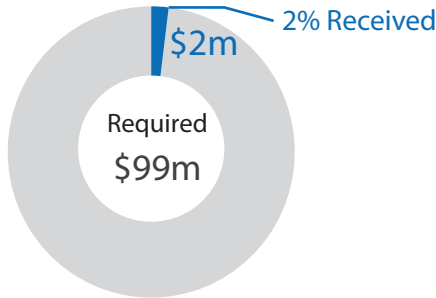




The January-December dashboard summarizes the progress made by partners involved in the Lebanon Crisis Response and highlights trends affecting people in need. The Energy Sector in Lebanon is working to: OUTCOME 1) Increase energy production through implementation of renewable energy sources; OUTCOME 2) Reduce energy demand due to implementation of energy efficient initiatives; OUTCOME 3) Improve access to electricity through Rehabilitation and Reinforcement works on the Transmission and Distribution networks; OUTCOME 4) Enhance capacity of MoEW to plan, budget and oversee energy sector initiatives.

2019 funding status

Funding received Jan to Jun 2019

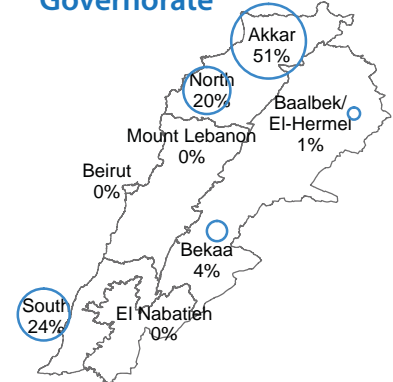


Targeted population

2 million (People in Need)



Breakdown of Beneficiaries Governorate



Progress against targets

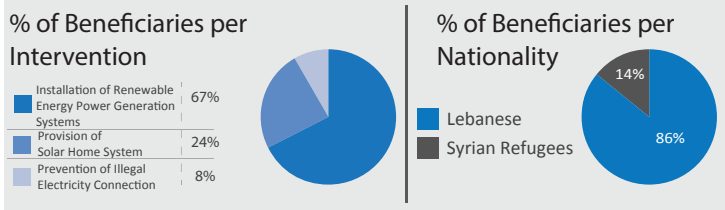
Outputs

| | reached / target |
|---|------------------|
| # of solar water heaters provided to HH | 0 / 111,392 |
| # of sites and municipalities with access to off-grid street lighting | 0 / 107 |
| # of public wells with installed solar power for water pumping | 0 / 14 |
| # of Renewable Energy power generation systems installed for communities and/or institutions | 2 / 75 |
| # of households with access to energy efficient products (indoor LED and Solar cookers) | 400 / 110,172 |
| # of public institutions (schools, healthcare) with access to energy efficient products | 0 / 114 |
| # of wells equipped with variable speed pumps | 0 / 146 |
| # of public institutions and/or households that have undergone an awareness campaign on Energy Conservation | 0 / 114 |
| # of persons reached through installation of necessary equipment to reinforce the transmission network | 0 / 94,600 |
| # of staff provided to MoEW to assist in implementation of projects | 0 / 8 |
| # persons reached through installation of necessary equipment to reinforce the distribution network | 675 / 277,140 |

Outcomes

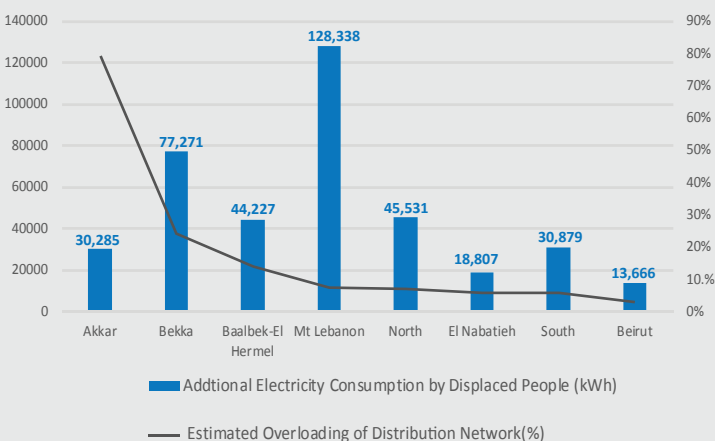
| | LCRP 2016 Baseline | Jun 2019 Current | 2019 Target |
|---|--------------------|------------------|-------------|
| OUTCOME 1: increase in MWh resulting from installed capacity through renewable energy sources (MWh/year) | 0 | 6,365 | 280,375 |
| OUTCOME 2: Reduction resulting from installed capacity through energy efficient measures in MWh (MWh/year) | 0 | 0 | 72,250 |
| OUTCOME 3: #of persons reached through installation of necessary equipment to reinforce the transmission network & the distribution network | 0 | 675 | 371,740 |
| OUTCOME 4: # of new energy initiatives resulting from capacity development and support to MoEW | 0 | 0 | 115 |

