the near to zero rate of returns are pre-estimated. The burden often is shifted to the market conditions prevalent.

Pondering upon the market conditions does not merely mean the forces of demand and supply in the power sector, it also means the role of the capital markets. By and large, in the primitive

[14] Kanika Chawla, Manu Aggarwal & Arjun Dutt,"Analysing the falling solar and wind tariffs: Evidence from India" *Journal of Sustainable Finance and Investment* (2019).
[15] Voivontas et al., "Evaluation Of Renewable Energy Potential Using a GIS Decision Support System", 13(3) *Renewable Energy* 333-44(1998).
[16] Number of projects taken up every year.
[17] IRENA, *"Global Energy Transformation: Roadmap to 2050*" 18 (2017).
[18] K. Neuhoff, "Large-Scale Deployment of Renewables for Electricity Generation", 21(1) *Oxford Review of Economic Policy* 90 (March 1 , 2005).
[19] Swati Deva, "Foreign Venture Capital Investment: The Indian Experience", 42 *The International Lawyer* 180 (2008).

stage of the projects, capital market directly doesn't have much to facilitate. However, the indirect interaction with the securities in the capital markets can serve the purpose of financing problem at the early stage of the renewable energy project, especially sources like hydropower, solar and wind energy sources.

IV. VIABLE STRUCTURE FOR AIF

Capital markets are an important source of alternative and additional capital to bank lending.[20] The private equity investors clearly maneuver their agreements to foster and guide the minority investment in the sectors in need.[21] Hence, the alternate mode of investment is eyed by the commercialists.

The SEBI (Alternate Investment Funds) Regulations, 2012 were brought out in distinction of the collective Investment schemes and mutual funds to bring in privately pooled investment for a pre-determined objective.[22] The striking inclusions of these AIFs are the Venture Capital Funds, Infrastructure funds, Debt funds, Private Equity Fund, Social Venture Fund, SME Fund etc. While this is an exhaustive list of nomenclatures, the USP of these funds is the regulatory concession. The aimed investment has to be channelized towards maximum profits. Hence, the pooled finance provides freedom to the managers of AIF to enunciate a business plan that can be best suited for further investment return maximization.

The AIF once established flags in market reputation and continuity in flow of finance. The investor qualifications are relatively less stringent and has surged the finance inflow from the AIF to Rs. 134,200 crores as in March 2019.[23] The regulations floated by the regulator for AIF has nearly brought in ease of finance in the energy sector specific. However, the number of private players adopting this mode is still less. Reason being the project design is not planned at two different stages and thereby apprehensions that AIF might not suit for the operational stage of the project, this plan is per se rejected.

Infrastructure funds

Infrastructure funds[24] are specific funds primarily investing in the unlisted securities and listed debt securities and securitized investment. However, the explanation to Regulation 2(m) provides discretion to Government of India to notify the meaning of infrastructure. Thereby, indicating that the executive intervention by-passing the regulatory powers of SEBI has been kept in to include those potentially volatile projects that are not in their ultimate stage infrastructure projects but the initial stages require development of infrastructure. Renewable energy sources like hydropower,

[20] Climate Policy Initiative Divjot Singh, Dhruba Purkayastha & Gireesh Shrimali, "From Banks to Capital Markets: Alternative Investment Funds as a Potential Pathway for Refinancing Clean Energy Debt in India" 10 (2019).

[21] Afra Afsharipour, "Corporate Governance and The Indian Private Equity Model", 27(1) *National Law School of India Revie*w 17-48 (2015).

[22] BCAS Referencer 2016-17 SEBI (Alternative Investment Funds) Regulations, 2012 Available at https://www.bcasonline.org/Referencer2016-17/Other%20Laws/sebi_alternative_investment_funds_regulations_2012.html

[23] Dhruba Purkayastha, "Alternative Investment Funds to help renewable energy access capital markets*" ET Energy World* (July 23, 2019).

