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ACCESS TO FINANCE

SURVEY FOR ENERGY EFFICIENCY AND RENEWABLE ENERGY PROJECTS

JULY 2014

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Table of Contents

1.0 EXECUTIVE SUMMARY	4
2.0 SURVEY DESIGN AND COVERAGE	6
3.0 SURVEY ANALYSIS	8
3.1 COMMERCIAL BANKS	8
3.1.1 Systematic Vs. Opportunistic in Financing RE & EE Projects	8
3.1.2 Attractiveness of Financing	9
3.1.3 Sources of Funding for Financing RE & EE Projects	10
3.1.4 Availability of funds, loans terms, interest rates and collateral	10
3.1.5 Commercial Banks' Preference in Financing Energy Efficiency & Renewable Energy Projects	11
3.1.6 Accreditation/Licensing of Energy Service Providers (ESPs)	13
3.1.7 Training and Capacity Building Needs Assessment by Financial Institutions	14
3.2 INTERNATIONAL DEVELOPMENT BANKS AND FUNDS	15
3.2.1 Development Bank of the Federal Republic of Germany (KfW) ...	15
3.2.2 The European Bank for Reconstruction and Development (EBRD)	16
3.2.3 The French Development Agency (AFD)	16
3.3 MICROFINANCE AND LEASING COMPANIES	17
3.3.1 Tamkeen Leasing	17
3.3.2 National Microfinance Bank.....	18
3.3.3 Tamweelcom	18
3.4 GOVERNMENT FUNDS AND SUPPORT PROGRAMS.....	19
3.4.1 Central Bank of Jordan.....	19
3.4.2 Jordan Environment Fund	19
3.4.3 Jordan Loan Guarantee Fund "JLGF"	20
4.0 CONCLUDING REMARKS AND RECOMMENDED ACTIONS	21

Table of Acronyms

Acronym	Term
AFD	The French Development Agency
CBJ	Central Bank of Jordan
ESPs	Energy Service Providers
EBRD	European Bank for Reconstruction and Development
EE	Energy Efficiency
EMRC	Energy and Mineral Resources Commission
ESCO	Energy Service Company
JLGF	Jordan Loan Guarantee Fund
JREEF	Jordan Renewable Energy And Energy Efficiency Fund
KFW	Development Bank of the Federal Republic of Germany
MEMR	Ministry of Energy and Mineral Resources
NERC	National Energy Research Center
PVs	Photovoltaics
RE	Renewable Energy
ROI	Return on Investment
USAID	United States Agency for International Development

1.0 Executive Summary

Improved energy efficiency (EE) and the use of renewable energy (RE) will improve the Jordanian economy. However, the development of EE and RE sectors requires an effective regulatory base, market pull by consumers, ease of access to affordable financing, and qualified energy service providers (ESPs) to implement EE and RE projects.

The objective of this study is to enhance our understanding of financial institutions' willingness to finance ESPs, requirements and preferences for financing EE and RE projects, and key challenges that exist around financing for EE and RE projects.

In general, banks are interested in financing RE and EE projects. A survey of seven banks suggests that micro RE projects are more attractive than micro EE projects for financing. However, banks still prefer financing mid-sized projects in RE and EE, as they are most closely linked to their existing diversified client base. Banks are more interested in financing photovoltaic (PV) projects than EE projects, particularly the larger projects that are being guaranteed by the government.

Some banks have already established designated credit lines for financing RE and EE projects utilizing subsidized sources of funds. Others are still observing the market and rely on incoming financing requests to be evaluated and financed from their internal resources.

The four Commercial banks utilizing the Central Bank of Jordan (CBJ)'s window for renewable energy and energy efficiency have at least JD 76 million available for borrowers, while the Agence Francaise de Development (AFD)'s facility size is around JD 36 million available through two banks namely; Capital Bank and Cairo Amman Bank. This sums to a total of approximately JD 112 million currently available for RE and EE project financing.

Financing ceilings are set at JD 10 million and JD 5 million per investment for CBJ and AFD's facilities respectively. Loans provided through banks' internal funds are governed by each bank's lending guidelines.

For several years, the benchmark lending price has typically been the banks' prime rate, which can range from 8-12% according to the client's size, credit history, and asset portfolio. The CBJ's window included RE and EE projects since 2014 lowering the interest rates for these two sectors. The commercial bank borrows funds at a rate of 2-2.5% and relends to clients at 5-6% for up to a ten year term.

The existence of various funding sources for commercial banks help lower the interest rates they can offer loans at a competitive rate. However, banks still assume the credit risk of these funds. For this reason, banks typically prefer direct lending to the customer, particularly if that customer is already an existing client.

With the lack of credible market reference, short credit history, and the absence of physical asset holdings, ESPs are still perceived by banks as consultants rather than as projects' implementers or credible providers of turnkey solutions.

Part of the challenge for ESPs is that banks typically lack the experience working in this new field and do not possess sufficient knowledge to verify EE projects assumptions, technology, or risks. With the absence of a credible reference body and independent advisory sources, banks rely on collateral as the most important tool for risk mitigation. Accordingly, RE and EE loans are often treated as any other loan even if the bank has a designated channel or funds available for RE and EE projects.

In many international cases, government funds and programs have acted as catalysts and trust builders for EE project development and financing. However, government funds like JREEF and the Environment Fund are paralyzed with no active role in either developing the market or the financing schemes.

Loan guarantee programs, international development programs, and development banks offer supporting technical tools such as technical assistance and capacity building programs. However, commercial banks do not have similar experience and are hesitant to finance EE and RE projects, making these tools and solutions less effective in pushing the market forward.

For market segments that are not of interest to commercial banks, microfinance institutions can play a vital role in financing EE and RE solutions. Microfinance organizations are well-suited to the task and have a strong desire to enter the EE and RE market.

The EE and RE market is growing as a function of time and trust; as sources of competitive funding increase, awareness among clients and lenders is rising and real demand increasing.

Aligning efforts of the government, international donors, international development banks, international funds and professional associations is vital for building the credibility of the EE sector as a whole, as well as the credibility of ESPs. Translating this alignment into a multi-layer accreditation system while delivering the right knowledge and tools to decision-makers in the banks will enhance the credibility of ESPs among both lenders and end consumers.

More details on challenges, highlights and recommendations can be found in this study's concluding remarks.

2.0 Survey Design and Coverage

Over the past few months, the RE and EE market has witnessed an upward trend driven by various factors such as rectifying the renewable energy and energy efficiency law, the initial selection of mega-RE bidders, and the kickoff of net metering installation on a small scale.

Although the main focus of this survey is on energy efficiency financing, certain questions focusing on financing renewable energy were added to get a better understanding of financiers' appetite for EE projects in relation to the increasing appetite for financing RE projects.

Energy efficiency projects are more complex¹ than renewable energy projects due to numerous end-use technologies and various applications of these technologies in industrial, commercial, and residential sectors.. Thus, in such a premature market, EE projects are less popular for both financiers and consumers. This represented a challenge for the study team in identifying financiers' genuine appetite for financing energy efficiency projects.

Accordingly, this survey was primarily designed to inquire about past and present activities of banks, local and international funding agencies involved in energy efficiency funding in Jordan.

The second objective of this study was to explore opportunities and challenges for funding energy efficiency projects and to seek advice from interviewees on ways and means to expand access to affordable financing for ESPs' projects.

Interviews with commercial banks were structured with consistent questions to get a more accurate understanding and comparison of their financing programs, preferred financing modes, and knowledge development areas that may require capacity-building.

Interviews with microfinance companies, international development banks and funds, government funds, and supporting programs included the survey questionnaire, but also adopted a more open approach. The less structured part of the interview was used to obtain more information and feedback on their experiences in the market, current challenges, and upcoming financing and support programs for the target sector.

As the banking sector is the long-term backbone for the development of any economic activity, seven banks were covered in this study. Three international development banks and agencies were interviewed, as they are considered to be change catalysts and initial market movers. Two micro-finance companies and one leasing company were interviewed, as they represent financing channels for non-bankable clients or micro-scale projects that are out of the current interest of commercial banks. The central bank, government funds, and loan guarantee programs were interviewed for insights on available and possible financial tools that can help jump-start low-risk energy efficiency projects. Table 1 lists the institutions that were interviewed.

¹ Complexity of EE projects in comparison to RE projects is due to the fact that EE projects usually include more than one systems, measures and equipment that need to be integrated within the project. Also, EE projects might include structural or civil works like thermal insulation solutions, glazing and building envelop upgrades.

Table 1. Institutions Interviewed

Sector	Institutions Interviewed
Commercial Banks	Housing Bank
	Capital Bank
	Cairo Amman Bank
	SGBJ Bank
	Jordan Kuwait Bank
	Al Ahli Bank
	Al Etihad Bank
International Development Banks and Agencies	KFW
	EBRD
	AFD
Government Funds & Support Programs	Central Bank of Jordan
	Jordan Environment Fund
	Jordan Loan Guarantee Program
Microfinance & Leasing Companies	Tamkeen
	Tamwelcom
	National Micro Finance Bank

3.0 Survey Analysis

3.1 Commercial Banks

Seven banks with a registered capital ranging between JD 100 million and JD 250 million were interviewed. This spectrum covered corporate banks, high penetration banks, specialized banks and foreign banks. Most of the banks interviewed revealed that they have functioning engineering departments that provide technical support to financing officers for decision-making. However, the majority of these departments cater to pure real estate projects and appraisal.

