

Financial instruments for RE financing

February 2020



The Need for Renewable Energy Finance

Improved Economics of Renewable Energy

- Since all SAARC countries are **emerging economies**, the emphasis has traditionally been on encouraging the **lowest cost of energy generation**.
- Over the past couple of years, considering the technological advances and the increased scale of **renewable energy installations** worldwide, renewable energy has **now become very competitive** and in some countries has also reached cost parity with thermal.
- Renewable energy has a number of qualitative benefits which are of great importance because countries all over the world are becoming more focused towards environment and reducing carbon footprint.
- In order to provide energy in the **most remote areas**, which is a challenge in SAARC nations, renewable energy comes out as the most viable option with readily available fuel and use of small scale projects and off-grid installations to reach these areas

Need for External Finance

- In order to meet **the aggressive renewable energy targets** set by the countries, there is a clear need to accelerate investments and expand finance access significantly in the sector to bridge the currently prevailing financing gap.
- To this end, **various stakeholders need to be engaged**, including governments, national financing vehicles, development finance institutions and the private sector.
- Some of the challenges faced by the private sector in accessing finance and attracting capital into renewables include **unfavorable scale of project, lack of long-term and project financing, weak or underdeveloped local financial markets constraining re-finance or exit from the project, general knowledge, resource adequacy and capacity gaps among the project stakeholders and investment risks**
- We have aimed to address these challenges through our study

Overview of Financial Instruments

A variety of debt or equity financing instruments are available to support RE projects. Over the years, various kinds of innovative financial instruments and structures have been deployed. These innovative instruments have proved to be a successful mode of investment into matured markets. The selection of instruments varies from projects to projects depending on the type of risks faced by the investors and the maturity of the financial markets.

Debt Finance Instruments

- Senior Debt
- Subordinated Debt (Mezzanine Finance)
- Grants

Equity Finance Instruments

- Venture Capital Funds
- Private Equity Funds
- Infrastructure Funds
- Pension Funds

Guarantees and Insurance

- Guarantees
 - Government Guarantee
 - Political Risk Guarantee
 - Currency Risk Guarantee
- Insurance

Innovative Finance Instruments

- Green Bonds
- Infrastructure Investment Trusts (InVITs)
- Carbon Financing
- Small-Scale Project (SREP) Financing
- Asset Backed Securities (ABS)

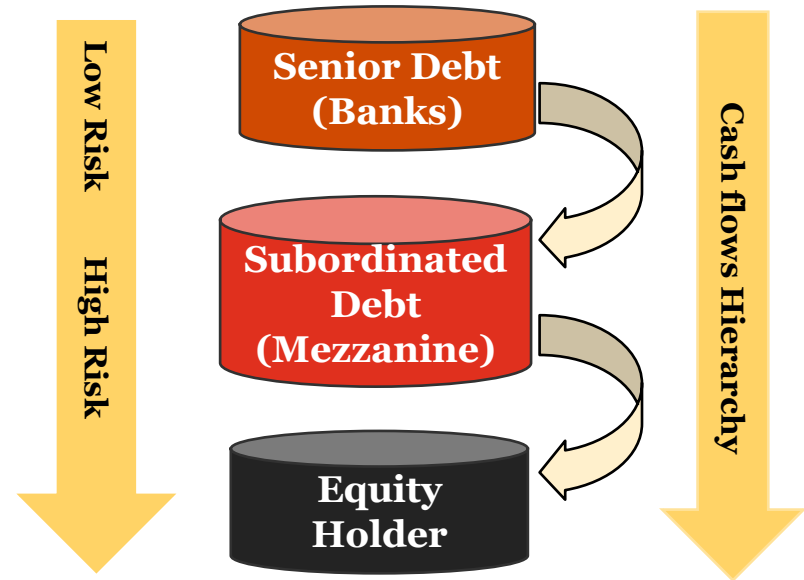
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Traditional Financial Instruments

Debt Finance

Overview of Debt Finance

- Debt funding, through conventional term loans, covers ~70% of project costs in renewable energy
- The major sources of debt financing are **international and national commercial banks**. Other sources of debt financing include **multilateral development banks (MDBs)** and the **International Finance Corporation (IFC)**, debt investment funds, equipment suppliers, and private investors
- In debt funding, the lenders must be paid before the shareholders are repaid. Hence, the lenders bear less risk than equity holders