[24] Regulation 2(m), SEBI (Alternative Investment Fund) Regulation, 2012.

solar and wind have been continuously in dearth of infrastructure along with the land procurement constraints.

Thereby, the need of private sector funds to be attracted towards the renewable energy projects arises. There are two models proposed for the alternative Investment funds for specifically renewable energy projects. In the first model, the AIF is sponsored by the Government institution like IREDA[25], while second model pertains to the privately sponsored Alternative Investment Funds schemes.

Usually, the renewable projects in the early stage require substantial amount of the investment and hence, AIF registered under Category 1 for early stage ventures are best suitable for financing. However, this does not necessarily mean that the all structural issues are addressed by merely shifting to AIFs. This is just a part of the long term investment plan of the project.

IREDA sponsored AIF

India Renewable Energy Development Agency established with the objective to catalyze growth in renewable energy generation to meet the 2022 175GW production target. IREDA has been successfully earning profits out of the increasing figures of loans disbursed. With the proposal to float and AIF that is sponsored by IREDA[26] implies assurance of funds. This is also to facilitate the sector specific financial growth. Backed by the motive to reduce the electricity cost deficits in the country, institutionally backed AIF means moving back from where we came. That is to say, that to remove the concentration of funds from single source of finance was the AIF model proposed.

However, the unified structure has received a big boost as general permission has been granted under the FDI Policy to accept foreign investment in an AIF under the automatic route.[27]

The investment model is project specific hence the renewable energy source potential also determines the mode of investment best favorable for not only efficiency in the production but also for retaining and multiplying the investment. The investment faces plenty of internal as well as external barriers. Many internal barriers result because renewable energy projects are *not* simple investment projects.[28] External barriers are witnessed in the form of regulatory hindrances.

V. REGULATORY BENEFITS AND CONSTRAINTS

Opting AIFs to fulfill the finance requirements of the project brings it under the aegis of the two regulators; Securities Exchange Board of India and Central Electricity Regulatory Commission (or State Electricity Regulatory Commissions whichever applicable**.** The regulatory bodies don't just ordinarily regulate the respective

[25] India Renewable Energy Development Agency.

[26] "IREDA plans to sponsor Alternative Investment Fund*"*, *The Hindu Business line*, October 14, 2018, *Available at* https://www.thehindubusinessline.com/money-and-banking/ireda-plans-to-sponsor-alternative-investment-fund/article25221118.ece (Last accessed on March 08, 2020).

[27] Divjot Singh, Dhruba Purkayastha & Gireesh Shrimali, "From Banks to Capital Markets: Alternative Investment Funds as a Potential Pathway for Refinancing Clean Energy Debt in India*"*, *Climate Policy Initiative* 10 (2019).

[28] Eric Martinot, *"*Renewable energy investment by the World Bank*"*, 29 *Energy Policy* 689-99 (2001).

sectors but also are onerous for fostering the commercial objectives of the stakeholders. The regulatory regime in place at present (SEBI (Alternative Investment Funds) Regulations, 2012 and Electricity Act, 2003) doesn't really bring forth harmonious efforts of the two regulators to foster commercial or consumer interests. The framework in place has on one side nourished the operations and upcoming of new projects in the renewable energy sector, and constricted the early stage commercial operations on the other side.

The India Renewable Resources Development project occurred in parallel with the explosive market growth of wind power in India in the mid-1990s, fuelled by favorable investment tax policies and a supportive regulatory framework.

With Government of India opening up prospects of FDI in this sector, the investment decisions are governed by the regulatory environment. Albeit, the dispute resolution parameter is not an attractive quotient for inviting investment in the sector, the Model Bilateral investment treaty was being criticized to withhold foreign investment prospects in the energy sector specifically.

