Consultative Session

Determination of Rate of Return

November 22, 2018

Background

- The Authority decided to review the return offered to power sector companies in August 2016.
- For this purpose, a concept paper was prepared to provide a basis for determining returns for various generation technologies.
- NEPRA through advertisement in the newspapers (The News & Express) published on 26.11.2016, invited comments from the general public on the concept paper which was uploaded on the NEPRA's website.
- Subsequently, the Authority received several comments from individual/firms, general public etc. based on the input from stake holders including using latest market data different returns for different technology power plants were proposed.
- The Authority decided to once again obtain opinion of general public and stakeholders on the returns worked out to for different technology and accordingly decided to hold a consultative session today
- In this regard Advertisement was published on 30.10.2018 and notices were sent on November 05, and November 14, 2018

Policy Guidelines on Return

- The guidelines for Determination of Tariff for Independent Power Producers 2005, allowed:

  IRR = 10 years PIB auction rate + Premium to be determined by NEPRA.

- As per the latest Power Generation Policy 2015, Government has indexed Return component of tariff to US dollar, ensuring a US Dollar based return to the equity holders of power generation projects in Pakistan.

- It also refers that, ***"An attractive Return on Equity / IRR shall be allowed in the tariff by NEPRA".***

Concept Paper Floated (CAPM Model)

- A concept paper was developed & placed on NEPRA's Official website seeking comments from stakeholders. Major parameters used to quantify IRR were;

  Return = RF + Beta (MRP) + CRP = 8.59% to 13.57%

Rf:	Risk free rate of US Treasury Bond
Beta:	Asset Beta was used of US Utilities
MRP:	Market Risk Premium used was (S&P 500)
CRP:	CDS was considered (for Pakistan-at that time)

  - Technology Specific return was also proposed for seeking comments

Comments Received on Concept Paper

Responding Organization	Salient Recommendations
CPPA-G **WAPDA** **K-Electric** **Asia Petroleum** **Gharo Solar** **Bridge Factor** **Norez Abdullah** **Aequitas Pvt. Ltd**	• Risk Free Rate to be aligned with project life. (5 – years) • CDS supported with caveat to review if breached $\pm$0.5% • Normalized Rate of Return of 10-15 years may be considered for market risk premium • A PKR based return to be considered (RF & RM) • While using beta (according Pakistan Environment) there is no need to separate country risk premium • NEPRA to provided returns close to be offered neighboring countries (14% - 23%) • For CRP Pakistan Euro Bond rate may be considered • Model does not account for Unsystematic Risk (Green Field Projects) • ***US beta used includes gas & water utilities (0.49)***

Calculating Base Return (Pakistan Data)

- **Return = Rf +** $\boldsymbol{\beta\ (Rm - Rf)}$
- Rf: **9.95%** current yield of 10-yr Pakistan Investment Bond Issued 08.08.2018
- β **: 0.84** (US Power Market)
- (Rm-RF): **6.5%** market consensus 6% to 7%. Historic 6.43%
- Return: **15.47%**

Using US Data to verify/check the result

- **Return = Rf +** $\boldsymbol{\beta\ (Rm - Rf)}$ **+ Country Risk Premium**
  - Risk free rate (Rf): 2.96 **%** Risk free rate of US Treasury bond issued Aug 15, 2018 for 10 years
  - β **: 0.84** US Power Market
  - (Rm-RF): **5%** Generally used (Historic 4.77%)
  - Country Risk Premium(Bond Market): **5.15%** (8.10%-2.96%)
  - Return: **12.30%** (US$ Based)
  - Return: 1**5.41**% (PKR converted)
- Conclusion: The return of 15.47% using Pak data is similar to return of 15.41% arrived using US Data

Summary of Proposed return for major Tech/Fuel

Technology	Proposed Return		Current Return	
Thermal	**US$**	**Eq. Rs.**	**US$**	**Eq. Rs.**
Imported Coal	12.50%	15.67%	17.00%	20.30%
Imported Gas RLNG	13.25%	16.44%	15.00%	18.24%
Local Gas	14.00%	17.21%	15.00%	18.24%
Thar/Local Coal	14.00%	17.21%	18.00%	21.33%
Bagasse	14.00%	17.21%	15.00%	18.24%
Renewable				
Solar/Wind	14.00%	17.21%	14.00%	17.21%
Small Hydro (Take or Pay)	14.25%	17.47%	17.00%	20.30%
Small Hydro (Take & Pay)	14.50%	17.73%	17.00%	20.30%
Large Hydro (Take or Pay)	15.00%	18.24%	17.00%	20.30%
Large Hydro (Take & Pay)	16.00%	19.27%	17.00%	20.30%

Commentators

Oracle Power PLC

- The proposed changes in the allowed return should apply to project for which LOI/LOS has not been issued.
- For Oracle coal, this reduction is significant and will discourage the long-term investment necessary to promote the IPP project
- There remain significant risk association with Pakistan’s servicing of foreign debt, perception of sovereign guarantees including circular debt
- State of Industry Report 2017 foresee a rise of 62GW by 2026 which would require a capacity of 4GW per annum requiring about US$4 billion per year totaling US$36 billion. This is ambitious target when compared to equivalent countries like Thailand 0.65 MW per MW capita, Iran 0.96 per MW per capita
- In Thar, only one project has reached financial close. It is premature to assume Thar is de risked.

