

FINANCIAL INSTRUMENTS FOR FINANCING ENERGY EQUIPMENT PROJECTS IN THE UAE.

E. Rengasamy¹ S. Muhammed² B. Abu Hijleh³ and E. Alkhateeb⁴

1. Faculty of Business & Law, British University in Dubai, UAE, elango.rengasamy@buid.ac.ae
2. Faculty of Business & Law, The British University in Dubai, UAE, suhailsameeullah@gmail.com
3. Faculty of Engineering & IT, British University in Dubai, UAE, bassam.abuhijleh@buid.ac.ae
4. Faculty of Engineering & IT, British University in Dubai, UAE, enasassami@gmail.com

Abstract

The present study analyses the current state of financing options available for energy-saving projects in the UAE. A succinct review of the existing literature on energy-saving projects indicates that there is plenty of scope for such projects both in real-estate and industrial sectors. Studies indicate that such projects have the potential to save energy consumption by 30%, in developing economies. Research reports further estimate that energy saving projects have an average internal rate of return (IRR) of 17%. In the UAE, energy-saving projects have gained fresh momentum as part of the UAE's green development strategy. Since availability of adequate funds is an essential pre-requisite for introducing any energy efficiency project, there is an imminent need to explore the various sources of funding available for building owners and developers. This is quite essential in order to measure the risk-return trade-off of individual projects as it would facilitate faster decision-making for funding a project. In this study, selected set of stakeholders was contacted including promoters, developers, utility companies, private institutions that are prime candidates for implementing energy-saving projects, energy services companies (ESCOs), banks and suppliers of major energy-saving equipments. Specific questions on financing options available for the above stakeholders for installing energy-saving equipments were asked. The results based on the interviews held with the above stakeholders indicated that UAE has been making strenuous efforts to make significant progress in financing green energy projects. However, many initiatives that are more concrete can be undertaken to speed up such projects. Also, there is a greater need for various funding agencies to offer loan/financing facilities to such projects with liberal lending terms.

Keywords: Green buildings, Energy-saving projects, Financing for projects, Green financing

1. INTRODUCTION

Of late, globally, greater emphasis is placed on introducing energy-efficiency improvements not only in housing and real estate sectors but in the construction of industrial establishments, factories and go-downs, as well. Governments initiate proactive measure to introduce energy efficiency-related initiatives through comprehensive policy guidelines, regulations, technical assistance and other supporting activities, understandably, based on the needs of builders and developers. While the support and technical assistance from the government sectors are quite encouraging worldwide, one of the primary challenges being faced by this sector is obtaining necessary funding to finance their projects. In other words, generating the required funding support for energy-saving projects is a greater challenge being faced by developers and promoters in many parts of the world. While large organizations raise the required capital and

funding support without much of difficulties, smaller firms and industrial establishments undergo many hassles to raise the necessary funding. Adding to this phenomenon is the fact that banking and financial institutions are unwilling to extend the required funding support to such projects on account of several reasons. Firstly, banks focus on funding revenue-generating projects as there will be constant cashflows and getting back the capital and interest would be very easier. Secondly, bankers are interested in financing activities and projects that would give fillip to the economic growth rather than cost-saving models. Thirdly, while revenue-generating projects have higher probability of repayment, energy-saving project models do not guarantee any assured returns nor is there any visible avenue for assured repayment from the borrowers. Bullier & Milin deplore in their research work the difficulties being faced by energy efficiency projects. 'Energy efficiency projects rarely correspond to the core business of

a company or it is a top priority for energy consumers. As a result, the equity available for these projects is often minimal, which in turn reduces the capacity to attract external financiers. Adding to this phenomenon is the fact that government and banking subsidies are not sufficient to cover the costs of funding such projects [1]. Yet another interesting fact to be taken note of, here, is that the existing models of financing greatly focuses on return on investment (ROI) while environment-focused or green-energy focused schemes, unfortunately, take the backseat. Although renewable-energy saving projects have greater long-term benefits and they are helpful to the humanity in many ways, there are many obstacles such projects encounter before being considered for financing and implementation. For instance, subsidies being offered to the end-users for fossil-fuel and the tax structures do, in reality contribute to the slow-phase of energy-saving projects, research indicates.