3.1.1 Systematic Vs. Opportunistic in Financing RE & EE Projects

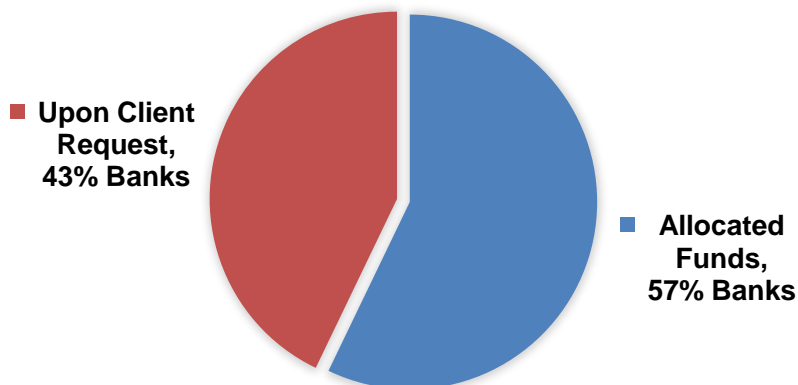
Four of the seven banks surveyed indicated that they have designated financing channels for EE & RE projects. Banks without such programs indicated that they receive funding requests from their clients for RE and EE projects and deal with them on a case-by-case basis. Some of these banks that have not initiated designated programs indicated that there are plans to get into the EE/RE segment, but they are waiting to see how the market reacts to new developments in the RE mega-projects.

Although it does not have a designated credit facility or funds for RE and EE projects, Housing Bank has already met with most of the mega-RE bidders to discuss financing options. However, the bank at this stage would like to be selective and would offer finance from its own sources in accordance with their approved credit policy in terms of collaterals, maturities, and interest rates.

Al Etihad bank has already launched a special program for financing the replacement of home appliances with energy-efficient labeled appliances. However, financing EE projects is still on their radar, as it requires close monitoring of developments in the market and a thorough review of the bank's credit policy for such projects.

"The bank is not allocating funds for lending RE and EE projects at the time being. However, the door is open if clients approached the bank and it would be studied case by case as a traditional loan. There might be future plans to provide designated financing for such projects as we see how the market will develop in the coming few years." Khalid Saad, Head of corporate banking - Sosgen Bank

Figure 1. Banks Allocating Funds for RE and EE vs. Opportunistic Allocations



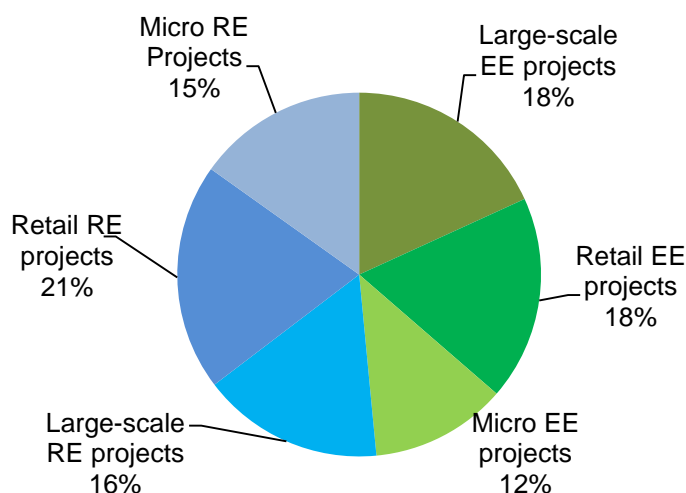
3.1.2 Attractiveness of Financing

Most of the banks interviewed are currently negotiating financing the large-scale RE projects that are planned in south of Jordan. However, banks have greater interest in retail or medium-scale projects for both RE and EE. This interest in financing mid-sized projects can be justified by the following facts:

- No mega-projects have gone into operation yet.
- As it is a new industry, concentration of funds into one or two projects with the same contractual setup and geographic zone has a high level of risk.
- Mid-sized projects are mostly linked to banks' existing customer base of big clients or SMEs, which is a more diversified portfolio than few mega-projects.
- Typically, mid-sized projects have a shorter payback period and higher ROI.

For micro-scale opportunities, banks prefer financing RE projects and equipment (particularly PVs) to financing micro-EE projects and solutions. In general, commercial banks do not have technical experience or financial-related evaluation tools that assist them in evaluating the rewards and risks of larger projects. Accordingly, banks become more hesitant to finance EE and large RE projects unless they are backed up with government-supported power purchasing agreements, which perceived as a type of collateral.

Figure 2. Banks' Financing Preference in Terms of Project Nature and Scale



Over the past year, banks have started to receive a noticeable number of financing requests for RE systems. This trend, combined with the enforcement of net metering, means that credit officers have become familiar with PV systems. In some cases, banks began to accept PV systems as collateral for financing, especially if it was supplied by a well-known manufacturer.

However, banks still lack experience in and a good understanding of this new field – particularly the energy efficiency financing potential, including projects' scope, contractual aspects, and energy service providers' role.

The Energy and Mineral Resources Commission (EMRC) is currently allocating 2.5% of peak demand to net metering and wheeling projects, which represents 80 MW, with expectations of linked projects to reach 14 MW by the end of 2014. Although EMRC may increase the allocation for RE permitted to be linked to the grid, RE projects are still constrained by technical requirements that could slow down the RE market and impact RE financing opportunities.

On the other hand, the energy efficiency market is a low hanging fruit with few regulatory and technical constraints imposed by external parties. Currently, the EMRC is fixing most electricity

tariffs until 2017, after which subsidies will be removed and restructured to make EE projects a more economic, feasible, and a cross-cutting opportunity.

3.1.3 Sources of Funding for Financing RE & EE Projects

The banks surveyed have a mix of funding sources that includes internal resources, CBJ, and AFD's funds. The cost of internal funds depends on the size of the bank, money sourcing policy, client base, and profitability targets. The cost of funds through CBJ and AFD windows is relatively fixed and is linked to when the funds were attained.

It is worth mentioning that AFD has selected two banks to operate its financing program, while CBJ's window is open to all operating Jordanian banks who wish to use their facility. Table 2 illustrates commercial banks' sources of funding for EE & RE projects.

Table 2. Commercial Banks' Sources of Funding for RR & EE Projects

	Internal Funds	CBJ Funds (allocated for RE/EE)	AFD Funds
Housing Bank	✓		
Capital Bank	✓	✓	✓
Cairo Amman Bank	✓	✓	✓
SGBJ Bank	✓		
Jordan Kuwait Bank	✓	✓	
Al Ahli Bank	✓		
Al Etihad Bank	✓	✓	

3.1.4 Availability of funds, loans terms, interest rates and collateral

Over the next few years, it is estimated that tens of millions JDs investment will be required to fuel projects in energy efficiency and renewable energy in Jordan. As a result of this high demand, banks are keen to secure the funds necessary to tap into this market.

However, compared to other well established sectors with which banks traditionally have experience, establishing accurate market projections is a challenge. As such, there are no clear allocations for RE and EE within the banks surveyed.

The four Commercial banks utilizing the CBJ's window for renewable energy and energy efficiency have at least JD 76 million available for borrowers, while the AFD's facility size is around JD 36 million available through two banks. This sums to approximately JD 112 million currently available for financing.

Internal funds allocated for this sector are difficult to quantify, as they vary by bank and depend on the project's owner, structure and technology.

Loan tenures vary and tend to be flexible enough to cope with infrastructure renewable energy projects that require long payback periods, as well as with EE projects that typically have a shorter payback period.

Loan terms of up to five years are commonly found at financial institutions. Loans given through the CBJ's window are set at a 10-year term, while loans through AFD reach up to 13 years. In some cases, banks combine and adjust the cost of money from governmental/

development funds and stretch the loan term up to 17 years. Loans given through internal funds usually have a shorter term of up to 7 years in the best case. For example, if the cost of financing based on the CBJ's 10 year term is 5% and the project requires a 15 year financing term, the bank adjust the interest rate (e.g. 6.5%) to cover the remaining 5 years through its internal funds.

Financing ceilings are set at JD 10 million and JD 5 million per investment for CBJ and AFD's facilities, respectively. Loans that are given through banks' internal funds are governed by each bank's credit policy and limits. However, as banks have no minimum amounts for funding, it can be economically justifiable for the bank to proceed with such small loans.

For several years, the benchmark lending price has typically been the banks' prime rate, which can range from 8-12% according to the client's size, credit history, and asset portfolio. CBJ's window lowered interest rates for RE and EE projects. The commercial bank borrows funds at a rate of 2-2.5% and relends to clients at 5-6% for up to ten years.

The financing sector in general is still heavily using asset-based lending rather than cash-flow based lending. Under such conditions, collateral is still considered one of the most important requirements to mitigate lending risks.

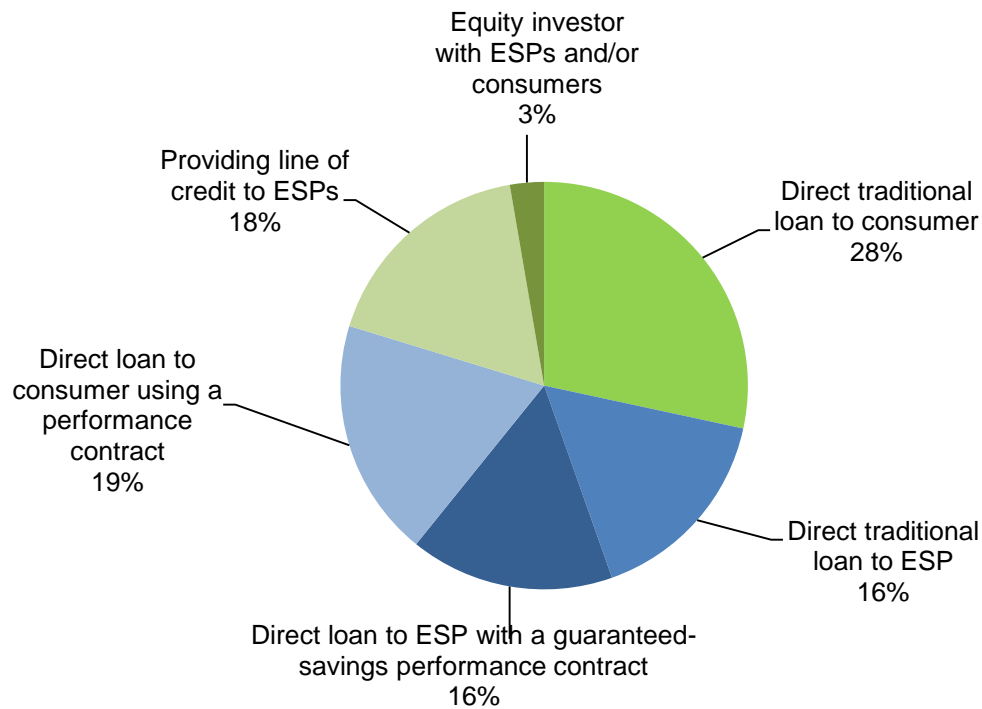
Most banks review the projected cash flows of RE and EE projects. However, credit officers neither fully understand the details of such projects, nor can they verify the assumptions behind the numbers. Therefore, a client's creditworthiness and establishment of their business become the most important factors that banks consider. As such, depending on the client's worthiness, the collateral is set as low as 10% of the loan to as high as 120%.