Type / Nationality Breakdown

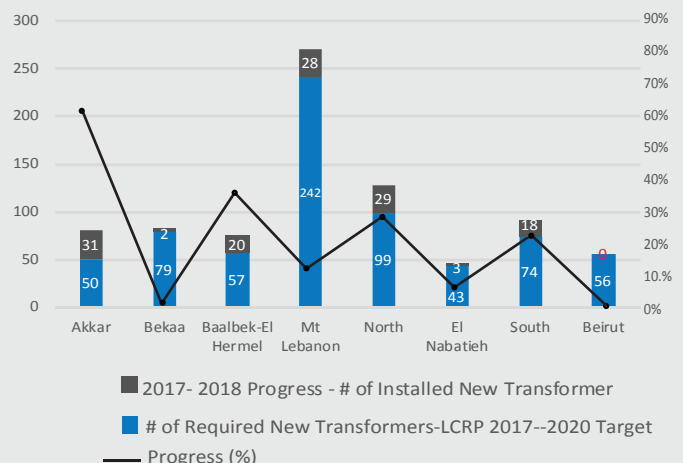


Analysis

Impact of Syrian Crisis on Lebanese Electricity Network (MoEW & UNDP, 2017)



Progress vs Needs of Intervention Per District



KEY CONTRIBUTIONS OF THE SECTOR TO LCRP IMPACTS

As of Mid-2019, the projects implemented by Energy LCRP partners (Total two partners reported their projects this year) focus on the installation of renewable energy equipment (Output 1.1: Increase in electricity production through implementation of renewable energy, one partners) and the rehabilitation of the electric distribution networks (Output 1.4: Improve access to electricity through implementation of reinforcement and rehabilitation works on the distribution network, one partners). By enhancing electrical services and capacity at the national and local level in a sustainable manner, these interventions contribute to the LCRP's third objective of supporting service provision through national systems, and the fourth objective of reinforcing Lebanon's economic, social, and environmental stability. By its nature, these interventions benefit both genders equally. Overall, the sector's results and area of interventions are similar to that of 2019.

Regarding renewable energy (Output 1.1), three types of intervention were implemented to support the vulnerable public and non-governmental organizations in mitigating their financial burden regarding electricity bills under LCRP.

Given the significant power outages that Lebanon experiences, especially in the rural areas, the need for basic electricity services for indoor lighting is of real importance for people's general well-being, education and health. For this sake, 400 Solar home systems were provided to the Lebanese households in the most vulnerable areas in Dinniyeh and Akkar. The use of renewable solar home systems ensures that some of the basic needs of the households are met and saves on household spending. With an average income below 500 USD per month, most of these households cannot afford a secondary power source and use either a small UPS or candles during black-outs. The selection was done in coordination with the municipalities choosing households from the list of the National Poverty Targeting Program (NPTP). These kits are expected to light 3 rooms and provide USB auxiliary power charging supply.

To support public schools in vulnerable areas to benefit from solar lighting systems and reduce their administrative costs, the upgrading of the already existing solar PV systems in public schools were undertaken. The activity has upgraded the existing solar PV systems, with new batteries banks, solar chargers, and address other issues defects. The total 20 schools (Beirut: Shiah, Batroun: Jran, Selaata, Tripoli: El Nour, Akkar: Kroum Arab, Ouyoun El Samak, Al Hakoor, Meniara, Habshit, Ain Yaacoub, El Tleileh, Bekaa: Yanta, Tell El Zounoub, Mdoukha, Hosh El Harime, Nabatieh: Kfour, Nabatieh - Al Fariha, Kfarshouba, Ein Deleb, Kfarkela) are targeted for this activity in coordination with the Ministry of Education and Higher Education. In addition, the awareness workshops for school students, from grades 10, 11 and 12 in two schools which have been recipients of PV systems under this activity were also conducted.