This paper, among other objectives, makes an attempt to analyze the financing options available for renewable and green energy projects and is organized into five sections. The present section I introduces the background of the study and gives an overview of the importance being accorded to such projects, across the globe. The next subsection, highlights the steps being initiated by the GCC states and UAE for introducing green energy projects as an alternative to fossil fuel. The last paragraph in this section discusses the major features of the current study. Section II, reviews the existing literature on the topic. Comments and criticisms of the literature can be found at the end of section II. In section III, the methodology used in this study has been presented. It includes data collection, sampling and analytical framework being adopted in this study. Section IV discusses the analytical results. Section V gives a summary of the conclusions and gives appropriate recommendations in light of the analytical results and discussion.

1.1 Renewable and Green Energy Initiatives in the Gulf Cooperation Council (GCC) Countries

All the six Gulf Cooperation Council (GCC) member states in the region are not only aware of the impending dangers of excessive reliance on fossil fuels but they do realize the significance of implementing green energy projects in the region.

More particularly, United Arab Emirates (UAE) and Saudi Arabia have framed comprehensive policy guidelines, ambitious clean energy projects and energy-efficiency targets. Yet another important fact, which is being considered by the GCC governments, is that the GCC's population is expected to grow more than 53 million by 2020. [2]. So, investments on clean energy and green-energy-related projects are taking the much-needed attention in order to meet the energy needs of the growing population. Among the different initiatives taken by the GCC governments, two of the most important steps richly deserve a special mention, here. Governments issue 'green bonds' since 2008, which tie the proceeds of such bonds to green and environmentally-friendly industries and this initiative is getting sufficient support from the people. World Bank-pioneered the first ever green bond in this region. Since then, the World Bank has raised funds for such projects with the support of institutions and people in the region. Also, private sector has started using green bonds to finance their green initiatives which is a very encouraging phenomenon. Green Sukuk, which are bond instruments, offer a greater alternative to conventional debt instruments owing to the high level of liquidity and these instruments are linked to green initiatives, as well.

1.2 Renewable and Green Energy Initiatives in the UAE.

UAE Federal Government has been taking far reaching measures to introduce many green energy initiatives in different sectors. "UAE government leadership has committed 7% renewable energy target by 2020 [3]. Abu Dhabi Future Energy Company (Masdar) has stated that it is fully committed to finding low cost renewable energy technologies that can be rolled out on a largescale giving safe and clean power to many. Yet another important initiative taken by the UAE Government is that by the year 2025 nuclear power would become the second-source of electricity ensuring that dependence on fossil would gradually be reduced in the days ahead. In addition, the initiatives taken by the UAE government and organizations include policy guidelines supporting energy-saving projects such as introducing aviation environmental guidelines, initiatives by the two leading airlines Emirates and Ethihad to re-designing aircraft configuration with Airbus and Boeing, clean fuel

standards etc.,. The Abu Dhabi Government is setting up wind turbine projects at Sir Baniyas Island which is the first of its kind in Arabian peninsula, the primary objective of which is to foster use of renewable energy sources in the United Arab Emirates. Shams 1 (1000 Megawatt CSP) is yet another ambitious project in order to generate clean and sustainable alternative solar power. In January 2012, Dubai Government has taken the initiative to build 1GW solar park which would be completed in two phases by the year 2030.

1.3 The Present Study

What are the different funding options available for builders and promoters if they would like to install or adopt energy-saving equipments in their constructions is the core objective with which this study was started? How do they determine the ROI of their green-energy projects? This is yet another pertinent question with which we made an attempt to investigate the problem being faced by the promoters, particularly, for generating the required funding. To be precise, the present study aims at analyzing the current state of financing options available for energy-saving projects in the UAE. Although the governments through different legislations introduce a lot of concrete measures, policy guidelines and initiatives, builders and developers find it difficult to raise sufficient funding sources on account of several reasons. In other words, there is a clear shortage of funding sources available to this sector. So, if this gap is not filled in, the vision and strategy of the government may not be achieved. Also, the present study, in addition to the above primary objectives, intends to examine the different financing strategies being adopted by the developers. More specifically, the pertinent questions that were posed on them include, among others, the following. Do the developers get the adequate funding support from different sources?, do they get sufficient internal and external funding sources?, what type of investment appraisal techniques do they apply to select the project?, the payback period which they expect on their investments, the risks encountered by them and the energy saving targets set which should be achieved by them in a set time-frame. So, there is a compelling need for identifying the problems and issues being faced by the developers and promoters, analyze the same extensively and submit the recommendations to

the concerned authorities for remedying the situation, if needed.