3.1.5 Commercial Banks' Preference in Financing Energy Efficiency & Renewable Energy Projects

During the interviews, banks were introduced to ESPs' work and to the various financing models that ESPs can use in implementing EE and RE projects, such as guaranteed savings, shared savings, and *chauffage* models. In order for banks to assess EE and RE projects, they will need a better understanding of the dynamics and financial implications of the various EE and RE project financing models based on real cases. Lack of experience with EE & RE projects and low level of technical skills of bank staff, are the primary reasons that banks prefer direct loan to consumers than ESPs for such projects..

Several of the banks surveyed indicated that in many cases, clients who apply for RE or EE loans do not have robust business plans or solid cash flow projections. With the absence of credible third parties who can assist banks in technical and financial assessment of the proposed projects, banks deal with RE or EE loan requests as an ordinary loan request. In doing so, the bank avoids assuming credit or performance risks by asking the applicant to submit physical collateral that typically covers 100% of the loan amount.

Figure 3. Banks' Preferred Financing Route



In general, banks prefer to lend directly to the consumer who is the beneficiary of the RE or EE solution or service, especially if that consumer is an existing client of the bank. As such, direct financing or expansion of credit to ESPs who are bank clients could be a more successful approach. Because banks are heavily regulated by the CBJ and international banking standards, the option of taking equity in the ESPs is not viable unless the bank enters into the venture through an investment subsidiary.

Common financing barriers for all banks include the following:

- Creditworthiness of the loan recipient
- Credit history and past transactions of the loan recipient
- Business robustness and cash flow performance
- Ability to provide collateral or guarantees in case the project's cash flow is not convincing or if the bank cannot verify the assumptions upon which cash flows were calculated

In a unique case, Al Etihad Bank entered into a performance contracting lending arrangement with an ESP by obtaining a commitment from the client to transfer savings proceeds to an escrow account (under the name of the ESP) that is controlled by the bank. By using this setup, the bank was able to guarantee that the energy savings proceeds are channeled toward repaying the loan given to the ESP.

Table 3. Issues that Hinder Banks in Providing Finance to ESPs

Issues with the Market	Issues with ESPs
<ul style="list-style-type: none"> • The RE and EE industry in Jordan is relatively new, so the risk in financing this sector, especially private sector companies or projects, is still considered high • There are many newcomers to the market, and each company claims to have the best available technology or solution • Regulations are constantly changing, and enforcement varies • Financial statements submitted with loan requests are often weak (e.g. double accounting, differences in audited vs. actual) • Often, equipment providers and suppliers are not well-known (e.g. Chinese suppliers with untraceable track records) 	<ul style="list-style-type: none"> • Most ESPs are new, and it is difficult to verify past project performance • ESPs are typically small companies without sufficient collateral to back up their lending requests • It is difficult for the bank to verify technical aspects and assumptions behind the financial numbers provided by ESPs or clients • There is a lack of recognized legal contracts and practices governing EE projects and related transactions • There is a lack of alliances and joint ventures with international suppliers and well-established firms

Banks also expressed readiness to lend directly to ESPs if they meet the requirements listed above. However, providing cash flow based loans to ESPs is challenging due to the following perceptions and facts:

- Banks often perceive ESPs as consultants (theoretical consultants) rather than project implementers.
- Banks do not have the proper understanding to differentiate between an ESP and a regular supplier or single solution provider
- Most ESPs are relatively new companies with no operational or physical assets
- Banks do not have the means to verify ESPs' credibility in terms of performance of past projects

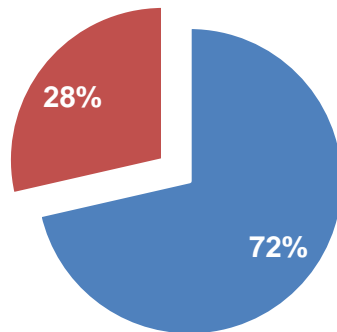
"There are so many companies approaching the bank directly and each company, typically, promotes itself as the best solution provider in the market. As the bank does not have the knowledge or technical capability to judge behind the financial numbers given to the proposed project, it is hard for the bank to trust given numbers and to verify the accuracy or reasonability of the expected returns." – Jafar Majdalawi, Large Corporate Financing Manager, Al Ahli Bank

3.1.6 Accreditation/Licensing of Energy Service Providers (ESPs)

In response to the growing number of companies and suppliers entering the market, a couple of banks (Capital Bank and Cairo Amman Bank) have an approved list of suppliers. Most of the banks interviewed strongly agree that accreditation of ESPs would reduce the risk for banks (Figure 4 below).

Figure 4. Would the Presence of Accredited ESPs Reduce the Perceived Risk by Banks?

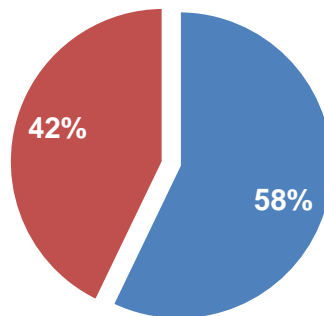
■ Strongly agree ■ agree ■ Strongly disagree



All banks agreed that the accredited ESPs would be able to get better terms for EE and RE loans (Figure 5 below). Interviewees justified the possibility of better terms for accredited ESPs with reduced risk factors related to the loan's pricing, structure and covenants. Accreditation also helps reduce banks' costs by avoiding third parties verification, field visits, and due diligence activities.

Figure 5. Would Accredited EPSs be able to get Better Financing Terms?

■ Strongly agree ■ agree ■ Strongly disagree

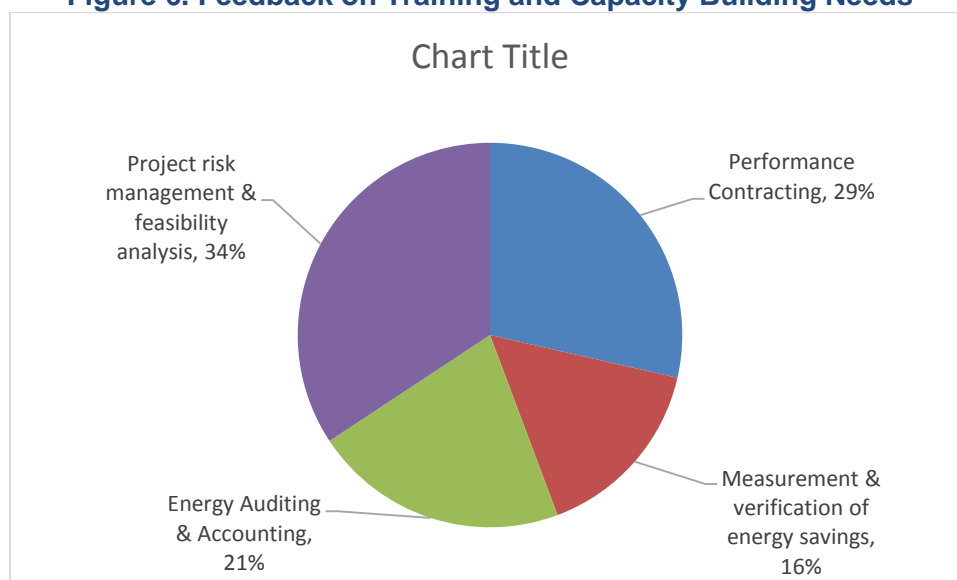


For example, if the current average prime lending rate offered by banks is 9% with average loan guarantee fees of 1.5%, and the bank is willing to give a favorable rate for accredited ESPs, the total cost of loan could match the prime lending rate including the loan guarantee fees.

3.1.7 Training and Capacity Building Needs Assessment by Financial Institutions

The survey included an assessment for knowledge areas required to increase the bank's ability to assess and evaluate incoming RE and EE financing requests. Pure technical areas like measurement, verification and energy auditing were less attractive for banks. Banks were interested in areas that assist them in understanding and assessing submitted projects in terms of technical assumptions, contractual links and risk assessment.

Figure 6. Feedback on Training and Capacity Building Needs



3.2 International Development Banks and Funds

International development banks, funds and aid programs have been supporting Jordan for decades in various areas. With the growing challenges of energy demand and in line with the recent interruptions of energy supply, energy cost has become a major burden on the national budget and a major driver for inflation and national debt increase. In response to these challenges, international aid agencies, banks and funds have introduced programs to support the RE & EE sectors at different levels. This section sheds the light on these major programs and recent developments in supporting the finance of RE and EE projects.

3.2.1 Development Bank of the Federal Republic of Germany (KfW)

The Development Bank of the Federal Republic of Germany (KfW) has supported projects to help reduce water loss. This support takes the form of subsidies and favorable-term loans used for modernization efforts in the water sector. Overall, the bank has financed around EUR 400 million in water sector projects in Jordan over the past three years.

In 2013, KfW launched an initiative in energy efficiency for public buildings, allocating EUR 15 million for this pilot project. Initially, it was discussed that the Ministry of Energy and Mineral Resources would own this pilot project. However, the project ultimately fell under the Ministry of Housing and Public Works, which showed greater interest in adopting this pilot.

On the financing side, KfW only deals with the government in Jordan on the basis of technical assistance and soft loans for project implementation. Currently, there are no operating financing schemes or programs targeting private sector companies in Jordan that are sponsored by KfW.