Finally, two biomass briquetting plants were upgraded to promote bioenergy use for heating (See Section Case Study for more detailed information).

The reinforcement of the distribution network is one of the key interventions aiming to increase the capacity to deliver quality electricity to additional end-users, especially to the most vulnerable people and communities (Output 1.4). Through a project that aims at the prevention of illegal connections, a total of 135 legal electrical connections, along with net metering systems, have been installed in Bekaa, Akkar, Baalbek, and the North in Mid-2019.

CHALLENGES

The main challenge of the sector remains to raise funds and to advocate for the importance of the sector. Electricity in Lebanon remains a controversial issue: the challenges that the sector faced before the Syria crisis have been severely exacerbated by the extra consumption of electricity, causing more losses to the government and the Lebanese population.

The ministry estimated that the installation of approximately 700 new medium and low voltage transformers are needed to accommodate the demand increase while the partners have installed 122 transformers to date. Because upgrading of the distribution network is a capital-intensive activity, it is a difficult challenge to raise sufficient funds to reach the vulnerable communities most in need.

Regarding the installation of renewable energy, given solar photovoltaic positive return on investment, and immediate and sustainable monetary saving, the possible solutions for this are to; 1) mainstream renewable energy and energy efficient projects in other sector's strategic interventions, especially support to public institutions, and; 2) leverage private investments through technical and financial support with grant.

KEY PRIORITIES AND GAPS FORESEEN FOR 2019

The 2019 Energy sector strategy remains the same as 2018. The sector aims at achieving higher targets for Output 1.1: Increase in electricity production through implementation of renewable energy. There are 13 partners that are appealing under this activity across Lebanon, with the focus on Bekaa region. As for coordination issue, the Energy sector, under the guidance of MEHE will closely coordinate with the Education sector for the implementation of renewable energy projects mainly distribution of Solar PV systems and installation of energy efficient (LED Lighting) projects in public schools. Since the installation of solar PV in schools can generate monetary savings throughout its lifespan (c.a. 20 years), The financial savings can be re-directed to core education activities such as school enrolment.

Case Study

Biomass is an untapped renewable resource in Lebanon, which has a vast potential in creating jobs and promoting money circulation within local communities¹. According to the National Bioenergy Strategy², forestry and agricultural residues were identified as the most promising and sustainable source of bioenergy for heating. Given this finding, the biomass briquettes plants (300 tons/year production capacity for each plant) were previously implemented in Bkessine (South) and Aandket (Akkar) during 2017. The plants use the forestry residues from the pruning done by the two respective municipalities in order to preserve their pine forests from the increasing risks of wildfires and to ensure the sustainable growth of the trees. Residues are collected by the municipality team and transported to the plant to treat and produce briquettes for heating during the winter season.

In terms of economic and social impacts, the Bkessine biomass plant has secured approximately 5 full time employment (at the plant itself) opportunities and many other seasonal opportunities (in pruning). Furthermore, up to \$200 annual savings (depending on alternative fuel costs) accrue to each of the estimated 600 households benefitting from the use of biomass briquette. There are also environmental impacts. Assuming that the displaced courier for heating is diesel, the overall benefits of the biomass briquettes per plant with 300 ton/year production capacity is approximately 500,000 kg of CO₂ emission reduced annually. Reduction of the risks of forest fires cannot be measured, however the biomass briquettes plant definitely reduces this risk given that it is the dry material from the forest that is collected.

To scale-up these impacts, the feasibility study of two biomass projects in Lebanon was conducted with the help of an international consultant, and as a result the upgrading of the existing briquetting plants in Bkessine and Aandket was recommended. During 2018, the upgrading of the briquetting initiated to automate the process by doubling its yearly production through the provision of packaging and wrapping equipment and increase storage space for the finished product. Two steered loaders and external shedding for raw material were ordered to be installed in the respective facilities. These facilities use wood fillings (residues) gathered from local forests. The briquetting plant in Bkessine and Aandket are operating through a private company in a public-private partnership agreement signed with both municipalities.

After the upgrading, the production capacity of plan has increased to 450 tons/year and the production cost has decreased from approximately USD\$ 200 to 150 per ton of briquette.



Bkessine Biomass Plant and the worker



Aandket Biomass Plants: Collection and storage of forestry residues from the pruning



Packaged Biomass Briquette

¹ UNDP (2018). Value Chain Assessment and Analysis – Renewable Energy Sector in Lebanon.

