

# On-line Training of SAARC Professionals on Power Purchase Agreements of Renewable Energy Projects

## RPPA's financing structures and bankability requirements for RE Projects

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# OBJECTIVE

- This will help the Participants to understand how the Renewable Energy Projects are being financed and what makes them bankable projects so as to get financial closures easily.

# OUTLINE

- What makes a Project Bankable
- Type of Financing RE Projects
- What are Risk associated with a RE Project
- How the Risks be Mitigated
- Way Forward

# WHAT MAKES A PROJECT BANKABLE?

- A bankable project involves the following
  1. A strong financial- economic- technical Plan
  2. Risk allocation scheme for the nature of the project

A project is bankable if the project company has the ability to service the principal and interest payment and has the ability to cover the associated risks with project.

# TYPE OF FINANCES AVAILABLE TO RE PROJECTS

- Recourse Financing

*A recourse loan is a form of secured financing. It lets the lender go after the debtor's other assets that were not used as loan collateral or to take legal action in case of default in order to pay off the full debt.*

- Non Recourse Financing

*A nonrecourse loan does not allow the lender to pursue anything other than the collateral. For example, if a borrower defaults on a nonrecourse home loan, the bank can only foreclose on the home.*

- In India, RE Projects are mostly recourse financing if by Banks. Similarly Financing of RE are mostly Public funded or Public Private Funded in most of SAARC Members.
- It can be either limited recourse or full recourse finance. There are several reasons why non-recourse finance is difficult to obtain. They relate to three layers of the market:

# 3 Modes of Financing RE Projects

- There are mainly three modes of financing which countries adopt to fund their renewable energy initiatives.
- The first mode is through public funding.

Adopted by Countries, where there is very limited access to basic infrastructure, the per capita income is low and markets are largely under developed.

They can choose to either fund renewable initiatives through budgetary allocations or depend on global/ multilateral agencies like the World Bank, Asian Development Bank, etc. to provide funds through loans or grants. They can also try to access grants from the developed world. The main aim here is to provide their public with basic amenities.

- The second mode of financing is through public private partnership (PPP).

This mode is suited for countries with markets that have attained a certain maturity and a particular size. PPP mode brings along the technical expertise of private players along with investments with a profit making expectation against associated risks.

- The third mode is through pure private investment operating in a free market and there is a return expectation for the risks undertaken.

# Modes of Financing

## Public

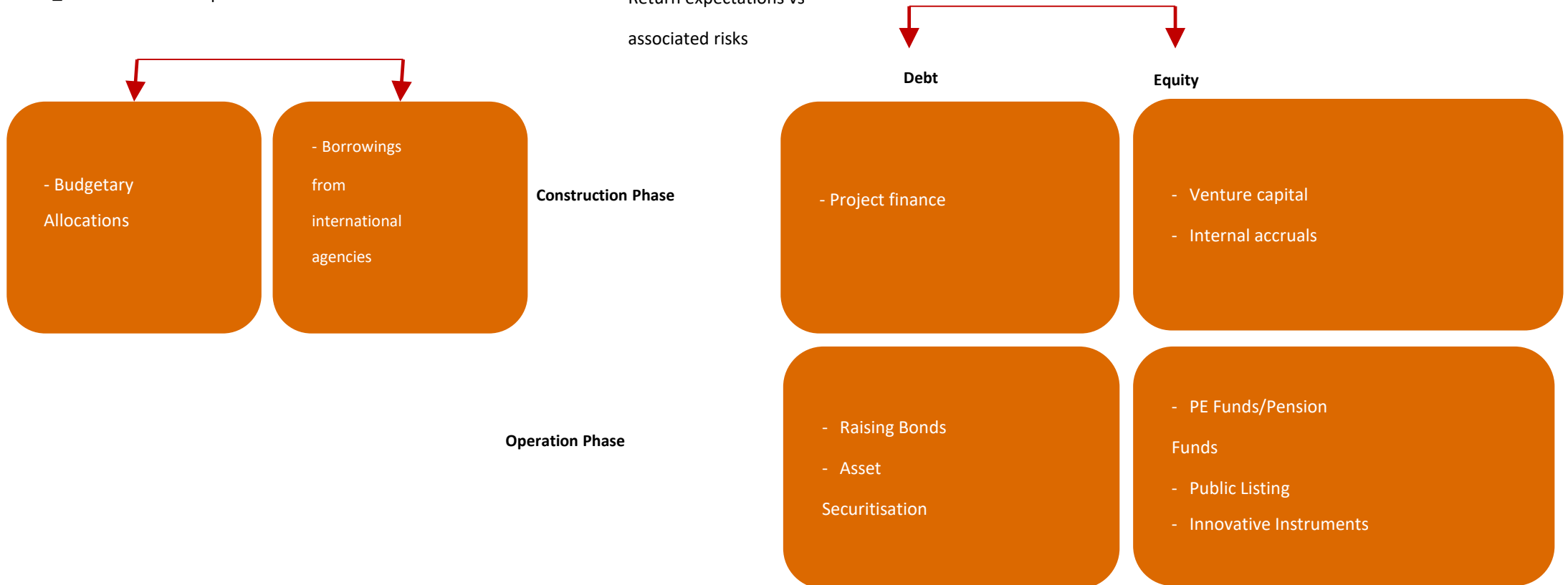
- Providing access/ Social cause
- No return expectation