Senior Debt:

- Provided by Banks during the start-up and construction phases with flexible payment structures against the life of the project.
- Lender is risk averse and seeks covenants and measures to minimize losses in an event of a default
- **SBI's** customized financial product for grid connected rooftop solar PV program
- **Standard Chartered's** renewable energy and environmental finance team that has lent \$4.2 billion world wide

Advantages

Debt will be at the level of project company (SPV) instead on the books of the parent company

Challenges

Local commercial banks in developing countries are reluctant to extend long-term loans. Instead, they offer a mid-term loan with a potential follow-up finance at the end of the term

Overview of Debt Finance Continued...

Subordinated Debt (Mezzanine Finance)

- The product insulates senior debt investors from unforeseen risks and reduce cost of capital where equity is too expensive
- Some forms of subordinated debt can be converted to shares or, as in the case of preferred shares or take the form of equity but with lesser or no rights of control

Advantages

It improves the cash flows in a project and reduces the risk of senior lenders. As a result, the willingness to lend and to accept long-term loan increases

Challenges

High risk is compensated for by a higher rate of interest as compared to RoI on senior debt

Public Funding/Grants

- This includes funding of renewable initiatives through budgetary allocations or grants from global/ multilateral agencies like the World Bank, Asian Development Bank, developed world etc.

Advantages

The main motive to provide energy access to the population, there is no return expectation involved from the funds invested.

Challenges

Usually required in countries where there is very limited access to basic infrastructure, the per capita income is low and markets are largely under developed

Sri Lanka Renewable Energy Program:

The World Bank is funding projects related to in grid-connected, mini-hydro, off-grid village-level hydro and SHS. These funds are channeled to the MoF and Planning as an International Development Association (IDA) credit.

Equity Finance

Overview of Equity Finance

Renewable energy equity investors take an ownership stake in a project, or company. It involves a range of financial investors including Private Equity Funds, Infrastructure Funds and Pension Funds with varied features in terms of risk appetite, loan tenor and expected returns.

	Venture Capital Funds	Private Equity Funds	Infrastructure Funds	Pension Funds
How funds are raised	Funds are raised from wide range of sources with high-risk appetite to include insurance companies, pension funds, mutual funds and High net worth individuals	Funds raised from a wide range of sources with medium risk appetite to include institutional investors and high net worth individuals	Funds drawn from a range of institutional investors and pension funds	Funds are drawn via Public equity, corporate & Government bonds real estate, private equity, cash and inflated linked assets
Appetite for Risks	High	Medium	Low	Low
Investment Tenor	4-7 years	3-5 years	7-10 years	8 - 12 years
Expected IRR	50 % to 500%	20-25%	12-15%	10-12%

Overview of Equity Finance Continued...

	Venture Capital Funds	Private Equity Funds	Infrastructure Funds	Pension Funds
Area of Investment	New Technology	Matured Stage	Mature Stage	Mature Stage
Investors	Renewable energy venture fund (ARENA & Softbank) Sunnova Energy Corp, SunRun, Hampton Creek	Africa Renewable Energy Fund, IDFC, Abu Dhabi Investment Authority, Goldman Sachs.	Allianz Global Investors, Blackrock, GEEREF	CDPQ

Raised Equity

- Mytrah Energy raised USD 78.5 million from IDFC Project Equity and USD 19 million from PTC Financial Services.
- Solar IPP Azure Power raised USD 13.6 million from Germany's DEG

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Guarantees

Guarantees

Investors and lenders are naturally averse to risks that give rise to negative fluctuations in project cash flows. To attract investors, the RE projects should be strategized in such a way, that it minimizes the probability of an occurrence that gives rise to negative financial impact on the RE projects. Financial risk instruments such as guarantees transfer specific risks away from project sponsors and lenders to insurers and other parties.

Government Guarantee:

By issuing guarantees, governments are in a better position to mitigate project risks that help enable financing.

The most popular form is an assurance to enter a contract through the state utility to purchase electricity from the project.

Political Risk Guarantee:

It provides a broad coverage of risks, which occur by political events such as war, terrorism and civil disturbance, which may include losses from revolution, insurrection, sabotage and terrorism.

YAP Renewable Energy Project :

The State of Yap, in the States of Micronesia, developed a 3.6 MW solar-wind- diesel hybrid project to reduce dependency on imported diesel financed by the ADB.

