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1. Background and Importance of NEEREA

The Lebanese government is working hard to increase their Renewable Energy (RE) share in the electricity production and to reduce their greenhouse gas emissions (GHG) by 2020. To this end, the government set strategic goals to achieve a 12% increase in Renewable Energy by 2020 and to reduce energy demand by 5% by 2014 as an intermediate objective.

The public market and capital play an important role in the financing of Energy Efficiency (EE) and Renewable Energy (RE) projects in Lebanon. Precisely because the public market can offer the potential to increase the availability and to lower the investment costs of these EE and RE projects, the National Energy Efficiency and Renewable Energy Action (NEEREA) was created. NEEREA was brought into existence as one of the fourteen initiatives of the National Energy Efficiency Action Plan (NEEAP) for Lebanon, which was approved in November 2011.

NEEREA is a national financing mechanism initiated by the Central Bank of Lebanon (BDL) in collaboration with the Ministry of Energy and Water (MEW), the Ministry of Finance (MoF), UNDP, the European Union (EU), and the Lebanese Center for Energy Conservation (LCEC), it was officially launched with the issuance of Circulars No. 236, 313, 318, 346 and 365 by the BDL.

2. Objective of NEEREA

The main objective of NEEREA is to support the financing of environmentally sustainable projects, including EE and RE implementations, by offering soft loans to eligible and feasible projects in Lebanon. NEEREA does so by allowing private sector entities including individuals, SMEs, or even corporate bodies to apply for subsidized loans for any type of EE and/or RE projects.

The creation, development and implementation of NEEREA has clear and important benefits.

The advantages are mainly distributed among 3 beneficiaries:

In addition to the users’ benefits presented above, NEEREA mechanism also provides households interest-free loans for solar water heaters over a 5-year period to be secured by Lebanese commercial banks. Furthermore, customers who purchase a system that is in compliance with a specific set of quality criteria can in their turn benefit from the 200 USD from the MEW to be discounted from the total price.

Moreover, consumers that install small renewable energy systems can offset the cost of power drawn from the utility (EDL) through Net Metering. This works by installing a meter that records the bidirectional energy flow, allowing the excess power to be transmitted to the grid. The exported energy from the system is then subtracted from the imported energy and the net output is calculated and billed by the utility (EDL).
3. Funds

NEEREA loans to the private sector are mainly subsidized by BDL via two financial mechanisms, one being by exempting the lending banks from reserve requirements, or by granting those banks a special loan at 1% against NEEREA loans. In addition, final beneficiaries who are eligible under the Government Subsidy Program managed and subsidized by BDL too, will receive an additional subsidy of 4.5% on interest rate. Hence the price of a NEEREA loan will range approximately between 0% and 1%.

In 2014, the loans ceiling (envelope) reached 400 million USD. This envelope is supposed to be renewed yearly conditional on NEEREA success; hence, the importance of NEEREA relies on its sustainability. According to LCEC, NEEREA loans will be exceeding 250 million USD in 2014 and possibly higher in 2015.

Furthermore, the European Investment Bank (EIB) and the Agence Française de Développement (AFD) had agreed with BDL on a 90 million euro credit line, that will be signed with the Lebanese Government, ratified by the Lebanese Parliament, to be managed and subsidized by BDL, hence added to the NEEREA mechanism for the next 15 years.

The following histogram presents the evolution of the loans size from the date NEEREA was created till the present time:

4. Involved Parties

The main parties involved are as follows; First, as the national financing institution, the BDL sets the operation framework and offers the benefits to different banks. Second, the Ministry of Energy and Water sets the strategic guidance and priority towards EE and RE. Third, the Ministry of Finance defines the subsidies on interest rates for the different sectors of the economy. Fourth, the LCEC is considered as the technical consultant to the BDL, reviewing loan applications, and setting quality control criteria.

Besides these main parties, the NEEREA mechanism is also characterized by the presence of other parties such as the European Union (EU), who offered the BDL 12 Million Euros to encourage SMEs in applying for NEEREA, and the United Nations Development Program (UNDP) who partnered with BDL to offer technical support, training, marketing, and awareness raising activities.

The most important and effective involved parties however are residential, commercial, non-profit and industrial users who can benefit from long term loans at low interest rates to finance their RE and EE projects through NEEREA.
5. Loans Amount

As mentioned above, NEEREA allows private sector entities such as individuals, SMEs, corporate bodies, residential, commercial, not-for-profit and industrial organizations to apply for subsidized loans for any type of EE and/or RE projects. The ceiling for these green loans, which are of low interest rate for a total repayment period of up to 14 years including a grace period of 4 years, is 20 million USD.

The greens loans are provided through any of the Lebanese commercial banks, which are considered as other important involved parties, to directly reach the end user. New projects, on one hand, can benefit from a repayment period of up to 10 years, beginning after the end of the grace period ranging from 6 months to 4 years. Re-modeling existing projects, on the other hand, can benefit from a repayment period of 10 years, including the grace period ranging from 6 months to 2 years.

Re-modeling projects means adding energy efficient or renewable energy solutions for existing facilities.

The EU is also contributing to green loans by offering a grant equal to a percentage from the approved loan amount under NEEREA. This grant will be 15% for non-subsidized sectors and 5% for subsidized sectors (Industry, Tourism and Agriculture), granting a loan ceiling of 5 million USD only. If the approved loan amount of a project for a non-subsidized sector is equal to 8 million USD, the EU grant will be 15% of 5 million USD, meaning 750,000 USD. The eligible parties for the EU grant are SMEs composed of less than 400 employees, tertiary buildings and NGOs. Funds are allocated to the project after LCEC approves the technical study proposed. The grant money allocated would be disbursed upon final execution and after technical validation by LCEC. *figure 2* presents how the loans are divided according to the loan category.

