East African Scholars Multidisciplinary Bulletin
Abbreviated Key Title: East African Scholars Multidiscip Bull
ISSN 2617-4413 (Print) | ISSN 2617-717X (Online) |
Published By East African Scholars Publisher, Kenya

OPEN ACCESS

Volume-2 | Issue-9 | Sept-2019 | DOI: 10.36349/easmb.2019.v02i09.002

Review Article

Review of Financing Options and Developments of Renewable Energy

Olusoyi Richard Ashaye[1] and Husam Helmi Alharahsheh[2*]

[1]Freelance lecturer at the Brunel Business School, Brunel University London and University of Wales Trinity St David, London Campus, UK
[2]Faculty of Business Management, University of Wales Trinity Saint David, UK

*Corresponding Author
Husam Helmi Alharahsheh

Abstract: The paper provides exploration and assessment of financing opportunites to support renenwable energy projects and and promote resources. The paper provides focus on key aspects in relation to financing renewable energy projects and initiatives such as types of investment and financing opporunites, Financial Structure including their barriers and advantages, key influences to choosing financial structure, as well as the associated impact. The research is based on inclusion of the available letrature in the field as well as relevant academic and profesisonal publications to enhance consideration of key trends and developments. Key findings of the research concluded that policy development plays a major role in the process, and that development of renewable energy in future will be influenced by the government legislation, motivation to involve new or re-emerging investors, and economic changes. where unexpected circumstances in the market reformed the financing of renewable energy.

Keywords: Finance, Renewable energy, policy development.

INTRODUCTION

The deployment of renewable energy sources and the realisation of energyefficiency project often require substantial amounts of money, in order to plan the project, purchase and install the equipment, as well as to train staff for the operation and maintenance of the system installed.

Scholars and practitioners have however observed Renewable energy (RE) to be higher risk investments, because of their inflexibility with investors and developers and not-so-good standing with the financing community. Some of the issues idenfied as influencing the financing of renewable energy are: Market-related issues (limied availability of developer and feasibility studies); political and policy-related issues (non-prioritisation of RE and risk and uncertainty); technology (high mobilisation costs and lack of adequate access to finance for research, development and manufacturing); and intrinsic nature of projects:

There is therefore the need for affordable financing because of the threat of overestimating the practicability of future RE projects. These risks impact on investment and are classified as political, technology and Market-related.; thus it is necessary to determine the sources of financing especially for decentarlised renewable energy project and these could be through microfinance funds, RESCO funds, output basd bid funds, community block grant funds or carbon credits (DIBS, 2013; UNIDO/REEP, 2015).

Types of Investment and Financing Opportunities

There are various types of investment opportnities, these inclue:

- Research and development (R&D) financing
- Investment in companies to scale up manufacturing
- Development and con struction of renewable power plants
- Corporate actions – M & A activities and refinancing

As regards types of financing, pratitioners tend to classify them as debt, equity and grants and gurantees.

- **Equity**–where investors release capital for funding projects with the expection of receiving equity share on the projects and the expected return on equity are generally larger than the return on debt. Repayment is based on share of the company and

Quick Response Code

Journal homepage:
http://www.easpublisher.com/easmb/

Article History
Received:15.08.2019
Accepted: 25.08.2019
Published: 03.09.2019

dividends rather than interest and the risk is shared. On the other hand, there are usually extensive paperwork to be completed and regulatory requirements are time consuming since the investors largely influence decision making.

- **Self Financing** However being regarded as higher investmenrt risk as money is commited for a longer period of time, this type of financing tend to produce faster project completion and less paper work involved. It also provides god returns as well as lower capital growth in terms of lower interest rates.

- **Debt financing:** Include bonds or loans with interests payable on the amount borrowed. The lenders tend to benefit from the interst earned on the capital and payment are made prior to ditributing to the shareholder in order to minimise risk, compared to other types of funding.