AIF registered under Category 1 i.e., a domestic fund is exempted from tax. The pass through status only accorded to the domestically registered funds. The legislative intent behind this is to bring the fund in regulatory record. However, the foreign investors still face the red-tapism issues when it comes to independent registration under the AIF regulations, necessarily implying that the AIF must be a mix of investors from different sources, since the qualifications for sponsors are minimal.

Role of SEBI and CERC

Talking about the role of capital markets regulator while also admitting the fact capital market is not really offering the energy players the requisite finances. However, the researcher discusses this to highlight the potential role of SEBI as financial market regulator. Back in 1981, the paucity of realistic assessment for investment in the renewable energy sector was put in an as a reason for unpredictability in the investment decisions. As of today, the investment decisions by and large based on the economic formula have led to significant number of successfully running renewable energy projects.

Renewable energy sources like hydropower, solar and wind have been continuously in dearth of infrastructure along with the land procurement constraints. Central Electricity Regulatory Commission established with primary objectives of consumer protection has by and large failed to address the regulatory facilitation for large scale energy projects backed by technological innovation.[29] SEBI as a regulator has been consistent in its working of providing a coherent structure of financial growth to kick in market efficiency.

The integrated effort from both the regulators in terms of aligning the renewable energy sectors' financial need with the capital market to dilute

[29] "Investing in renewable energy might well result, at least over the short to medium term, in an increase in electricity prices." Ariel Bergmann, Nick Hanley & Robert Wright, "Valuing the attributes of Renewable Energy Investments", 34 *Energy Policy* 1004–14 (2006).

the dependence on banks and NBFCs is the need of the hour. The market trends must also affect the renewable energy capital to align the policies to be efficient to generate profits enough to renew the capital.

The biggest challenge that the start-ups or new entrants in the market face is that the credit rating is usually never AA for the projects in the early stage. Thus the value adding method for the cost benefit analysis must be adopted for new investors in this sector.

There is a need for a robust system of regulation and not restricting the investors to bring the renewable energy infrastructure in place. The structure must be in line to bring the international energy investment demand on line and thereby to facilitate the 2022 renewable energy production target.

VI. WAY AHEAD

The primary concern for the renewable energy technology as has been floated through these years has been the concern of risk allocation in the investment plans. Formerly, the power sector was given meager importance when it came to systematic investment structure planning. Thus, the chain reaction of the deficit figures was conveniently attributed to the distribution sector.

The losses that originated in the generation sector and subsequently spread across the electricity supply chain were ultimately attributed to the distribution sector. Hence, the policy change and commercial regime mainly focused on the distribution sector. The foundational challenge that lies in the generation sector was lack of systematic investment. This scattered and unmanageable system also suffered when the economies across the globe were shifting to non-conventional sources of power generation.

The regulations floated by the SEBI for AIF has nearly brought in ease of finance in the energy sector specific. However, the number of private players adopting this mode is still less. Reason being the project design is not planned at two different stages and thereby apprehensions that AIF might not suit for the operational stage of the project, this plan is per se rejected.

The biggest challenge that the start-ups or new entrants in the market face is that the credit rating is usually never ‘AA’ for the projects in the early stage. Thus, the value adding method for the cost benefit analysis must be adopted for new investors in this sector.

While Electricity Act, 2003 in itself struggles to balance the commercial and consumer interest, the long term goal we are discussing is integrated efforts on part of both the regulators to bring together a coherent financial environment that could foster the market efficiency by enhancing the rate of returns. Thus, an empowered regulatory interplay is suggested that shall not help in attracting investment for renewable energy projects but shall also help maintain and retain it.

The integrated effort from both the regulators in terms of aligning the renewable energy sectors’ financial need with the capital market to dilute the dependence on banks and NBFCs is the need of the hour. The market trends must also affect the renewable energy capital to align the policies to be efficient to generate profits enough to renew the capital. There is a need for a robust

system of regulation and not restricting the investors to bring the renewable energy infrastructure in place. The structure must be in line to bring the international energy investment demand on line and thereby to facilitate the 2022 renewable energy production target.

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