Energy consultants from KfW have already conducted field visits and initial assessment of some public buildings and prepared the tender documents. A portfolio of buildings owned by different Ministries (Education, Health, and Public Works) were selected for this project. The main contractor, a German ESCO, will be joined by a local ESCO to implement the project.

On the renewable energy side, KfW is planning to finance a 10 MW PV project in the north of Jordan, near Irbid. This project aims to ease the pressure on the northern electricity grid due

to increasing demand from the influx of Syrians refugees residing in the Irbid and Mafrqa areas.

This project will serve as a practical case study, which will feed into KFW's future decisions about expanding this type of project to include more government buildings. It is worth mentioning that after the project is implemented, maintenance, measurement and verification will be the sole responsibility of the subject Ministries, which requires technical capacity-building and commitment to ensure the continuity and consistency of the savings.

3.2.2 The European Bank for Reconstruction and Development (EBRD)

The European Bank for Reconstruction and Development (EBRD) is helping to address Jordan's energy shortage with investments to increase overall energy efficiency.

EBRD's activities in Jordan focus on overall economic growth, developing the private sector, promoting energy efficiency, supporting renewable energy, and improving infrastructure and municipal services, including water and wastewater treatment.

EBRD operates two investment and financing channels. The first is direct lending, either as equity or debt. The minimum lending amount is EUR 1 million, which makes such funds only available for medium-size projects or relatively large projects.

To date, EBRD has invested around USD 30 million in financing renewable energy and energy efficiency projects, with the balance leaning toward renewable energy projects.

The second financing channel is an indirect lending facility operated by local partners. As the bank's policy states that it must avoid competing with local banks, EBRD plans to operate a facility window (similar to AFD) through selected local banks, who in turn will lend directly to commercial SMEs and possibly households. To this end, it has already launched the Sustainable Energy Facility Fund.

EBRD may choose to rebate 10-15% of the loan size. In some cases, the bank has a "first loss coverage" that can cover the client in case of default.

Part of EBRD's financial services offering is technical support to potential clients through an approved list of local ESCOs, in addition to the technical review by the bank's employees. Having potential projects assessed through these technical filters puts the bank in a better position to give loans on cash flow basis or at least request minimum collateral.

Although the bank covers 70% of the energy audit for any potential client, the volume of energy audits is not picking up as expected. Clients compare paying a subsidized fee to an ESCO against paying nothing to a supplier who offers a free audit in order to get the job. Accordingly, developing the energy efficiency sector and ESCOs market requires raising awareness among clients about differentiating between service providers and product providers in the energy efficiency field.

3.2.3 The French Development Agency (AFD)

The French Development Agency (AFD) operates a green lending program allocating USD 53 million for its facility window in Jordan. This facility is operated through two local banks: Capital Bank and Cairo Amman Bank. Loans are open to private firms and households, with a specific focus on renewable energy, energy efficiency, and environmental performance improvement projects.

There is no minimum loan size, but loans are capped at USD 5 million per project. However, it is up to the bank to grant initial approval of the loan before obtaining additional approval from AFD, especially for sizable loans. Interestingly, this program allows for a 5% refund of

the loan upon the project completion and verification – a courtesy of the EU to provide additional incentive for such projects.

Minimum loan maturity is 4 years with a grace period that ranges from one to three years. In addition, there are technical requirements for energy efficiency projects, such as:

- At least 20% of energy efficiency for green field projects
- At least 10% of internal rate of return for investments targeting existing facilities
- At least of 50% of internal rate of return attributable to energy savings that also result in an increase in production

The program also provides technical assistance to its applicants, which includes assessing EE measures, calculating financial returns, and selecting the right solutions or technologies.

3.3 Microfinance and leasing companies

There are at least 11 microfinance facilities and 10 major leasing companies operating in the Jordanian market. Leasing companies owned by banks dominate almost 75% of the leasing market, and there are few microfinance companies operating effectively with a wide active client base. As the number of active leasing and micro financing companies is small, this study selected a sample of three active companies in this field to gather insight on their current and potential participation in financing certain segments in energy efficiency market.

3.3.1 Tamkeen Leasing

Tamkeen Leasing Company is a subsidiary of INVESTBANK with a registered capital of JD 5 million. The company addresses the retail, SME, and corporate markets with a range of services for vehicles, real estate, office equipment, renewable energy products, and other sectors.

Tamkeen offers leasing services from JD 10,000 to a maximum of JD 2 million with two rate options: a flat rate of 6.5% on Jordanian Dinars or a discounted rate of 5.5% on US Dollars. Tamkeen's leasing system is based on collateral, with a grace period of up to 6 months.

So far, the company is interested in leasing out off-grid renewable energy systems guaranteed by a purchase back agreement, maintenance guarantee, performance guarantee, and project insurance.

Tamkeen's representatives expressed the challenges of entering the energy efficiency market, as EE projects include variable components, tools, and new technologies. As these systems are closely integrated, Tamkeen does not currently have the capability to verify comprehensive EE solutions, nor can it see a viable liquidation options or a secondary market for systems and equipment used in EE projects in case of default.

Although Tamkeen registers the leased equipment under its ownership at the Ministry of Industry and Trade, representatives expresses that the regulatory and legal framework for equipment ownership still cannot tackle such issues in a clear and comprehensive manner. In energy efficiency projects, systems such as HVAC, building management systems, and even renewable energy equipment becomes an integral part of the building. In the case that the client's premises are under mortgage to another institution and the client goes into default, the issue of seniority over debt and or assets is not well regulated by the law.

3.3.2 National Microfinance Bank

"Alwatani" (National Microfinance Bank) is a Jordanian private shareholding not-for-profit company that was established in 2006.

Currently the company has over 300 employees spread over 20 branches in Jordan. According to ministry of planning and international cooperation study conducted in 2012, It is ranked third in size among Jordanian microfinance companies, with over 44,000 active clients and a current loans portfolio of approximately JD 22 million.

Similar to other microfinance companies operating in Jordan, the National Microfinance Bank started with seed capital and funds from commercial banks. Loans range from JD 200 to JD 50,000 depending on the client and the nature of the project or goods being financed.

No collateral is required. However, personal guarantor, credit history of the client, and cash flow (for lending to businesses) are the main factors that determine whether a loan is granted. Because of a higher level of risk, interest on loans ranges from 10-11% with a term of up to 36 months.

The National Finance Bank is planning to initiate micro-lending for RE and EE products or small projects, with financing of up to JD 3 million (out of 22 million) for such projects and products.

The company expressed interest in financing working capital, solutions and products for ESPs with a ceiling of up to JD 70,000 per project. This type of finance will require no physical collateral (similar to individual financing). However, the cash flow of an ESP relative to the financing amount will be one of the main factors for taking the financing decision. The National Finance Bank has requested technical assistance from ESCB to support development of such loans and financial products and to evaluate EE and RE applications.

3.3.3 Tamweelcom

The Jordan Micro Credit Company (Tamweelcom) was established as a non-profit organization in the field of micro-enterprise support and development. It is registered at the Ministry of Industry and Trade as a limited liability company owned by the Noor Al-Hussein Foundation.

The company obtained a grant as seed capital from USAID through the AMIR program. It has also received financial support (in terms of loans) from different international sources such as the European Union, the Development and Employment Fund of the Jordanian Ministry of Planning and International Cooperation, and more recently from commercial banks.

In 2011, the IFC provided technical assistant to develop financing products and assisted Tamweelcom in sourcing funds from local commercial banks. Tamweelcom also offers financial and non-financial support to low income people.

Loans range from JD 100 to JD 50,000. In general, no physical collateral is required to grant the loan. However, there should be a personal guarantor for the applicant.

Tamweelcom offers a monthly interest rate of 1%, with a loan term that can be extended to 36 months. The overall the collection rate is very high, reaching up to 99%.

In 2009, the company issued a financial loans scheme for solar water heaters through which it financed the installation of over 150 solar water heaters. The company has an approved list of solar water heater suppliers, and it makes a profit from the discounts received from suppliers, in addition to the financing itself.

Tamweelcom's model has the flexibility to finance ESPs, and the company is willing to do so for ESP projects of up to JD 50,000. It is also keen to work with demand side management programs targeting non-bankable and low income clients in the market.

3.4 Government Funds and Support Programs

3.4.1 Central Bank of Jordan

CBJ established a loan facilitation window in 2011 targeting industrial sector lending with terms of up to 5 years. Later, tourism, renewable energy, and energy efficiency were added to this facility. This facility is gear toward commercial banks and is renewed annually as long as there is a demand for this facility from banks.

The central bank provides money to commercial banks for RE at a rediscounted rate at the time of giving the funds to commercial banks minus of 2% (fixed rate) for a period of 10 years. In return, commercial banks provide collateral to the central bank in form of checks or bonds. With this arrangement, the central bank in theory assumes no risk for money provided to commercial banks.

For example, if a commercial banks requests funds through that window, the CBJ secures the funds at the rediscount rate at that day (e.g. @ 2.25%). The commercial bank adds its margin in the light of its need, profit targets and other factors and lends at a higher rate (e.g. 5.75%)

On the other hand, banks add a premium to the RE discount rate, which varies according to the bank's cost of funds, profit target, and sector penetration strategy. Typically, banks add 2.5-3% to the discount rate depending on the client, nature of the project, and lending terms. CBJ also indicated that banks should not exceed an interest rate bar of 6.5% provided to their clients within that scheme.

This facility, which is available to all banks, has a variable ceiling capped at 5% of the bank's total granted facilities, which varies from month to month. On average, an estimated JD 850 million is offered to the three sectors benefiting from this facility. Over the past 6 months, around JD 14 million was provided for energy projects specifically.

CBJ has one major condition on the loans that banks provide under this facility: they cannot exceed JD 10 million per project or client. The central bank does not interfere with the minimum loan amount, collateral or lending terms; it is up to each bank to apply its policy and conditions.

More clear regulation of the RE and EE sector will help increase the level of trust in this emerging sector and encourage the central bank to create a designated facility window for the sector.