To reduce the risk of late- or non-payment of loan obligations by the borrower the Federated States of Micronesia provided a sovereign loan guarantee. Commercial risk associated with securing leases for the solar installations was reduced by a long-term leasehold rights to install, maintain and operate the systems on government-owned rooftops.

Wind-power in NICARAGUA:

Nicaragua's electrification rate is among the lowest in Central America. MIGA's \$16.3 million in political risk guarantees to Eolo de Nicaragua S.A., a 44-megawatt wind farm in Rivas province, helped the country rectify its power-sector issues. The Agency's guarantees covered an equity investment by Globeleq Mesoamérica Energy Limited, Bermuda.

Guarantees Continued..

Currency Risk Guarantee:

Currency risk arises in situations in which the project has revenue in one-currency and loan payments in another.

For renewable energy projects, a mismatch between the financing currency (hard) and the revenue currency (local) is often a problem for debt repayment. Due to these concerns, some transnational project developers would only sign a contract in hard currency to insulate themselves from currency risk.

Although it can remove currency risk, it also opens up exposure to non-payment risk if the off-taker cannot pay the PPA price in hard currency. Some governments take some of the currency risk by offering USD tariffs payable in local currency. Instruments such as currency swaps can also be used for this purpose.

India's Solar Support Fund:

The Indian government, has been experimenting with the concept and has plans to launch such a fund to support solar development. Under this scheme, distribution companies will quote their price for solar energy in hard currency (USD) with a lock in period of 25-year and charging customers in Indian Rupees (INR). MNRE created a hedging fund of USD 1 billion by charging developers a hedging fee of INR 0.90/kWh (about USD 0.015/kWh). The fees would be transferred to an escrow account to cover against local currency depreciation . It will help developers access international capital and reduce high hedging costs.

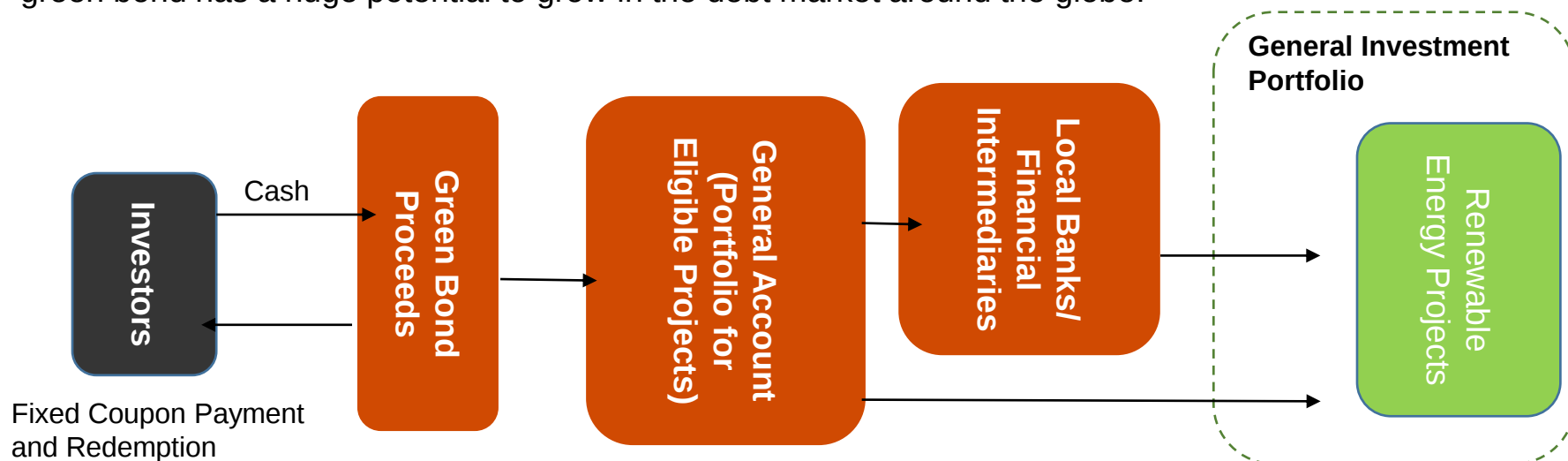
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Innovative Finance instruments

Green Bonds

Green bonds are the fixed income financial instruments that are used to promote and to implement environment solutions. In this instrument, the issuer of the green bond gets a capital to finance green projects while the investors receive fixed income in the form of interest. When the bond matures, the principal is repaid. In a way, green bonds are a subset of corporate bonds, and where the use of proceeds are allocated to environment related activities.