2. REVIEW OF EXISTING LITERATURE

The existing literature on the topic, particularly, in GCC and MENA (Middle East North Africa) region is very limited as renewable and alternative energy sources is an emerging area getting wide recognition and acceptance but, at a slow pace. However, a great wealth of literature is available on the topic in the advanced economies, particularly, in Europe and North American regions. The literature available in the 'Emerging Economies' is truly encouraging as countries such as Brazil, India, Russia, China and South Africa have been introducing many green-energy projects over the last decade.

Xiaofan Zhao in their case study analysis made an attempt to examine as to how local government's implementation of energy-saving policies in the 11th and 12th Five-year Plan periods have resulted in reducing the obstacles and barriers to the energy saving initiatives of industrial establishments in China [4]. While Xiaofan Zhao *et al* focused on analyzing the governmental support in the implementation of energy-saving policies, Arminda & Lilia examined the theme of energy saving resources and its relationship with the preservation of environment. In addition, they also analyzed the importance of green-marketing in order to achieve sustainability, in the long-run. A self-administered questionnaire was distributed to 300 respondents to collect data and analyzed using appropriate statistical tools. The study threw interesting results. Most of the respondents were truly concerned with the environmental problems, more particularly, 68% of the respondents who belonged to the 'Savers Group' strongly advocated in favour of saving the environment. However, it is quite disappointing to note that while most of them agreed that energy-saving schemes were the best option for protecting the environment, they did not have renewable energy equipments at home. Another interesting aspect to be carefully taken note of, is the fact that women are quite proactive in resorting to energy-saving equipment and are environmentally very conscious. Also, the level of education is not very important in order to distinguish the pro-environmental individuals when compared to others, indicates the results [5]. To remove the barriers in obtaining the required funding support, Jyoti Prasad Painuly in

his paper titled, 'Financing energy efficiency-lessons from experiences in India and China', suggested that a separate commercial banking window for energy efficiency, setting up of a separate energy-servicing company, funding guarantee facilities, equity financing to the sector and better understanding among the financial institutions would be very helpful, he has stated [6]. Further suggestions include sharing of experiences from these countries and organizing cross exchange workshops. He further confirms that lack of access to financing facility is the major cause for slow growth in this crucial sector. The same view regarding funding constraints to the sector is confirmed by Bullier and Milin [7] who analyzed the 'Alternative financing schemes for energy-efficiency in buildings'. The key obstacle for the improvement of alternative financing schemes is the lack of adequate finance whether it is public, commercial or residential constructions, they have asserted in their research work. William Prindle in his paper on analyzing the corporate energy efficiency strategies has identified a list of key qualitative factors affecting energy efficiency factors which affects the internal factors, supply chains and products & services, as well. The paper further identifies three important motivating factors that drive corporate establishments to resort to energy efficiency strategies. They are reducing carbon footprint, mitigating the risks involved in increasing energy prices and their higher level of commitment to corporate social responsibility. Simple payback period method (PBP) and internal rate of return (IRR) are the most important techniques being widely used by the energy efficiency companies, they have stated. The study further highlights that companies would reap greater benefits by focusing on energy efficiency strategies [8]. In the same way, Ivan Hascic (2015) in his research paper titled, 'Public interventions and private climate finance flows: Empirical evidence from renewal energy financing' analyzed the role of two categories in mobilizing fund flows which includes public finance and policies. The objective is to examine the flow of funds to and in developing countries. They conclude their study by asserting that both public finance and public policies play a crucial role in mobilizing private finance for the industry, in the world [9]. Martin and Gossett estimate that energy saving projects have an average internal rate of return (IRR) of 17% and save up to \$900bn