Commentators

KRAFRAC Consulting

- The rates of return allowed to power sector companies are indeed high. As discussed later, several incentives are being provided which are not available in other countries. All these can be a reason for review of returns. However, the most important reason is the double counting of compensation for expected exchange rate movements.
- NEPRA's initially allowed rates of return included an implied compensation for any adverse currency exchange rate movement. However, later the government issued instructions in 2004-05, to allow all investors a separate coverage of any exchange rate movement.
- This government decision provided a windfall return to investors who have been receiving an average additional 4.85% return per year without taking any additional risk. Perhaps, this was done with the aim of encouraging investments in a drastic electricity shortfall situation, but it has resulted in an unduly huge negative impact on sector and national economy.

Commentators

KRAFRAC Consulting

- Due to this double counting resulting from government's decision, (estimating 5000 MW of new projects at US$ 50 Billion total investment since then, with equity share of US$ 10 Billion), additional payments to new power producers on account of Return on Equity alone amount to US$ 485 Million each year. Over the typical 30 year life of power projects, even without compounding, this additional payment amounts to US$ 14.55 Billion, enough to construct two new mega dams. This is without adding the impact of additional payments to other power sector companies.
- The easiest option now for NEPRA to remedy this situation would be to revise the rates of return in order to end this double counting. This can simply be done by subtracting the 4.85% annual currency devaluation from currently allowed return. Alternatively, the returns can be calculated anew with revised variables to address the double counting issue.
- In case of fresh calculation of returns with revised variables, care must be taken to use the correct corporate tax rate and optimal capital structure so as to arrive at a true cost of equity.
- It would be advisable to address the issue of double counting of exchange rate immediately and then gradually review other factors skewing the returns so as to avoid large volatility in returns.

Commentators

KRAFRAC Consulting

- The new returns should be valid for a specific time period, say 5 years. Another review of rates of returns should be undertaken after this period.
- If NEPRA wishes to allow different returns to projects with different power generation technologies, then this additional return should be specifically labeled as "incentive" and mentioned separately. This would allow review of incentives in future without interfering with the actual return.

Technology	Rate of Return on Equity	Incentive	Total
Thermal			
Imported Coal	12.15%	0.00%	12.15%
Imported Gas RLNG	12.15%	0.35%	12.50%
Bagasse	12.15%	0.35%	12.50%
Local Gas	12.15%	0.85%	13.00%
Thar/Local Coal	12.15%	1.35%	13.50%
Renewable			
Solar/Wind	12.15%	1.85%	14.00%
Small Hydro	12.15%	1.85%	14.00%
Large Hydro	12.15%	1.85%	14.00%

All returns protected for PKR devaluation against USD

Commentators

Korea Hydro & Nuclear Power Co. Ltd

- 17% EIRR was guaranteed by the Pakistani authority at the time of Athmuqam HPP's bidding announcement and KHNP consortium is developing the Project based on that IRR any change downward is not acceptable.
- Therefore, original EIRR 17% should be applied to the project under the power policy framework at the time of advertisement by PPIB on Jan 2016.
- KHNP is deeply concerned that the change in EIRR of the IPP project under way should lead to fall down the credibility of the Pakistan IPP policy.

Riali Hydro Power Company Pvt. Ltd

- To reconsider proposed RoE for small hydro project especially for projects who are taking hydro logical risk/take & pay option. Hydrological risks on streams/tributaries are much higher than the rivers. Therefore the Authority is requested to maintain ROE o 17.73% or small hydro take & pay.
- NEPRA should also direct the federal government in providing a conducive environment to investors in power sector by facilitating in provision of integrated power policy, one window facility for the issuance of LOI & LOS.

Commentators

- **Government of KPK**

- Hydro is best suited for power generation as 70-80% plant consist of local component, no imported fuel is required, plant operates for over 50 years, transferable to provincial government at the end of its 30 years life.
- When upfront tariff coal was announced 2% extra ROE was given over local coal.
- In view therefore, it requested to immediately notify extra ROE of 5% to hydel project

China Three Gorges South Asia Investment Limited:

- The current IRR of 17% offered to the investor (for Hydropower Projects) proposed a minimum acceptable return to the investor and should not be further revised downwards in lieu of the following risks.
  - Geo-Political Risks (Jurisdiction of AJK)
  - Developmental Risks (Land Acquisition Risk & Long Gestation Period Risk)
  - Construction Risks (Geological Risk and Construction Period)
  - Operation Risks (Circular Debt and Delay Payment Risk)

Commentators

Access Electric/access solar

- In addition to the recognition of country risk premium in CAPM formula the following also needs to be considered:
  - Liquidity Risk
  - Development Risk
  - Regulatory Risk
  - Counterparty Risk
- For Risk Free Rate a risk free of 30 year should be considered instead of 5 year US Treasury note yield.
- Average return over the most recent 30 years period should be used instead of S&P 500 index from 1928 to 2013.
- Beta being used as of US S&P 500 utility for adjusting the Equity Risk Premium for Power Projects also includes gas, water and other related public utilities which may not have the same risk profile as power companies.
- Other Issues (Incentive- based return rather than risk-based return and Take-or-Pay Vs Take-and-pay

THANK YOU