6. NEEREA Procedure

6.1. NEEREA Overall Procedure

Clients seeking to implement energy conservation measures directly at their own premises apply to commercial banks where they have to submit the required documents as well as a technical report on the proposed solutions (feasibility study including technical, financial, and environmental analysis).

The loan request is then studied and submitted to the BDL for approval on a green loan. Once it passes by BDL, it is sent to LCEC for verification and approval by their Technical Support Unit that is dedicated to offer technical assistance in the evaluation of the eligibility of submitted loans.

The BDL reviews the results of LCEC analysis and sends the results back to the commercial bank that then informs the client whether the loan is granted or rejected. If granted, the client can proceed to implement technical solutions recommended by ESCO or by suppliers themselves.

This standard process presented in *figure 3* takes around two months based on the quantity of applications and availability of information. Action would be taken if final execution diverges from original plans.

On the other hand, projects and loan requests that do not exceed 20,000 USD do not require the direct approval of BDL; hence the report is directly sent from the commercial banks to the LCEC.

*Figure 2 – Loans amount by category of EE and RE*

*Figure 3 – NEEREA procedure step by step chart*
6.2. NEEREA Public Documents

The LCEC assists contracting and consulting companies in their preparation of technical proposals related to energy efficiency and renewable energy projects under the NEEREA financing mechanism. To this end, the LCEC has developed public templates reports for energy efficiency and/or renewable energy projects, to be used by potential beneficiaries in preparing their loan proposals. Furthermore, in order to facilitate the process and help design and contracting companies, LCEC published guidelines reports per technology type for contractors regarding the design, installation, and evaluation of NEEREA-eligible technologies.

There are three template reports:
- The GREEN template dedicated for EE/RE solutions in existing facilities
- The YELLOW template dedicated for EE/RE solutions in new facilities (non-certified)
- The RED template dedicated for certified approach for new facilities (LEED or equivalent)

And three LCEC Guidelines:
- Technical Proposals for Decentralized Solar Photovoltaic Systems (PV) Applications
- Technical Proposals for Light Emitting Diode Systems (LED) Applications

A list of potential solutions or measures related to energy efficiency is presented as a reference: interior lighting systems; exterior lighting systems; efficient ventilation systems; high efficiency motors; efficient pumping equipment; power factor correction; efficient heating systems and equipment; control systems on boilers; control systems on elevators; variable speed drives; cogeneration and heat recovery; building envelope applications; etc.

A list of potential solutions or measures related to renewable energy is outlined for reference: solar water heating; solar photovoltaic applications, geothermal applications, biomass applications, wind energy applications, etc.

6.3. European Union (EU) Grant

As mentioned earlier, the EU is contributing to NEEREA environmental loans by offering a grant to cover a share of the investment cost. Moreover, the LCEC technical support unit that evaluates the eligibility of submitted loans to benefit from the EU funded grant, whose steps are explained in figure 4, is financed by the EU.

For the project to be eligible, it has to be studied and implemented by a certified energy audit company or energy consultant. Funds are allocated to the project after LCEC approves the technical study proposed and the grant money allocated is then disbursed upon final execution and after technical validation by LCEC.

Upon request of the Central Bank, the LCEC can conduct a site visit to check the implemented energy conservation measures of the project applying for the EU grant. A detailed site visit report of the actual project is then submitted to the BDL by the technical support unit at LCEC to make sure that the projects have been implemented in accordance with the technical proposal of the approved loan.

Figure 4 – EU Grant procedure step by step chart
7. Approved Projects

Starting from July 2012 till May 2014, a total number of 117 loan applications were approved by LCEC to benefit from the low interest green loans through NEEREA. The estimated market value for these projects is around 128 million USD and they include different sectors, as presented in figure 5, with the residential having the highest share 75% whilst NGOs having the lowest share 2%.

Based on a detailed analysis prepared by the LCEC, these indicators can be revealed today:

- Out of the 117 approved projects, PV projects seem to profit the most from this financing mechanism with 66 PV systems constituting 52% of loans, as can be seen from figure 6. Largest loans amount however was for Green Rated Buildings. The remaining green loans approved were for LED lighting and energy efficiency (EE) measures such as biomass boilers, building envelope improvements, heat recovery etc …

- The 66 Approved PV projects made up a total of 819 kWh installed capacity and counted for amount of around 3 million USD. As such, the projects contributed to an annual energy saving of 1550 MWh, cost savings of 523,000 USD of and CO2 savings of 1184 Tons

- The 16 LED approved lighting projects, financed by almost 2 million USD contributed to an annual energy saving of 9,895 MWh, annual cost savings of almost 1.2 million USD and annual CO2 savings of 6,404 Tons

- Green building loans took the biggest part of the financing mechanism with a total budget of 108 million USD distributed over 12 projects

8. Projects in the Pipeline

The technical support unit to the BDL at LCEC noted that the numbers of projects in the pipeline are continuously increasing.

From a few dozen registered projects at the end of 2012, the mechanism had grown to 117 projects by early May 2014, with over 30 more projects in the pipeline (on 30 May 2014). Projects in the pipeline include several EE and RE measures to be implemented such as PV systems, LED lighting, certified green buildings, biomass boilers, etc ...

LCEC expects to approve green loans proposals of a total amount of around 40 million USD by the end of July 2014 hoping to achieve higher records in the upcoming years.