in energy cost before 2020. In the same way, Richard & John (2015) in their research article on, 'Innovative financing for renewable energy' made an attempt to explore the various methods of innovative renewable energy financing available for those who would like to install alternative or green energy saving equipments, across the globe. The primary idea is to help aspiring individuals with various financing options to get the funding support for renewable energy equipments and installations. They also explored the possibility of identifying public and private financing sectors to fund renewable and green projects. Clearly synchronizing with the results of previous studies, this research work also threw many interesting dimensions to the whole issue of financing energy installations. High transaction costs, lesser reliability on assured returns and longer gestation period to recover the initial investments cause greater impediments for this sector to secure funding support. Risk-return analysis, which is the usual method of computing the sustainability of a project for project financing methods does not seem to encourage energy saving projects. Also, the risk associated with the projects are magnified and they increase the risk-premium so that ultimately these proposal do not get clearance for loan or funding support from these institutions. Banks and financial institutions heavily rely on credit rating of borrowers. This again causes hardship to the borrowers. The researchers come up with many innovative financing options, such as 'distributed financing' where direct funding of required funds to the end-users takes place without intermediaries, P2P (peer to peer lending) where companies and borrowers can meet without undergoing the hassle of formal banking channels and 'crowd funding' opportunities with the help of Mosaic which is a platform available for connecting the borrowers and lenders. The study throws many interesting dimensions to the concept of renewable energy financing [10].

2.1 Comments and criticisms

A scrutiny of the existing literature on financing options available for energy saving projects indicates that a set of both qualitative and quantitative factors affects such projects, globally. While profitability is the primary focus of conventional finance, modern trends suggest high priority to energy saving projects in order to save the environment and leave a greater global

landscape for the future generation to live, peacefully. Most of the researchers are of the opinion that generating the required funding support for carrying out energy-saving projects is, indeed, a big challenge, globally. While highlighting the problems and issues affecting the sector, they do come up with many interesting suggestions in order to increase the funding options, as well. For gaining mileage in energy-saving projects, an interesting dimension suggested by researchers include exchange of experience and knowledge gained from energy-saving schemes and projects with other countries. Participating in exchange programs would greatly benefit countries, it has been observed and recommended by researchers. Proactive role of commercial banks is an essential pre-requisite for the success of such projects, it has been observed. However, the result would be that commercial banks may have to forego their core operations and a portion of profitable ventures. In a nutshell, active support of different national governments would help this sector grow with the required funding support, in the long run.

3. METHODOLOGY AND SAMPLING

As stated earlier, the primary objective of the present study is to analyze the different funding options available for green and energy-saving projects for such of those developers who would like to install energy-saving equipments and technology in the existing and new constructions both housing and industrial ventures. While funding options available for normal projects are plenty, which includes banking and other resources, the major issue is that cost-saving projects do not get the much-needed support from most of the formal lending institutions. With the result, there is reluctance on the part of the builders and developers to introduce or undertake any such projects for fear of losing their investments. Again, there is no certainty in terms of returns in such projects. As such projects do not generate returns rather offer long-term benefits over a period of more than twenty to fifty years, in many cases. Banking and financial institutions that work on profitability and revenue generating models are, obviously, unwilling to take such risks by investing their funds in such projects. Yet another aspect to be considered here is that the danger of losing money gets further confirmed if the duration of repayment is longer as it is highly unlikely to predict success of

projects in the long run. Quantifying risk dimensions is quite challenging in this scenario.