The European Investment Bank issued the first green bond in 2007 and raised Euro 600 million under the label Climate Awareness Bond. These bonds constitute a small fraction of the global debt market. Hence, green bond has a huge potential to grow in the debt market around the globe.



Green Bonds in India a \$7 billion market:

Green bonds in India have grown from virtual non-existence in early 2015 to a US \$7 billion market, with participation from public and private sector corporations such as ReNew, Greenko and Azure who are opting to raise finance, especially for renewable energy projects through this mechanism. The investors include pension and insurance funds.

Infrastructure Investment Trusts (InvITs)

InvITs are instruments that work like mutual funds. InvITs are designed to pool small sums of money from a number of investors to invest in assets. Part of this cash flow would be distributed as dividend back to investors. There are four important parties to an InvIT — sponsors, investment managers, project managers and the trustee. InvITs are formed by complying with the regulatory authority.

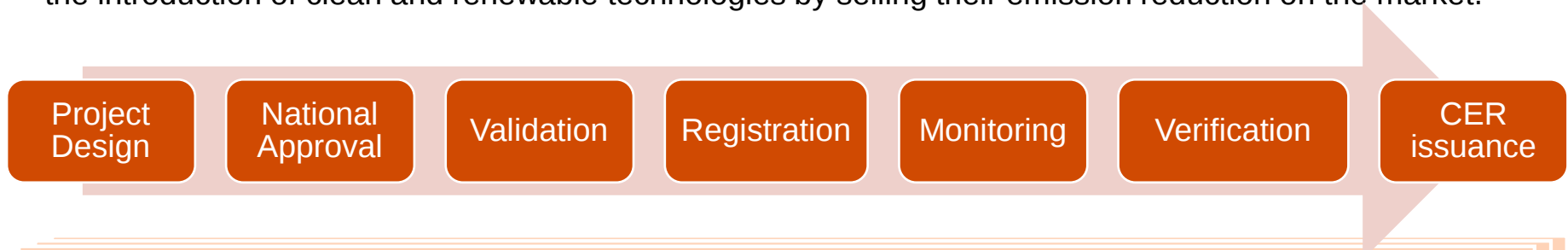
The infrastructure company interested in getting funds from the public will form this trust, and then appoint an investment manager who will be responsible for how the assets and investments of the InvIT are managed. There is also a project manager, who actually executes the projects. The investment manager oversees it. Since the instrument is essentially a trust, the company will also appoint a trustee, who has to ensure that the functions of the InvIT, investment manager and project manager comply with regulatory rules.

InvITs in India

According to SEBI, India there are certain rules that the InvIT issuers have to follow to safeguard the investor. First, the sponsor should hold a minimum 15 % of the InvIT units with a lock-in period of three years. Second, InvITs have to distribute 90 % of their net cash flows to investors. The trust is required to invest a minimum of 80 % in revenue generating infra assets. Only the rest can be used for under-construction assets. Dividends from the trust will be distributed to the investor depending on its cash flow and there is no dividend distribution tax on InvIT units. InvITs are suitable for high net worth individuals, institutional and non-institutional investors like pension funds, foreign portfolio investors, mutual funds, banks and insurance firms.

Carbon Financing

The Clean Development Mechanism (CDM) is a mechanism which is intended to contribute to the ultimate objective of the United Nations Framework Convention on Climate Change (UNFCCC), which is to prevent dangerous climate change. The basic principle of the CDM is simple; it allows developed countries to invest in low cost abatement opportunities in developing countries and receive credit for the resulting emissions reductions (CER). Developed countries can then apply this credit against their carbon emission reduction targets, reducing the cutbacks that would have to be made within their borders. As a result, projects in developing countries will get a new source of financing for sustainable development in the introduction of clean and renewable technologies by selling their emission reduction on the market.



Brazil & Mexico's Successful Carbon Financing

Brazil is a successful promoter of Clean Development Mechanism (CDM) projects. Brazil's CDM projects account for 40% of all CDM projects in South America and for 44% of contracted Certified Emission Reduction (CER) credits up to 2012.