3.4.2 Jordan Environment Fund

The Jordan Environment fund was established in 2006 and is governed by a board of directors consisting of ten of public and private sector representatives.

The fund was established with seed capital of JD 1 million and is funded by proceeds coming from environmental fines and penalties. In addition, possible proceeds from CDM and other sources are channeled to this fund. These annual proceeds range from JD 500,000 to 700,000 annually. Currently, the fund has available cash of JD 5.5 million deposited at the Central Bank of Jordan at 0% interest rate.

The Jordan Environment Fund has internal bylaws and instructions that govern all technical, procedural, and operational aspects of the fund. The fund's board and management has initially identified four major areas that are eligible for funding:

1. Waste and industrial water treatment
2. Solid waste treatment and recycling
3. Energy efficiency and renewable energy projects
4. Small and medium projects that have positive impact on the environment

These areas are subject to change depending on the national and sectoral priorities that the fund's management assesses from time to time.

Two years ago, the fund started promoting its first round, which was originally a grant-based round. The individual grant had a cap of JD 80,000 that could cover soft components, technical capacity, pilot projects in environment and energy, research projects, and in some cases equipment and machinery. Several hundred applications were received, and the fund filtered this down to around 15 projects. Unfortunately, this round was put on hold and then cancelled when the Minister of Environment changed. The fund is currently preparing to re-launch the first round with JD 1-1.5 million allocated for grants.

The fund is still operating on a grant basis. Fund management is looking into different models that the fund could follow, such as soft loans with terms longer than the ones provided by commercial banks. However, it is still not clear when this new model will be available to potential applicants.

The fund is still covering the renewable energy and energy efficiency projects under its funding criteria. However, it was indicated that when JREEF is operational, these schemes will be no longer eligible for funding under the Jordan Environment Fund.

3.4.3 Jordan Loan Guarantee Fund "JLGF"

The JLGF was established with the support of USAID and the Overseas Private Investment Corporation (OPIC) to provide partial loan guarantees and technical assistance to enable creditworthy but underserved SMEs to obtain bank financing. The SMEs can be startups or established companies with expansion plans.

The program eligibility criteria for SME applicants include:

- 50% or more privately owned and registered in Jordan
- At least two of the following:
 - a) Fewer than 300 total employees
 - b) Total assets less than USD 15 million
 - c) Total annual revenues less than USD 15 million

Loans can cover equipment, construction, inventory, or accounts receivable with a window size of up to USD 250 million.

Currently the program collaborates with seven major Jordanian banks: Arab Bank, Cairo Amman Bank, Housing Bank, Capital Bank, Al ahli Bank, Al Etihad Bank, and Jordan Kuwait Bank.

Loans that are eligible for partial coverage should not be less than USD 25,000. However, loans can range from USD 70,000 to USD 500,000 and extend to a maximum of seven years. Partial loan coverage ranges from 60% to 75% for projects in and outside of Amman, respectively. The guarantee fee is 1.65% of the loan's outstanding balance. Usually, banks add this fee above their interest rate and the annual 1% loan service rate. Accordingly, the attractiveness of this service to clients depends on the client's need for financing, the client's project profitability, and the competitiveness of the bank's interest rate.

To date, JLGF has guaranteed over 103 loans, of which 2 loans are for financing PV system installations in schools. Although there is no allocation for specific sector or industry, the program's management showed interest in customizing a guarantee product for renewable energy and energy efficiency loans.

4.0 Concluding Remarks and Recommended Actions

Access to competitive finance is crucial for the development of the energy efficiency market in Jordan. The structured survey and interviews investigated different competitive financing programs that did not exist only a few years ago. More banks and financial institutions are closely monitoring the market's development and see a growing potential in the sector. However, the current efforts of ESPs may not be able to push the market to the take-off stage unless there are a better understanding of ESPs' work, a structured platform, enhanced performance guarantees, and greater credibility.

International development banks and agencies are more willing to provide loans on a cash-flow basis compared to commercial banks, who still favor an asset-based approach. International development banks and agencies have technical arms that can support a more informed decision for loans given on cash flow basis. Local commercial banks do not have such technical capacity, which limits their flexibility in this regard. Within this context, local banks see that technical reviews conducted by partnering developments banks and agencies are very lengthy and do not match the speedy decisions required by clients.

The EE and RE market is growing as a function of time and trust; as sources of competitive funding increase, awareness among clients and lenders is rising and real demand increasing.

Aligning efforts of the government, international donors, international development banks and funds, and professional associations is vital for building the credibility of the EE sector as a whole, as well as the credibility of ESPs. Translating this alignment into a multi-layer accreditation system, while delivering the right knowledge and tools to decision-makers in the banks, will enhance the credibility of ESPs among both lenders and end consumers. The challenges that ESPs face in EE & RE financing must be tackled through implantation of an effective accreditation system, capacity building, and raising awareness among consumers, financiers and other key stakeholders.

Figure 7. The ESPs Challenge Line

Systems' Creation Program	Challenge Line	Capacity Building Program
Dynamic Accreditation System - Tiers /line of service - Past Projects	Trustworthiness of ESPs	Capacity Building for ESPs on technical scopes
- 3 rd Party verification - - Performance record under the accreditation system. - Past Projects	Credibility of Assumptions	Customized training for Banks (mid managers)
- Gov. Funds or micro finance Co. providing short term facility (e.g. tender bonds) - Issuing RE&EE tendering guidelines and schedule	Financing Working Capital	Customized training for ESPs on cash flow mgt.
- Customized/accelerated full or partial loan guarantees. - Solution/product certification - Gov. Funds to guarantee performance (ceiling or # of projects linked to acc.) - Funded public pilot projects	Obtaining Loan	Customized orientation on EE contracts and transactions.
- Feedback into the dynamic accreditation System - M&V - Installation certification	Project Performance	Marketing & outreach through collation/associations

Programs should also take into consideration the different stakeholders and partners involved, as each one has different perceptions, expectations and requirements. When it comes to making decisions on adopting energy efficiency measures and how to finance these measures, various issues emerge across stakeholder groups. These interlinked issues are mapped in Table 4 below.

Table 4. Financing Issues and Recommendations

Linkages	Issues	Recommendations
1. Between clients and ESPs	Clients cannot judge the capabilities of ESPs in terms of depth and breadth of services; they do not differentiate between a supplier and solution provider	Accreditation system with at least two tiers specifying the range of services that can be offered by an ESP
	Clients have difficulty determining which ESP offers the best solution for a particular project or need	Verified track record with past project classification and performance
	Clients are suspicious about savings' performance	Partial or full saving guarantees covered by a third party and backed by a customized legal contract based on a clear M&V protocol
2. Between banks and ESPs	Banks cannot judge the credibility of ESPs or verify the history of ESPs' work	Verified track record with past project classification and performance
	Banks perceive ESPs as consultants rather than solution providers	Accreditation system with at least two tiers specifying the range of services that can be offered by an ESP
	Banks perceive a risk in lending directly to ESPs and are suspicious about savings' performance	Partial loan coverage provided by a third party; partial or full saving guarantees covered by a third party and backed by a customized legal contract based on a clear M&V protocol
3. Between clients and the banks	Banks cannot verify the expected savings	Third party advisor verification (in the long-run, the active performance record under the accreditation system will cover this aspect)
	Banks cannot guarantee seniority/priority over equipment or savings' proceeds	Create an escrow account with seniority over savings proceeds, backed by customized legal contracts

4. Between Banks and the sector	<ul style="list-style-type: none"> • Banks' initial appetite for RE mega-projects • Banks do not fully see the potential of EE • Banks do not fully understand ESPs' role in the sector • Banks are not fully aware of the different financing models or options under which ESPs can operate 	<ul style="list-style-type: none"> • Awareness program for banks to highlight a quantified market potential for EE • Customized capacity building sessions for banks to understand ESPs' operations and different contracting methods
	Banks do not have the financial-technical capacity to understand and make initial verification of the opportunity	Third party advisor verification (in the long-run, the active performance record under the accreditation system will cover this aspect)
5. Between ESPs and the sector	ESPs are not well-promoted to potential clients and lenders	<ul style="list-style-type: none"> • Develop an outreach program for accredited ESPs • Integrate donors and governmental EE pilot programs/projects into the accreditation system to accelerate credibility
	ESPs' working capital is being consumed by projects and locked-up cash designated for tenders/performance/maintenance bonds	Develop a credit facility for accredited ESPs to free up some of their working capital with a certain limit (revolving bonds coverage)
	ESPs are offered high interest rates because they don't have credit history with the bank	Accreditation system (all banks indicated that favorable interest rates could be offered to accredited ESPs)
6. Between Micro finance and the sector	Do not have the technical know-how to penetrate the sector or develop packages related to EE solutions	Develop standard packages or credit lines for ESPs to cover micro segment, SMEs, and/or non-bankable clients

5. APPENDICES

Appendix 1: Financial Institutions Survey Form



Renewable Energy & Energy Efficiency Projects Structured Interview of Financial Institutions in Jordan

Objectives of the Interview:

1. To inquire about past and present activities of banks, local and international funding agencies involved in ENERGY EFFICIENCY (EE) & RENEWABLE ENERGY (RE) funding in Jordan.
2. To explore opportunities and challenges for funding ENERGY EFFICIENCY & RENEWABLE ENERGY projects in Jordan.
3. To seek advice from interviewees on ways and means to expand access to affordable financing for Energy Service Providers (ESP) projects.

What is ESPs (ESCOs): An Energy Service Provider (ESP) "also named ESCO" is a company involved in assessing, designing, and implementing energy efficiency projects using a performance-based contract. In many cases, an ESCO either finances the project or assists the facility owner in obtaining financing.

General Information

1. Name of the Organization:
2. Name and position of the interviewee:
3. Email address:
4. Telephone Number:
5. Mobile Number:
6. Web site, if any:

Registered Capital JDM	Number of Branches	Do you have engineering department?