3.1 Primary Data Collection through Interview

We used a well-developed questionnaire and contacted the promoters and developers in their offices and work-spots to initiate a dialogue and discussion based on the objectives of the study. A few of the respondents were contacted over telephone in order to get their responses consciously keeping in mind the objectives of the study. Flat and building promoters were the primary respondents with whom we have had personal interviews and collected the required data. This comprehensive questionnaire had focused questions that clearly aligned with the objectives and direction of the study. In total, the questionnaire had twenty three questions on various aspects pertaining to project financing. Research Assistants personally met with the respondents in their worksites and had an informal discussion on the topic with clear focus on green energy initiatives. Apart from the basic questions on the nature, quantum of investments of the projects, the questionnaire had a judicious mix of open-ended and closed-ended questions in order to elicit their opinions. We contacted thirty four respondents that are either directly or indirectly involved in major renewable or green energy projects. The process of collecting data started with a formal greeting and the respondents were drawn into the discussion in an informal way with a general enquiry about the project, estimated cost, progress of work, initiatives taken by them on installing green and renewable energy equipments in the ongoing construction. They were also asked to highlight the significance of installing energy-saving projects and the different sources available that include bank loans, debt, private financing and equity funding options available. Questions on the proportion of funding made on the projects from own and borrowed sources were asked for. Later, questions on the different types of risks faced by them in installing energy-saving equipments/installations were asked for. Among other related questions, important questions pertaining to the payback and return on investment were asked, as well. In order to avoid identity, no name or address details were recorded. While twelve respondents were directly contacted at the workspots primarily from Sharjah and Dubai emirates. The remaining

twenty two respondents were contacted over telephone and information were collected. Respondents could not answer a few of the questions and they were subsequently deleted from analysis. Overall, we were able to collect thirty questionnaires, in total.

3.2 Analytical Tools

Apart from computing percentages, 'content analysis' was used by the researchers to examine the data. "Content analysis enables researchers to sift through large volumes of data with relative ease in a systematic fashion (GAO, 1996) [11]. It can be a useful technique for allowing us to discover and describe the focus of individual, group, institutional, or social attention (Weber, 1990) [12]. It also allows inferences to be made which can then be corroborated using other methods of data collection. Krippendorff (1980) notes that "[m]uch content analysis research is motivated by the search for techniques to infer from symbolic data what would be either too costly, no longer possible, or too obtrusive by the use of other techniques" (p. 51)" [13].

Further, 'content analysis' is a very powerful tool to examine the direction and trend in the available qualitative data. This technique is also quite useful to clearly identify the public opinion. 'Word-frequency count' is one of the features of the content analysis which helps in understanding the opinions and views of the respondents. It is also a very powerful data reduction technique and helps in reducing the large volume of data into meaningful categories or concepts. Since 'content analysis' is a robust technique and satisfied our expectations to examine the trends in the data, it was used for our analytical purposes.

4. RESULTS AND DISCUSSION

4.1 Analysis of inputs on the project nature

The analytical results threw interesting dimensions of various issues and problems being faced by those who are looking for financing support for energy-saving schemes. The results indicate that a little over 27% of the respondents are involved in renewable energy-projects for the past one year whereas 43% of respondents are working on the projects for a period between one to three years. A little over 23% of respondents work on the projects for more than three years. To a specific query on why they thought that energy saving projects are very important, the responses

from individual sample respondents were as follows. While 73% of the respondents attribute their passion and concerns for the environment, 20% of the respondents talked about their interest in fulfilling corporate social responsibility. The rest informed that cost saving, ensuring improvement in productivity and reliability improvement of the system as the main factors which contributed to their commitment to energy saving projects.

Over 80% of the respondents have informed that bank loans are the primary source of funding for their projects while a little closer to 20% stated that private loans and funding support from non-financial entities as their source of financing.

Coming to the financing options available for renewable and green energy projects, again, majority of the respondents have stated that bank financing helped them to obtain the necessary funding support. They have also stated that they are fully aware of the liberal funding support available from government and semi-government entities for green-energy projects. When asked about the type of financing strategies they have followed, particularly, between debt and equity financing, the respondents have stated that they primarily focus on debt-financing rather than any other form. This could be attributed to the culture in this part of the world as equity investments available here in the GCC and MENA region are smaller in number. Regarding the proportion of own and borrowed funds, we got mixed results as over 75% of the respondents obtained debt for their projects. Coming to analyzing the suitability of renewable energy investment projects applying various investment appraisal techniques, the respondents expressed their awareness of payback period (PBP), net present value (NPV) and internal rate of return (IRR) techniques. Over 80% of the respondents are of the opinion that a combination of PBP and IRR are used in selecting the best capital expenditure projects. This practice seems to be widely prevalent across the country and is considered to be a very valuable proposition as well. Again, opinion is quite mixed with regard to the expectation of the respondents on expected returns on projects. A minimum of 15% to 20% seems to be their favourite ROI expectations on projects which is considered to be reasonable and fair by any standards. To yet another specific question on foreseeable risks inherently present in projects, particularly, in their previous projects, majority of the

respondents have clarified that credit risk and project delay-related risks are the two minor concerns in their projects. A few of them spoke about default risk, currency fluctuation risk and inflation risk although they are not quite significant in affecting the progress of projects.