- **Grants** – These are free capital classified as 'gift with no repayment; however there are alwayd strict eligibility criteria with little or no flexibility. These are usually offered by government and international organisations for hardware and/or equipment purchase for RE projects but with no guarantee that they would be granted, and usually no mobilisation fees available.

Financial Structure: Optimisation

Optimisation of financial structure stems around

- Advantages of project financing
- Disadvantages of (barriers to) project financing
- Risk

Advantages of Project Finance

The advantages of financing a project are enormous, some of which include:

- Non-recourse or limited resource financing
- Risk sharing
- Favourable tax treatment
- Improved financial terms

Table 1 below highlights the benefits funding options for renewable energy: (DIBS, 2013; UNIDO/REEP, 2015)

No	Types of Financing	Advantages of Funding Options for Renewable Energies
1	Self-financing	* Higher rate of returns as all incomes are received by the person financing the project * Good returns in terms of low interest rates * More efficient as less paperwork is required and less time is spent on chasing third parties * Faster project completion and return
2	Debt financing (Loans)	* Environmental fiscal schemes benefits * Tax reliefs on interest paid * Support company growth
3	ESCO	* Reduced risk to the energy consumer * Stability and security of energy cost to the consumer * Green credentials without having to make major expenditure * Benefits from renewable energy schemes payments
4	Co-operatives – CICs and IPSs	* Fundraising from share issues can encourage installation of larger (megawatt-level systems) * Ethical/green investment opportunity * May encourage community uptake and reduce objections to renewable installations * Income can be used for community development work
5	Equity financing	* Repayment is based on share of the company and dividends rather than interest * Risk is shared * Some investors could potentially bring in wealth of experience and business networking which the company would otherwise not have * Potential for further/follow-up investments
6	Grants	* Free capital expenditure

Table 1 Advantages of Funding Options for Renewable Energy (source: Adopted from DBIS, 2013)

Barriers of Project Finance

Despite the benefits of these funding types, it needs to be mentioned that each of them has its adverse effect on renewable energy. Investors and developers .

Therefore often assess these impacts before determine the best available funding option or options.

Table. 2 briefly list some of these barriers to funding options as follows:

No	Types of Financing	Barriers to Funding Options for Renewable Energies
1	Self-financing	* Money committed for long term * Higher risks, financial and otherwise, fall on one property * May produce lower capital growth in times of higher interest rates
2	Debt financing (Loans)	* Interest paid on the loan reduces the net profit * Repayments may not be flexible and there is the potential to default on loans due to variations in cash flow in different seasons * Company directors may have to give personal guarantees * Possible fluctuation of interest rates
3	ESCo	* Consumers do not benefit from government schemes despite having renewable energy technology on site
4	Co-operatives – CICs and IPSs	* Larger company and hence significant administration * Activities of CICs and IPSs quite closely controlled, thereby reducing flexibility * Loans involved increase expense to company * Cooperative shares can loose value but cannot gain value
5	Equity financing	* Extensive paperwork and regulatory requirements which are time consuming * Decisions influenced by investors * More than one owner, hence diluted company's share * Less likely to be encourages or build local/community involvement and benefit
6	Grants	* Stringent eligibility requirement * Competitive and not guaranteed for significant upfront effort * Significant administration burden, particularly at outset

Table 2 Barriers to Funding Options for Renewable Energy (source: Adopted from DBIS, 2013)

Choosing Financial Structure

When choosing a financial structure, professionals and scholars must take necessary precautions and consider the following factors:

- Consideration / motivation
- Project size
- Developer can use tax benefits
- Developer can fund project costs
- Developer wants early cash distribution
- Re-financing (DIBS, 2013; UNIDO/REEP, 2015)

Impact of Financial Structure

- **On returns**

After having assessed the risks involved, financial organisations often apply cost-benefit analysis to determine the amount they are willing and able to lend or invest for the project and the expected profit such as interest - return on investment (ROI) or dividends - return on equity (ROE). Generally, projects that are expected to attract higher returns (interest or dividends) would involve higher risks to the investors.