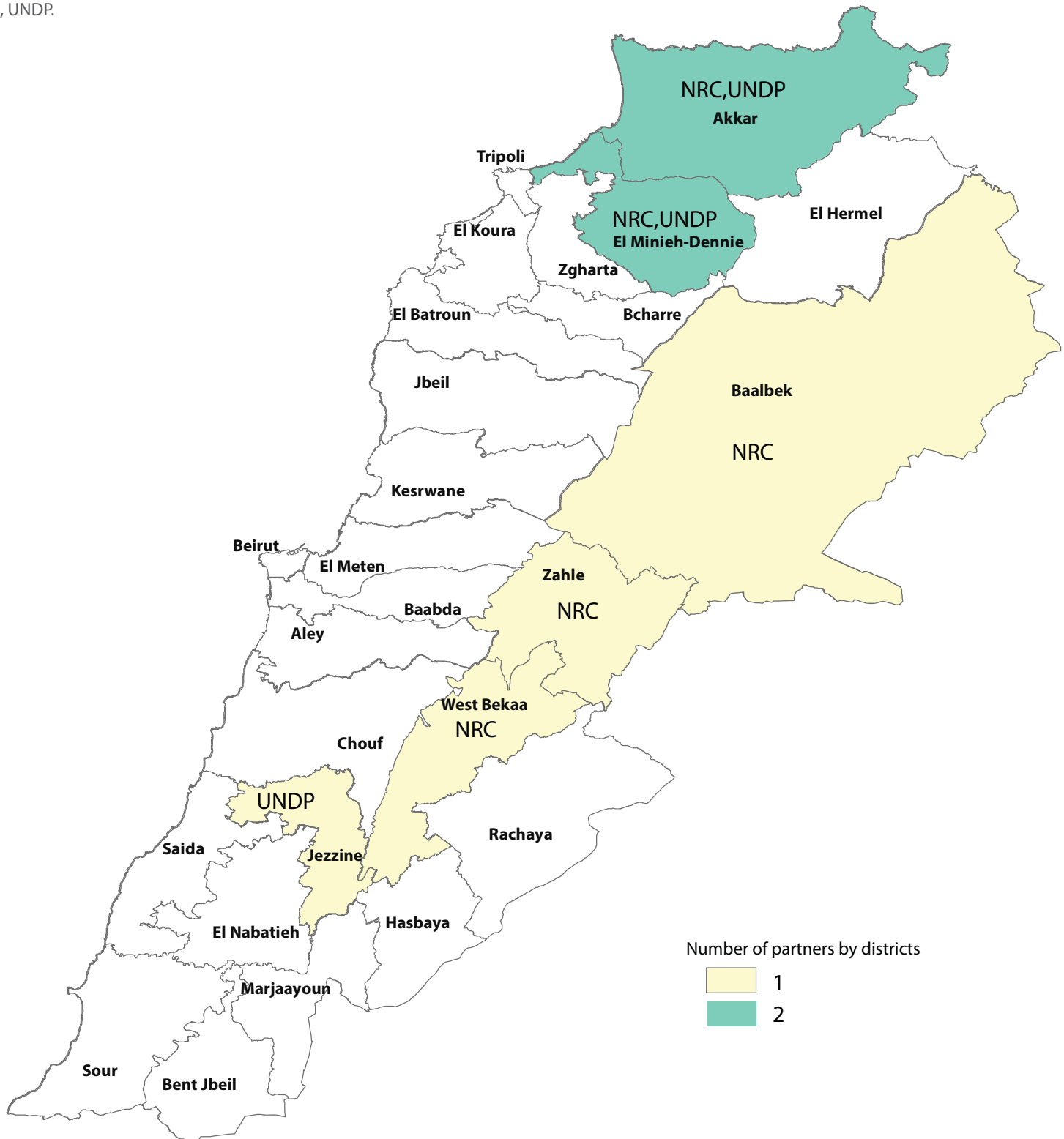
² UNDP (2012). The National Bioenergy Strategy for Lebanon.



Organizations per district

The achievements described in this dashboard are the collective work of the following 2 organizations:

NRC, UNDP.



Note: This map has been produced by UNDP based on maps and material provided by the Government of Lebanon for Inter Agency operational purposes. It does not constitute an official United Nations map. The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.