## Public Private Partnership

- Relatively mature markets with larger market size
- Return expectations vs associated risks

## Private

- Free market mechanism



- Afghanistan:

Afghanistan is in the public funding mode of financing. The government has to take the lead in first formulating a renewable energy policy with set targets. They have to procure as much international help in terms of policy formulation and funding as possible and only the government can drive this initiative.

- Bangladesh:

Bangladesh is in the PPP mode of financing as it is a mature market with a sizeable population. It can make use of financial instruments with public funding being as the trigger to attract investments.

- Bhutan:

Bhutan is a relatively small country with abundant natural resources. Bhutan has developed the sector policies and evolved from the public funding mode to the PPP funding mode.



- India:

India has taken a number of initiatives in the renewables space with specific central level and state level targets. It is in the advanced stage of the PPP funding mode and can further its already robust renewable energy sector by entering the purely private mode. This process is already underway in India.

- Maldives:

Maldives is in the public funding mode as being an island nation, it has limited resources that can be tapped for renewable energy and at this point it is largely on the government to develop this sector.

- Nepal:

Nepal is a small Himalayan nation with limited market maturity but abundant natural resources. However, it is in the public funding mode at this point because the basic financial infrastructure to enter the PPP mode has still not evolved.

- Pakistan:

Pakistan is a sizeable market and its financial infrastructure is mature enough to handle the PPP funding mode of renewables, which is imperative for a country of this size. However, the policy framework and government initiative is lacking in the renewable energy space as priority is being given to other sectors.

- Sri Lanka:

Sri Lanka is an island nation with a robust renewable energy framework and many initiatives taken by the government to develop this sector. Hence, it is currently in the PPP funding mode of financing.

# Some Barriers in development of RE in SAARC

- All big RE Projects will generally require access to long-term funding on a project finance basis, their exposure to other barriers and risks will differ.
- Project size, and therefore transaction cost barriers, are generally lower for wind and geothermal projects that can be developed on a greater scale than other technologies.
- While small hydro can be competitive with conventional technologies and wind, solar energy is approaching competitiveness in some countries.
- The risks and barriers facing off-grid projects also differ from those of on-grid RE projects.
- These projects are generally reliant on sales of individual household or small-scale systems to rural communities.
- While technical challenges may be limited, affordability and financing ability become key.
- The very small scale of such projects, down to the individual household level, means transaction costs can become an almost insurmountable barrier.

## **1.Foreign exchange risk**

Currency risk due to uncertain currency movements and high cost involved with market based currency-hedging solutions.