1. What type of financial services do you provide on ENERGY EFFICIENCY & RENEWABLE ENERGY projects? (if not go to Q2)

Types of financial Services	Sources of Funding e.g. internal funds, 3 rd party funds	Available funds in JD million	Loan size Min or Max cap for single loan	Interest Rate	Terms of the Loan	Collaterals	What type of projects these loans are available for?	
							Renewable Energy	Energy Efficiency

2. If you are not currently providing such services, please explain why you are not? Do you have any future plans to provide such services?

3. What are your preferences in financing ENERGY EFFICIENCY (EE) & RENEWABLE ENERGY (RE) projects? Please insert (x) at the box of choice.

		Most attractive	Attractive	Less attractive	Comments
Renewable Energy	Large-scale RE projects				
	Retail RE projects				
	Micro RE Projects				
Energy Efficiency	Large-scale EE projects				
	Retail EE projects				
	Micro EE projects				

* **Large-scale RE Projects:** projects in energy generation through PV, CSP or Wind. For Jordan, such projects' investment cost is > JD 1.5 m with a power purchasing agreement of 20 years + .

* **Retail RE Projects:** projects in energy generation on a smaller scale (solar water heaters or PV) that could be on a residential scale, commercial scale (malls, universities, office buildings) or on industrial scale (plants, factories, etc) ranging between 50k-500k

***Micro RE Projects:** less than 10k

* **Large-scale EE Projects:** projects that incorporate energy efficiency solutions within. These projects might be performed on existing buildings or facilities or planned to be incorporated into newly constructed buildings. Large scale EE projects might be for large scale real estate developments or a portfolio of buildings (e.g. mega real estate projects, group of hotels, large industrial facilities) . It might include renovating the building envelop, adding insulation material, changing fixtures, upgrading mechanical systems or integrating building management systems/solutions or energy auditing/assurance/management services.

* **Retail EE Projects:** projects that deal with small scale projects for existing/new buildings. These projects might be on a residential scale, single hotel, corporate head quarter, offices building. It might include renovating the building envelop, adding insulation material, changing fixtures, upgrading mechanical systems or integrating building management systems/solutions or energy auditing/assurance/management services or buying efficient set of home/office appliances. Ranging between 50k-500k

****Micro EE Projects:** less than 10k

4. In your opinion, what are the major financial risks associated in dealing with ESPs on ENERGY EFFICIENCY & RENEWABLE ENERGY projects Jordan?

-

5. What are your preferences in financing model for ENERGY EFFICIENCY & RENEWABLE ENERGY projects? Please insert (x) at the box of choice.

Types of Contracts	Highly Preferred	Somewhat Preferred	Not Preferred	Comments
Direct traditional loan to consumer				
Direct traditional loan to ESP				
Direct loan to ESP with a guaranteed-savings performance contract				
Direct loan to consumer using a performance contract				
Providing line of credit to ESPs				
Equity investor with ESPs and/or consumers				
Please add any other options				

*For more info on Energy Efficiency Financing Models and illustrations See pages 7-11 of the annex

6. What is your opinion about the Accreditation/Licensing of Energy Service Providers (ESPs)? Please insert (x) at the box of choice.

Accreditation of ESPs	Strongly Agree	Agree	Strongly disagree	Comments
Accreditation of ESPs would reduce the risk for the bank/ Lender				
Accredited ESPs would be able to get better term for ENERGY EFFICIENCY & RENEWABLE ENERGY loans				

7. What can be done to make ENERGY EFFICIENCY & RENEWABLE ENERGY projects more attractive for financing?

8. What are your training and capacity building needs to finance ENERGY EFFICIENCY & RENEWABLE ENERGY projects? Please insert ranks from 1 to 4 (1 most important and 4 less important) at the box of choice.

Suggested Training Areas	
Performance Contracting	
Measurement & verification of energy savings	
Energy Auditing & Accounting	
Project risk management & feasibility analysis	
Other areas	

END OF SURVEY

Annex

Background Information for the Interviewees

What is ESPs (ESCOs): An Energy Service Provider (ESP) is involved in assessing, designing, and implementing energy efficiency projects using a performance-based contract. In many cases, an ESCO either finances the project or assists in financing.

1. **Performance Contract**

Guarantees that the cost savings from an energy efficiency improvement project will pay for the costs of the improvements at a facility. In a performance contract project risks are shared more appropriately among the project participants. An effective risk management plan will generally result in more favorable financing terms.

By far, the greatest experience in working with energy performance contracting is to be found in the USA. Over the last twenty years, after an uncertain beginning, energy performance contracting has emerged as a mature sub-sector of the US economy. A performance contract may take many forms including *guaranteed savings*, and *shared savings*.

1.1 **Guaranteed Savings**

Under a guaranteed savings contract the ESCO guarantees a given value of energy savings. The customer makes periodic debt service payments to pay off the cost paid to the ESCO for developing, designing and installing the efficiency measures. If the guaranteed savings level is not achieved, the ESCO covers the difference between the guaranteed savings and the actual savings. However, the client keeps any savings above and beyond the guaranteed savings level unless stated otherwise. This has been the most common financing mechanism used in the US. Guaranteed savings contracts accounted for about 90% of ESCO contracts.

1.2 **Shared Savings**

Under a *shared savings* contract the customer commits to pay only a percentage of the realized savings to ESCO for cost of designing, implementing and monitoring the energy efficiency project. In this type of contract, the customer assumes no financial obligation other than to pay the ESCO a share of the savings that the project realizes. Thus, the ESCO which finances the project assumes both project performance risk and customer credit risk. Shared savings designs are more suitable for projects with short payback periods. In some cases, the manufacturer/ vendor may finance a piece of equipment on a "*paid from savings*" basis. This type of contract is not very common.

2. **Chauffage: The French Model**

Most of the ESCOs in Europe have followed the French model "**Chauffage**" attributed to Compagnie General de Chauff (now part of Vivendi). Under this contract the customer outsources the operations of their building's energy-using infrastructure for operation by an ESCO. These contracts are typically of long duration and the contractor provides all associated operation and maintenance requirements. The ESCO covers all costs of providing the service, and recovers their expenditures in the service charges paid by the client.

Energy Efficiency Financing Models

Over the past three decades, numerous energy efficiency financing models have been developed and implemented around the world. Some of these models had followed US examples, while other innovative ones were developed to meet local requirements. In general, these models could be grouped into three categories:

1. Private Sector Models,
2. Public Sector Models, and
3. Public/Private Partnership

The following sections describe these models and their implications for countries in Asia.

1. Private Sector Models

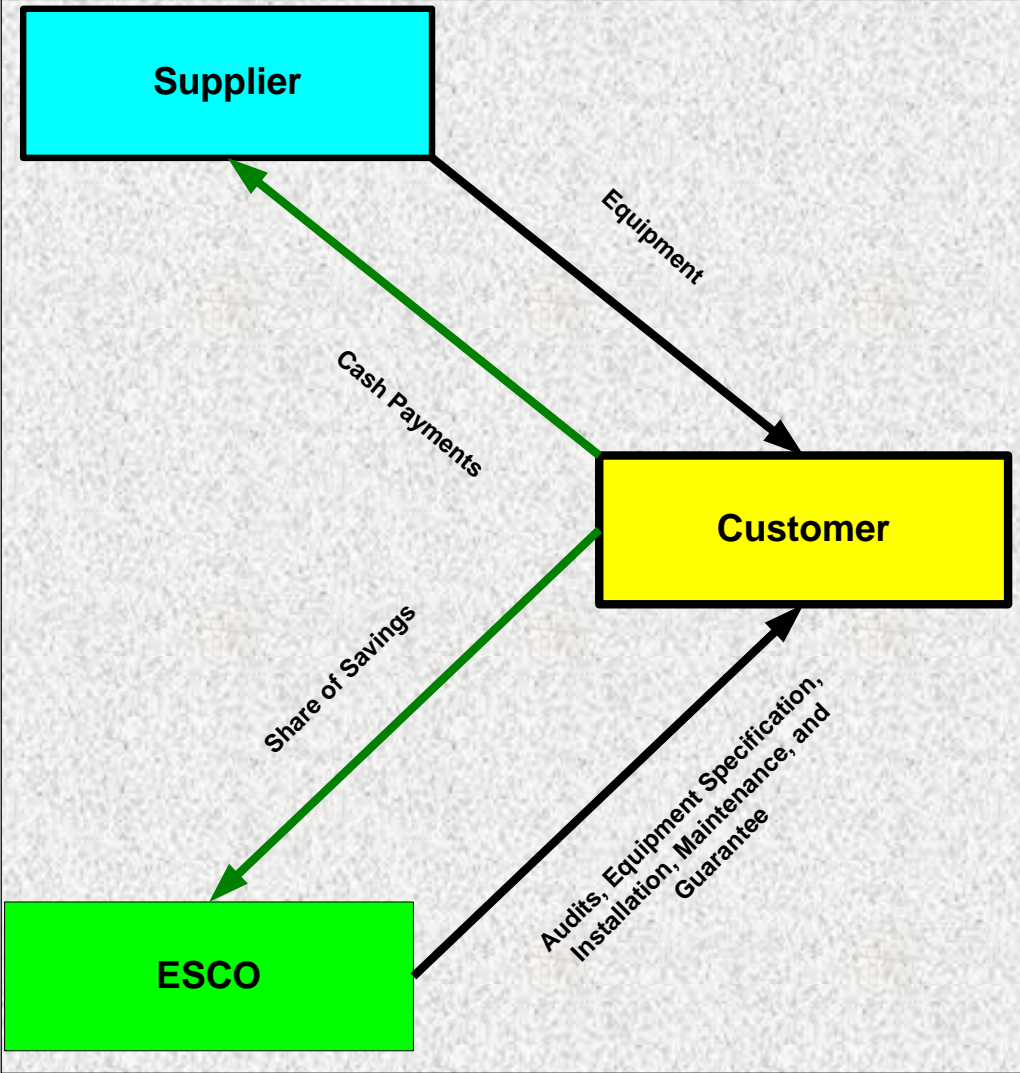
In the United States, due to strong **market potential** for energy efficiency and **low risks** for ESCOs, the majority of energy efficiency projects implemented by ESCOs are financed using private sector models for financing and implementation. In many cases, the market has been encouraged through government incentives or regulation. The ESCO can originate from different types of firms (utility, equipment manufacturer, architect and engineering company, or specialized engineering consulting firm); however, their common characteristic is private sector ownership. These ESCOs operate in a stable and predictable business environment, where the barriers facing each type of firm will be the same. In the US market, the types of financing mechanisms used to implement energy efficiency projects include both public and private sources, but funds are more likely to come from private sources.