In **Mexico**, a 250.5 MW and USD 600 million EURUS wind park was set up in the midst of the financial crisis. EURUS benefits from the sale of Certified Emission Reduction (CER) credits for offsetting a total of 599,571 tonnes of CO₂ annually.

Small-Scale Project (SREP) Financing

Small-scale renewable energy projects¹ (SREPs) play a crucial role in increasing deployment of renewables in developing countries. Small projects are well suited to conditions in emerging markets as they allow developers and banks to gain experience at limited risk profile and small scale projects. However, financing options in these markets are not well-aligned with the needs of small-scale projects. Given the high costs of project finance transactions, small projects are typically financed with corporate loans, which are not designed to finance RE investments. Risks include high interest rates, short tenors that doesn't comply to the long-term nature of RE.. These prevent viable projects from being pursued and hinder the long-term development of the renewables sector.

THE LAB by Climate Policy Initiative:

CPI is an independent, non-profit organization, which is considered a leader expert group in global climate finance. It has started an initiative called 'THE LAB' which contributes to the transformational development of local institutions to enable a wider scale-up of renewable energy finance. It has pitched the idea of SREP which is essentially an instrument that aims to increase investment in small-scale renewables from 1-20MW that typically do not have access to project finance. It will do so by increasing access to long-term debt and construction finance through a "Discounting Facility" which will allow operational renewable energy projects to refinance into long-term debt and increase its financial leverage by "discounting" its future cash flows from a power purchase agreement. A review of projects with potential for refinancing found more than 100 projects totaling **540MW in Nepal and Indonesia**. A regional pilot with USD 10 million in donor funds and USD 90 million from development finance institutions and/or commercial investors could mobilize USD 90 million in equity and up to USD 260 million in total investment for new small-scale renewable energy projects.

Asset Backed Securities (ABS)

Asset backed securities are bonds or similar instruments, which are backed by the cash flow generated by RE projects. Asset-backed securities are used for refinancing projects that are generating positive cash flows, although they can also be issued in the form of project bonds ahead of construction. Such refinancing offers a potential way to free up public funds that have been committed for development and investment, thereby allowing these funds to be refinanced to support new projects. ABS requires financial markets able to analyze and value the risks associated with such securities and, to price them. The experience with mortgage-backed securities in the recent financial crisis shows how even the most sophisticated markets can get this wrong. ABS is an innovative financial instrument to raise funds. According to Kroll Bond Rating Agency Transaction report, the total ABS market value increased in 2017 to USD 1.3 billion from USD 321 million in 2016.

Advantage	Disadvantage
These are generally long term and lower cost loan	Sophisticated markets required to be able to analyze and price the risk associated with this type of security.
ABS is one of the innovative ways to refinance projects and thereby allowing the developer to further invest	
Potential to bundle projects together in a single security can reduce risks and substantially reduce financing costs	

Few Players in Renewable Energy Securitization Market	
Mosaic - USA	Sunnova Solar Energy - USA
Dividend Solar Finance	AES Distributed Energy - USA

Micro Financing

Microfinance is a type of banking service that provides microloans in the range from \$100 to \$25,000 to unemployed or low-income individuals or groups who otherwise would have no other access to financial services.

Like conventional lenders, microfinanciers charge interest on loans, and can also require loan recipients to set aside a part of their income in a savings account, which can be used as insurance if the customer defaults.

Because many applicants cannot offer collateral, microlenders often pool borrowers together as a buffer: After receiving loans, recipients repay their debts together.

The first microfinance organization to receive attention was the Grameen Bank, which was started in 1976 by Muhammad Yunus in Bangladesh.

India's SKS Microfinance (Bharat Financial Inclusion Limited) also serves a large number of poor clients. Formed in 1998, it has grown to become one of the biggest microfinance operations in the world.

Bangladesh's Solar Home System (SHS) Initiative

The SHS initiative which began in January 2003 is an example of micro finance in the renewable energy space. The government-owned Infrastructure Development Company Limited (IDCOL) facilitated it. Its aim is to fulfil the basic electricity requirement of the off-grid rural people of Bangladesh. Initial funding from the World Bank was extended several times over the years via Rural Electrification and Renewable Energy Development Project. As on May 2017, 4 million solar home systems had been installed and directly impacting more than 12 % of population.

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