## **2. Off taker credit risk**

The risk that the buyer/off-taker will not fulfill its contractual obligations. It is a key contributor to the overall credit risk of a power project.

## **3. Quality of renewable energy Projects**

The credit rating of the operational renewable energy assets may be low overall, leading to operational assets not meeting investment criteria.

## **4. Lack of instruments for investment**

Lack of financial instruments – illiquid or liquid – to invest in renewable energy.

## **5. Low returns compared to expectations**

Renewable energy projects not being able to meet the risk-return expectations of investors.

## **6. Limited availability of debt capital**

Limited availability of debt capital due to capital market conditions, either domestically or internationally.

## **7.Contract enforceability risk**

Drastic reduction in cost of solar power generation may result in poor contract enforceability in the long-term

# FINANCERS RISKS

- Lenders have concerns with debt recovery and the legal enforceability of claims in general.
- The best way for a project promoter to reduce this concern is through a strong company reputation and banking relationship as well as through the actual track-record of debt repayment and future plans and debt.

- For RE projects, banks have two main concerns:
  - Limited availability of irradiation data, which forms the basis for projecting future revenues. Similarly data relating to Wind, Small Hydro data are not easily available to Developers by Nodal Agencies.
  - The strength of Discom power purchasing agreements (PPAs) due to the weak financial health of utilities.
- On account of these risks, the market is slowly maturing: more on-ground measuring stations and actual generation data from existing plants provide a stronger set of data.
- With respect to the strength of PPAs, payments are sometimes backed by guarantee funds and sometimes passed on to the private sector (through Renewable or Solar Purchase Obligations). The project promoter will need to be conservative on yield assessments and evaluate the off-take and REC options very carefully.

- There are projects that are simply not well developed. A well- developed project usually starts from the perspective of the debtors by identifying and mitigating risks. The second step is proving viability to the lenders.
- Currently, a dynamic, early stage, uncertain and regionally diverse regulatory environment also negatively impacts project bankability by keeping the transaction costs for lenders high and visibility low.
- The nature of Wind & solar power projects – with their high upfront capital requirements and low operational costs, typical of infrastructure projects – further emphasizes the bankability challenge.
- We may also not ignore that many Indian banks currently have excess exposure to the conventional power sector, they have very limited funds left over for solar & Wind projects. Other SAARC Members are also facing funding challenges like Afghanistan, Pakistan, Bhutan, Maldives, Nepal and Sri Lanka, Public Financing Institutes are non existence.

# MITIGATING FINANCER'S RISKS

- Investor must work towards mitigating all critical risks to be able to secure financing at reasonable terms.
- Lender's comfort depends upon several factors like PPA type, strength of the power off-taker, long term cash flows, earnings before interest, taxes, depreciation, debt service coverage ratio, environmental and social impact. Sponsors and developers should work towards meeting these criteria right from the outset of their project activities.
- Debt recovery and the legal enforceability of claims for any type of non-recourse debt in India remains a key risk for the lenders.
- Lenders usually have to rely on Courts for resolution and recovery of disputed loans defined under the Contracts.

- The key to achieving a non-recourse financial closure is to convince lenders that
  - The project risks are very well covered
  - The project development process has been very professionally executed
  - The project is financially viable
  - And the borrower has sustainable, long-term plans requiring more debt in the future.
- Apart from this, corporate credibility and the ability to raise equity also matters.
- In almost all the cases of non-recourse finance in India, debt is syndicated between multiple lenders, so that there is only a limited exposure on a single lender.



- In a non-recourse project financing structure, the plant assets themselves serve as a basis for the repayment of the loan. A proper and predictable forecast of the power production is of utmost importance.
- Other influencing parameters can be:
  - A sound technical planning
  - Track record & experience of the EPC contractor
  - Reliable irradiation measurements
  - Robust financial modeling
  - And availability of operational data from a plant close to the chosen location of the project at hand.