Private sector financing mechanisms varies based on the market conditions in a country and client's preferences. It ranges from client self-financing to vendor financing, leasing, and third-party financing. The most typical private sources include the following:

Client Self-Financing

Under *self-financing* the customer uses internal funds to purchase the technical upgrades and the services of the ESCO. ESCO fees are paid from the energy cost savings as shown in the following figure. In this model, ESCO acts as an engineering consultant. Both the customer and ESCO share the risks. This is normally practiced in industrial, large commercial or institutional facilities, where they have the financial resources, but not the technical know-how to design and implement an energy efficiency project.

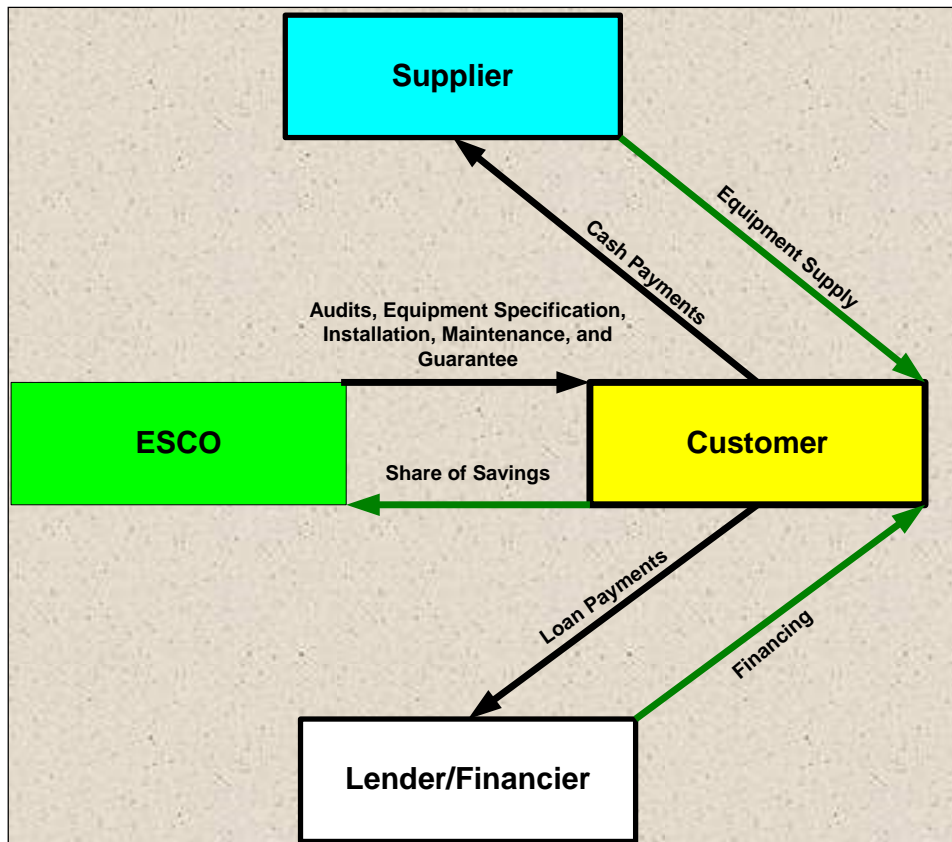
Figure 5.1: Client Self-Financing Model



Client Commercial Loan Financing

Under this financing option the client obtains their own commercial loan without the direct participation of the ESCO, based on client assets and credit. The energy- service agreement will still be the same as self-financing.

Figure 5.2: Client Commercial Loan Financing Model



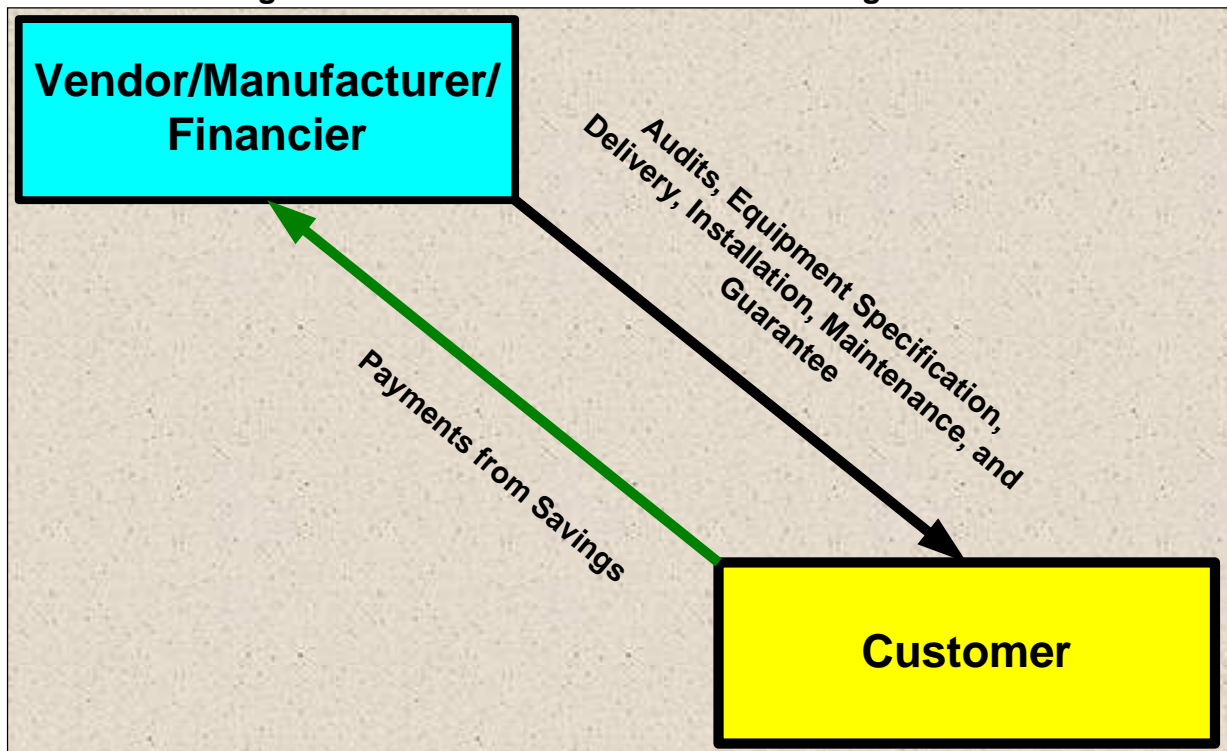
In this model, customer finances the project and assumes “**debt obligation**” on balance sheet. The ESCO, as an energy efficiency specialist, assumes “**project performance risk**” and guarantees that the energy cost savings will exceed the sum of customer’s debt repayments plus ESCO fees. The Lender assumes “**credit risk.**” In this model, the involvement of ESCO as project specialist reduces the credit risk perceived by the bank, which would make it easier to obtain financing.

Vendor / Manufacturer Financing

Vendor/manufacturer financing is used to purchase equipment and services from a specific vendor. The vendor may provide the financing and the energy savings guarantee. If this is the case, the vendor is the ESCO. Vendor financing may cover the entire or only a fraction of the project's total investment requirements. In many cases, this takes the form of **leasing**. In a *leasing* contract, ownership of the equipment remains with the equipment provider for some period of time, with an option to purchase at the end of the lease period. Providing an attractive financing package in conjunction with the equipment supplied can greatly expand the market for the equipment. In many cases, the equipment supplier uses its own resources to offer credit to customers.

Where the equipment in question is imported by the end-user, the supplier may have access to favorable finance from agencies based in their own country that could permit the creation of a vendor financing scheme. For example, the US Ex-Im Bank exists to assist US exporters of goods and services, so Ex-Im finance could be used to enable the creation of a local leasing subsidiary of an international equipment manufacturer.

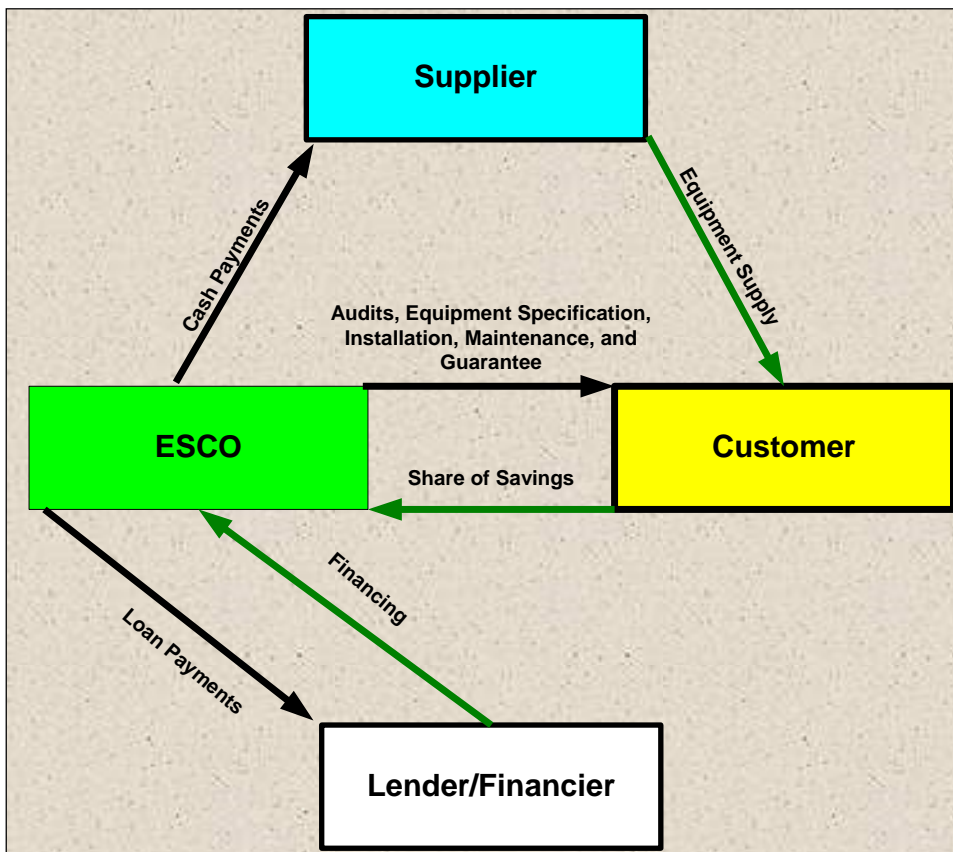
Figure 5.3: Vendor/Manufacturer Financing Model