- **On the cost of energy**

The design of financiaal structure is impacted by a variety of specific financing variables such as debt interest rate, debt term, equity return, and capital structure. Investors and financial institutions are familiar with the use of financial model such as the cash flow model to compute the bid prices as well as appraising and controlling the sustainability of the project. They also use a constrained optimisation algorithm model to analyse the cost of the power purchase that are need to meet the financial costs and other limitation – thus the two model outputs: optimal capital structure (i.e., debt-equity ratio) and the levelised cost of energy (Wiser and Pickle, 1997; Schwabe *et al.,* 2009)

The parties involved in finacial investment larges determine the financing structure they prefe based on features that rely solely on the project such as risk tolerance, financing structure security, effective and efficient tax credits usage, magnitude of the project and the size, and outcome of the project. However, there is risk involved in the successful completion of the project especially if there are multifaced methods of negotiation and this impact on the speed and financial structure of renewable energy projects (Schwabe *et al.*, 2009; Mendelsohn, 2012)

SUMMARY AND CONCLUSIONS

There are various investment opportunities and investors and financial institutions often captilise on the best available funding options, be it as debt, equity and grants or gurantees.

Countries such as the U.S.A have adopted various policies to support renenwable energy projects and and promote resources. They have also managed to attract investors by incentivisng taxes, payment of cash, renewables set-asides, uniformed contracts, loans with low interest rates, and environmental computers and machines. Having said this, some of these policies have

been obsereved to have adverse effects on the process and cost of project financing costs, despite being unplanned. As a result of the impacts on financing and costs, consideration should be given to the policy design that would promote adoption and implementation of nenewable energy technologies as well as devising incentives that would be assiociated with the policy obejctives depending on the market, technical and financial limitations .

The development of renewable energy in future will be influenced by the government legislation, motivation to involve new or re-emerging investors, and the expected recovery of the economy as in the case of the U.S.A. where unexpected circumstances in the market reformed the financing of renewable energy. More so, tax equity investment and debt are beileves to be two source of financing that are not vaiable for development of new projects. Despite this, it is worth mentioning that, as the economy improves with time, the renewable energy industry is bound to develop better and be more robust as long as the risks are identified and effectively managed (Wiser and Pickle, 1997; Schwabe *et al.*, 2009; Mendelsohn, 2012; DIBS, 2013; UNIDO/REEP, 2015).

REFERENCES

1. DBIS. (2013). 'SME Access to Finance Schemes: Measures to support SME growth'. Department for Business Innovation and Skills, April 2013 [online] < https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/192618/bis-13-p176b-sme-access-to-finance-measures.pdf> [Viewed 29 August 2018]
2. Mendelsohn, M., Kreycik, C., Bird, L., Schwabe, P., & Cory, K. (2012). 'The Impact of Financial Structure on the Cost of Solar Energy'. Technical Report NREL/TP-6A20-53086, March 2012 [online] < http://www.nrel.gov/docs/fy12osti/53086.pdf> [Viewed 22 August 2018]
3. Schwabe, P., Cory, K., & Newcomb, J. (2009). 'Renewable Energy Project Financing: Impacts of the Financial Crisis and Federal Legislation'. Technical Report NREL/TP-6A2-44930, July 2009 [online] < http://www.nrel.gov/docs/fy09osti/44930.pdf> [Viewed 20 August 2018]
4. UNIDO/REEP (2015). 'Financing Options for Renewable Energy and Energy Efficiency'. Sustainable Energy Regulation and Policymaking for Africa. Training Manual, Module 19 [online] <http:// africa-toolkit.reeep.org/modules/Module19.pdf> [Viewed 30 August 2018]
5. Wiser, R., & Pickle, S. (1997). 'Financing Investments in Renewable Energy: The Role of Policy Design and Restructuring'. Working Report. Environmental Energy Technologies Division LBNL-39826 UC-1321 , March 1997 [online] < http://emp.lbl.gov/sites/all/files/REPORT%20lbnl%20-%2039826_0.pdf> [Viewed 23 August 2018]