# REGULATORY RISK

- The regulatory environment in India with respect to RE power is still not Matured. Policy initiatives are also undergoing changes fast depending on the past experience and Present need of the Sector.
- Accordingly there is a Regulatory lag for approving the PPA. Any Release of funds for payment of monthly tariffs is only permissible after Regulatory Commission has approved the tariffs, such an approval by an independent body provides payment security.
- Though, It is much more economical for any obligated entity to set up a plant or buy solar power through a private PPA, rather than buying RECs even at the floor price.

# MITIGATION OF REGULATORY RISK

- Project selection should be done only after undertaking an in-depth assessment of the off-taker.
- For state policy-backed PPAs that are usually signed with the state distribution companies (DISCOMS), it is important to assess the financial health of the counterparty.
- Each Indian state has a State Electricity Board (SEB), representing the state power generation, transmission and distribution companies. Data on the financial health of individual DISCOM is not easily available and comparison of similar Discom is difficult. Similarly all other SAARC Nations have Government owned utilities and facing similar issues.
- We need to go for Government Reports where such financial indicators are taken up. They give a good indication of the finances of the electricity sector in a state and thus the financial ability of the states PPA signing authority to honor PPA payments

- For private PPAs, each off-taker will have to be judged on a case-to-case basis. This will initially push up the transaction costs.
- If power is sold on site (captive model) rather than through the grid, the dependency on the buyer will be very high. This is a significant risk. On the other hand, many private entities are in significantly better financial shape than most state utilities.
- Also, a strong, underlying commercial logic to buying solar power can be a better safeguard against payment default.

# PROCURER'S RISK

- The power off-taker risk is the most crucial from the perspective of long term payment security. A payment delay or default can make a project unviable and possibly eliminate a project owner ability to structure the debt.
- Currently, most off-taker and payment risks are still directly associated with the various RE policies in place in India.
- For most Preferential tariff based projects, a government entity is the off-taker. They cannot be considered as a low-risk off-taker as it is in poor financial health and has a track-record of delayed and defaulted payments to RE power generators in the state. The selection of a PPA signing authority and payment security measures such as payment guarantee funds together determine the risk associated with payment security.

# PROCURER'S RISK

- Apart from the bankability of the PPA signing authority, the exact terms under the PPA itself are equally crucial.
- Going forward, the government-entity backed PPAs are slowly giving way to private third-party PPAs. These PPAs are partially driven by the increasing commercial viability of solar power in India and may avail additional benefits under mechanisms such as the REC mechanism or Viability Gap Funding (VGF).
- Viability Gap Funding means a capital grant or subsidy or equity from the Central or State Governments to render a Public Private Partnership (PPP) project financially viable and bankable.

# MITIGATING PROCURER'S RISK

- A majority of the SEBs in India have negative net internal revenues and the situation is becoming worse. This puts their PPAs at risk. The sound financial health of the Gujarat, PPA has gone a long way in creating interest amongst investors and lenders in solar & Wind projects in the state. Andhra Pradesh also received a decent response owing to the relatively better health of DISCOMs.

# HOW TO MAKE PROJECT BANKABLE

A public private or Government utility PPA should have the following features to be bankable:

- The term of the PPA should be longer than the debt repayment in Preferential or levelised tariff PPA.
- The off-taker should commit to buying all the power produced.
- Payment security should be assured through a revolving monthly letter of credit. However, such arrangement is only useful for ensuring short term payment security and the overall PPA structure should preferably be backed by a dedicated fund, especially if the PPA signing authority is a loss making Discom.
- The tariff mentioned in the PPA, should be approved by the Regulatory commission
- A course of action for a default by either the power producer or the off-taker should be clearly outlined



- The litigating authority to resolve any issues should be fixed for cases where the Regulators may not be the litigating authority.
- During any litigation, payment should typically not be held up. The power producer or the procurer can be asked to submit bank guarantees in lieu of payments being made during the litigation period. The procedure for this should be specified in the PPA itself.
  - It would be advisable to sign private PPAs with large and financially sound companies or institutions. In addition, an escrow account or letter of credit covering a reasonable payment period will help.
  - If the power is sold under a private PPA, on-site under a captive model, a clause to sell the plant under predefined terms in case the contract is to be terminated before the end of the PPA or a build operate own transfer (BOOT) model can reduce the risk.
  - In general, the more dependent customers are on the power sold, the stronger their willingness to abide by the PPA. Thus, the larger economics of the power industry in India should be considered.