Third-Party Financing

In the *third-party financing* option, performance contracts are usually arranged between three parties, the ESCO, the customer and the lender. Under the three party arrangement, the ESCO provides an energy savings guarantee to the customer, the ESCO takes out a loan from the lender to cover the project's total cost (including principal and interest), and the customer's savings are used to repay the loan. The ESCO normally has ownership of the installed equipment until the loan is repaid, and provides a guarantee that the energy savings will be sufficient to repay the loan. The lender decides whether loan insurance or bonding is necessary to protect against high credit risk. If the ESCO is not the vendor, the vendor would normally provide some type of equipment performance guarantee to ESCO.

Figure 5.4: Third-Party Financing with Performance Guarantee where the Lender Provides Financing to ESCO



In this model, the ESCO assumes both performance and credit risks. In some cases, the customer through a “*shared savings*” performance contract might carry a part of the project performance risk. In this case, both parties will lose if the energy cost savings do not materialize.

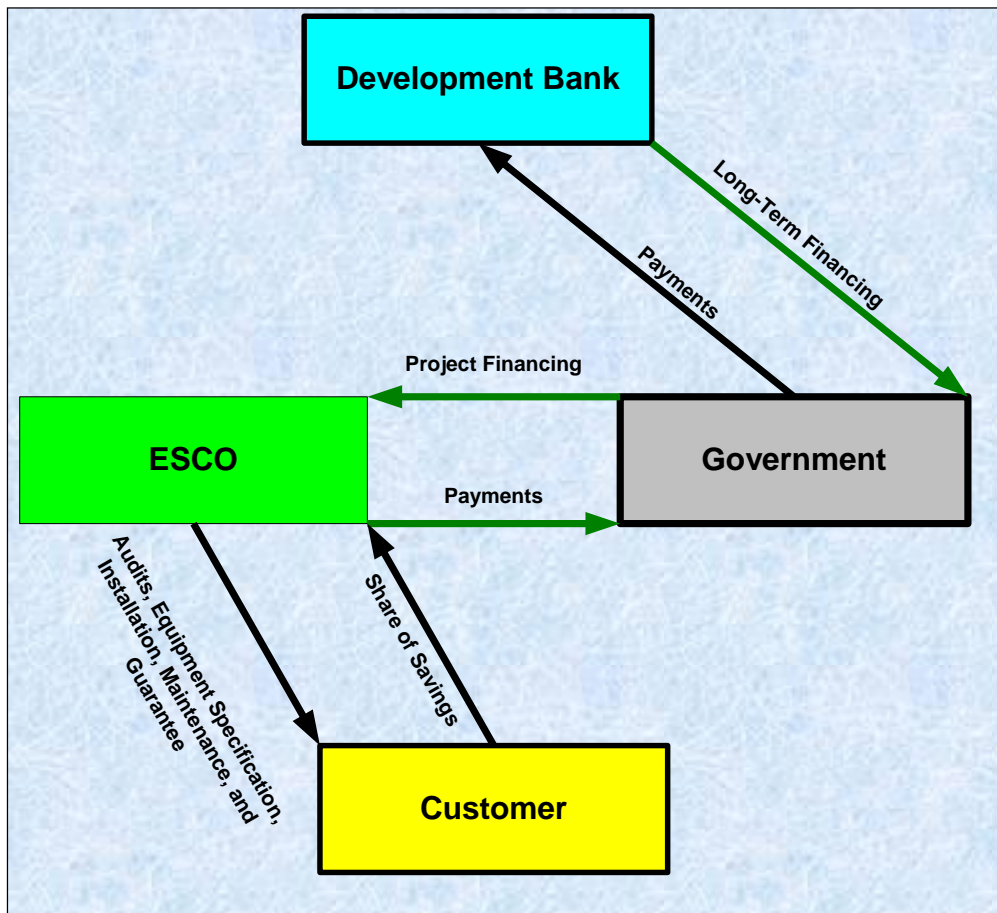
Financing through tariff

In several states in the US and some European countries, utilities have implemented demand side management (DSM) programs as part of the required integrated resource planning (IRP). The DSM programs were funded by the utilities themselves. However, they were allowed to recover the costs of DSM programs by adding a surcharge onto the price of energy. The DSM programs were primarily designed for residential and small commercial and industrial enterprises which are less likely to have implemented energy efficiency measures on their own.

2. Public-Sector Models

In most of the developing economies, the private-sector approach is too risky for investors. Thus, the public sector bears all the risks in the short term until the market conditions are suitable for private sector involvement and ESCOs are capable of implementing projects on their own.

Figure 5.5: Public-Sector Financing with Guarantees

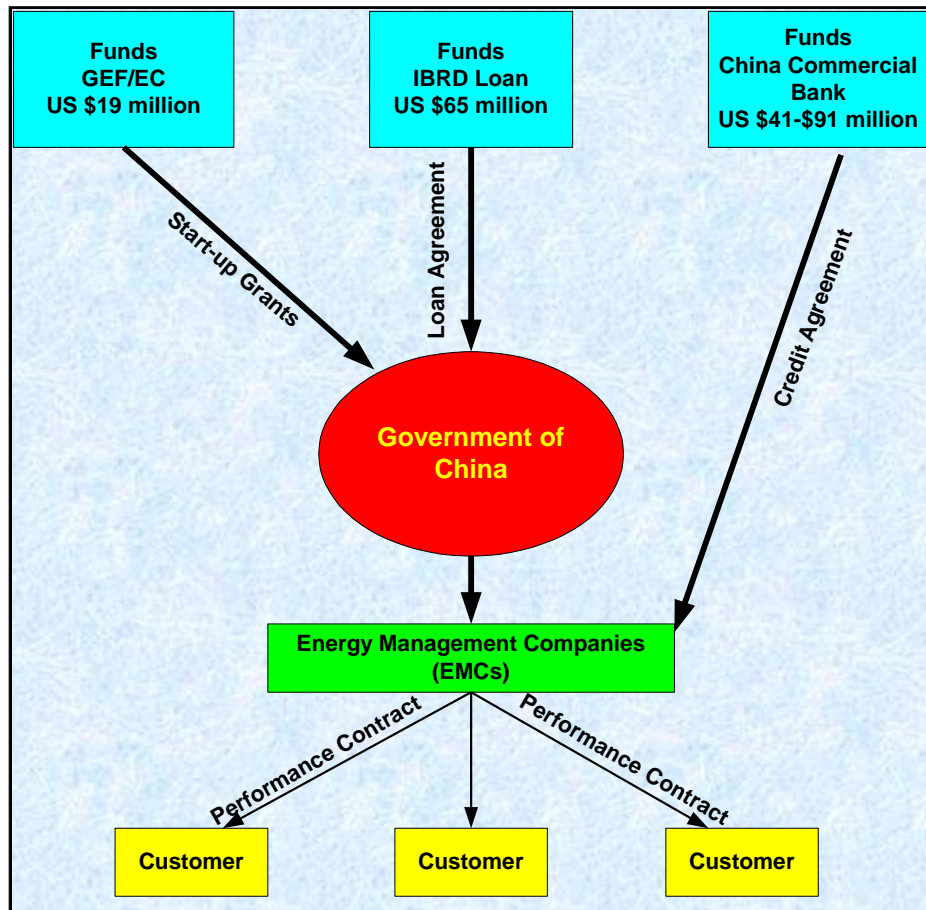


3. Public/Private Partnership Models

In transitional countries where the government plays a more dominant role in the energy market, such as in those of the Newly Independent States (NIS) and China, a mixed public/private sector efforts to mobilize capital for improved energy efficiency would be more successful. Government support is crucial to reduce risks to levels that are acceptable to the private investor. The main incentive for government to implement energy efficiency measures is the fact that energy efficiency is a least-cost alternative to increasing energy supply. The public/private partnership lowers the interest rate of the financing and produces other favorable terms (e.g. grace period, longer-term loan, etc.).

In one such example, in 1996, the World Bank, together with the Global Environmental Facility (GEF) and the Chinese government, structured the establishment of three provincial ESCOs, called Energy Management Companies (EMCs), to implement energy efficiency improvements in Liaoning and Shandong Provinces, and in Beijing on a performance contract basis. Grant funding GEF was used to leverage both a sovereign-guaranteed loan and financing from domestic sources. The funds were to be repaid to the Chinese government. Although the ESCO is private, the partners in the ESCO are mainly from the public sector. According to the EMCs themselves, this type of arrangement resulted in successful implementation of numerous energy efficiency projects. The mechanism used in such an arrangement is shown in Figure 5.6.

Figure 5.6: China's Public/Private Financing Model



Reference:

Hameed G. Nezhad, Ph.D.

DYNAMICS OF ENERGY EFFICIENCY BUSINESS IN ASIA

The Asian Development Bank

April 2004

USAID Jordan Energy Sector Capacity Building Activity
Saqra Building # 238(C), 6th Floor
Arar Street
Amman, Jordan