4.2 Results of Content Analysis

A detailed examination and analysis of the interview responses with the promoters and bankers resulted in the emergence of the following statements. The responses have been subject to initial coding and subsequently changed to focused coding in order to identify the emerging constructs or opinions. Only the final statements culled out from the process have been presented and discussed below.

1. Environmental concerns, regulations and cost savings are the primary reasons which motivate the builders and promoters to install energy saving equipments and instruments in their projects. 2. Corporate social responsibility and their commitment to ensure pollution-free environment are the second-most important reasons for implementing such schemes.

3. Bank loans and debt financing are quite helpful to introduce energy-saving schemes in projects. They should also have clear-cut guidance for analyzing projects in terms of payback period, net present value and internal rate of return. Banks follow strict risk-return analysis and other norms before sanctioning loans for projects.

Exclusive supporting desks in banks would help renewable energy projects to get a fresh fillip in the long run.

4. Government support and technical assistance/guidance play a crucial role in the success of energy-saving projects.

5. Liberal terms and conditions would be helpful while analyzing the projects. In other words, techniques applied for evaluating projects under traditional financing would not be helpful.

6. Subsidies and incentives from government and other agencies motivate us to introduce such environmentally-friendly schemes in our real-estate and industrial projects.

7. Payback Period (PBP) and Internal Rate of Return (IRR) play a predominant role in analyzing projects that are rewarding.

8. Project delay due to cost escalation is a major issue to be tackled in order to ensure success of energy saving projects.

9. It would be difficult to quantify the exact amount of cost-saving for introducing energy-saving projects. However, long run success and benefits are quite helpful to the nation and citizens.

10. I am willing to reduce my ROI for investing on green projects.

The statements culled out from the contents analysis is extremely helpful to identify the underlying patterns/opinions among the different stakeholders engaged in energy-saving projects.

5. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary and Conclusions

This research work aimed at examining the different financing options available for energy saving projects. A survey instrument was used to collect data. Personal and telephonic interviews were conducted with thirty respondents who are promoters/builders involved in renewable and green energy-related installations and construction in Dubai and Sharjah sites. Apart from percentages, 'content analysis' was applied to examine the opinions and views of sample respondents with questions that are specifically focused on renewable and green energy-related projects. It has been found that these developers and builders are involved in such projects ranging from one to five years. Bank financing seems to be the major source of funding for such projects. They have further stated that non-revenue generating projects such as energy-saving installations do not attract the bankers and they undergo stringent project appraisal norms and risk-return analysis. This finding is consistent with the results of Richard & John [14]. Payback Period (PBP) and Internal Rate of Return (IRR) seem to be the prominent models used by the respondents to appraise capital expenditure projects. Environmental concerns, government regulations, corporate social responsibility and ensuring pollution-free environment seem to be the primary causes of installing such energy-saving projects in their buildings and construction sites.

5.2. Recommendations

Based on the interview/interaction with the sample respondents and analytical results, the following recommendations are made in order to make these energy-saving initiatives a great success.

Firstly, banks can think of releasing soft-loans with lesser interest rates as energy-saving projects help generate clean and sustainable energy.

Secondly, these projects should not be compared on par with conventional loan types and the norms for evaluation should be relaxed. Also, profitability should not be the primary goal for analyzing energy-saving projects.

Thirdly, a well-developed equity market would help such projects in many ways and address the concerns of builders/promoters engaged in such projects.

Fourthly, while the respondents are quite happy with the existing concessions/incentives/grants and other generous support being extended to energy-saving projects, they would like to undergo training and orientations on green energy-related programs to improve their understanding on such topics. Sharing of experiences from both local and foreign experts would help in many ways.

Fifthly, further concessions and rewards for those who achieve the energy-efficiency targets would promote such socially relevant and environmentally-friendly initiatives, quite well.

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