- Project selection should be based on an in-depth understanding of the market conditions and clarity on policy or regulation. An investor should understand the following issues before making an investment decision:
  - What is the demand of RE power in the State?
  - What are the current prices of alternative instruments like RECs and its future pricing?
  - What are the enforcement status of REC?

There is always uncertainty regarding the long term demand for RECs as it depends largely upon the enforcement of RPOs. State DISCOMS that are the primary source of demand have huge losses on their balance sheets and without any penalties, have little reason to buy the more expensive solar power or RECs.

4. Currently, it is much more economical for any obligated entity to set up a plant or buy solar power through a private PPA, rather than buying RECs even at the floor price.

(Renewable Energy Certificates (RECs) is a market-based instrument to promote renewable sources of energy and development of the market in electricity. )

5. Many developers are convinced that the REC mechanism can provide considerable upside to their projects, thereby, making them viable. However, lenders are not comfortable with lending to such projects. Due to this, a large number of projects have not been able to come out of their planning stage.

- For any projects under the REC, developers should try to maximize the realization of revenue through the tariff in the PPA. Ideally, the revenues from the PPA should be able to serve interests and repayment of the loan.
- Lenders might be comfortable with a bankable private PPA at a viable tariff using additional revenues from the REC mechanism only as an upside.
- At the time of planning, one should also have maximum clarity on the requirement of permits and applicability of cross subsidy, wheeling, transmission and power banking charges and the connecting substation to ascertain such charges at the time of project planning.

# TECHNICAL RISK

- Risk of resource data is the key reason faced by some developers.
- For example, for a Solar project, irradiation data from most sources available in India is based almost entirely only on satellite data. According to industry sources, the margin of error for specific locations could be as high as 10% for some commonly used global satellite based data traditional sources.
- No credible methodology to correct this based on ground checks.

- Also, traditional Satellite based data usually has a low resolution, i.e., the data will appear constant over large areas. Therefore, there is very little ground measured irradiation data available in the country till date.
- As a result, it is still difficult to reliably predict the performance of projects. The uncertainty of performance predictions is a risk for lenders and they would cover this risk by charging a higher rate of interest and assuming a discount on the projected generation, when determining the viability of a project.
- P70 or P90 values are a common practice and are widely applied for PV and wind energy projects.
- P-values of solar radiation (DNI) are provided to judge the reliability of the solar resource of a CSP project.
- P50 refers to 50% of the years exceeding the value. Accordingly, the P70 (P90) value defines the DNI, which is exceeded in 70% (90%) of the years.

# MITIGATION OF TECHNICAL RISK

- It is important to quantify the uncertainty in performance prediction models.
- For solar projects, irradiation can be a key source of uncertainty.
- Majority of financial institutions irradiation data for more than 10 years should be considered for accurate prediction models.
- Field data on module failure rates and performance require a solar resource risk assessment report by an independent consultant.
- This is the best way to mitigate risk in solar resource assessment. Similarly for wind projects such assessment by an expert independent consultant is required.

# WAY FORWARD

For a good bankable project we need to break up the whole activity in 3 steps:

1. Identification of Project
2. Development of the Project
3. Construction and Operation of the Project

For Identification- Site identification & assessment, Site supervision/Techno-commercial feasibility studies and Detailed Project Report preparation

For Development- Project Registration, Bid strategy preparation, Land securitization, PPA facilitation, EPC tendering and selection, Management of permits and approvals, project structuring.

For Construction & Operation- Site supervision, Quality management, Stakeholder management, and cost controlling and Reporting

# Q&A





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*Thank you*

