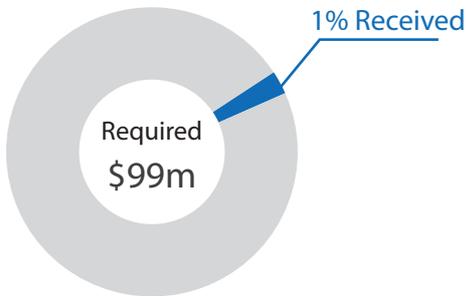




The Jan\_August dashboard summarizes the progress made by partners involved in the Lebanon Crisis Response and highlights trends affecting people in need. The Energy Sector in Lebanon is working to: OUTCOME 1) Increase energy production through implementation of renewable energy sources; OUTCOME 2) Reduce 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.

### 2018 Q2 funding status

Funding received Jan to June 2018

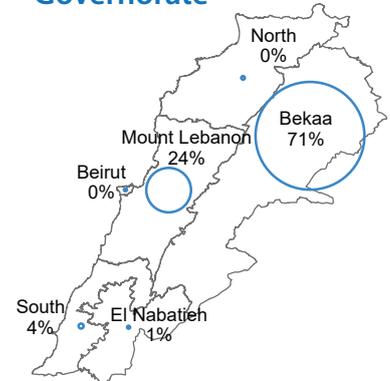


### Targeted population groups

3,000,000 (People in Need)



### Breakdown of Beneficiaries Governorate



## Progress against targets

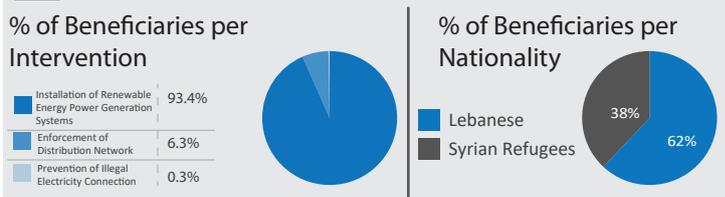
### Outputs

Output	reached / target
# of solar water heaters provided to HH	0 / 39,315
# of sites and municipalities with access to off-grid street lighting	3 / 38
# of public wells with installed solar power for water pumping	0 / 5
# of Renewable Energy power generation systems installed for communities and/or institutions	10 / 4
# of households with access to energy efficient products (indoor LED and Solar cookers)	0 / 12,018
# of public institutions (schools, healthcare) with access to energy efficient products	0 / 114
# of wells equipped with variable speed pumps	0 / 51
# 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

### Outcomes

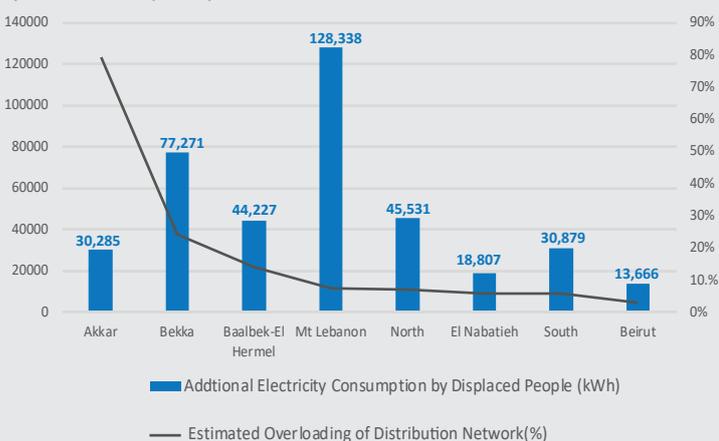
Outcome	LCRP 2016 Baseline	Aug 2018 Current	2018 Target
<b>OUTCOME 1:</b> increase in MWh resulting from installed capacity through renewable energy sources (MWh/year)	0	1,190	116,300
<b>OUTCOME 2:</b> Reduction resulting from installed capacity through energy efficient measures in MWh (MWh/year)	0	0	30,000
<b>OUTCOME 3:</b> #of persons reached through installation of necessary equipment to reinforce the transmission network & the distribution network	0	18,585	371,740
<b>OUTCOME 4:</b> # of new energy initiatives resulting from capacity development and support to MoEW	0	0	66

### Type / Nationality Breakdown

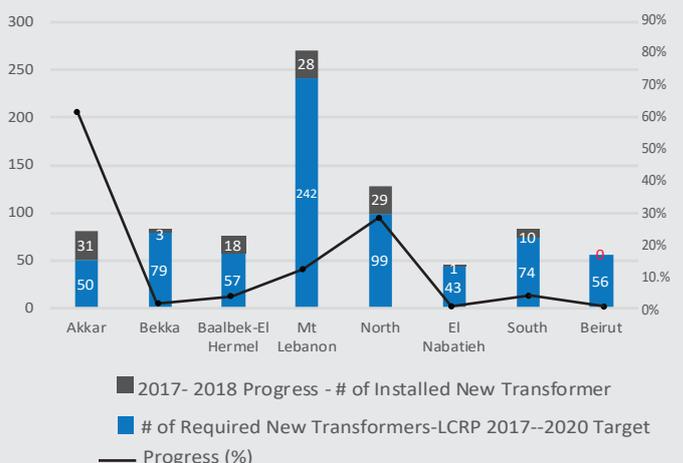


## Analysis

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



### Progress vs Needs of Intervention Per District



## KEY ACHIEVEMENTS

- **92 solar street lighting systems** have been installed across 3 districts (Metn, Saida and Sour).
- **4 public institutions, 4 Non-profit organizations, and 3 schools** are provided with **solar PV systems** (Total 771 kWp), decreasing their fiscal burden from the electricity cost.
- **Reinforcement of distribution network** has been undertaken through the installation of new transformers and relevant parts in **5 Cazas** and electrical connections are installed in **131 sites** to promote safety and installation of legal electrical connections, reaching approximately **18,455 individuals**.



### Facts and Figures

**97%** of displaced Syrian households connected to the national electricity Grid.\*

**56%** of displaced Syrian households using private generators.\*

**13.4 h** average hours of electricity supply from the grid.\*

**44%** of displaced Syrian households are not paying electricity bills for the grid electricity.\*

**486 MW** of power generation required to cater the daily needs of displaced Syrians.\*\*

**715 MW** of power added to the national grid since 2010 by EdL.\*\*

**33%** of energy supplied to displaced Syrians out of total energy supplied in Lebanon.\*\*

\* VASyR 2018.

\*\* MoE&UNDP (2017), Impact of the Syrian Crisis on Power Sector.

## KEY CONTRIBUTIONS TOWARDS LCRP IMPACT(S)

The overall objective of the Energy sector is to provide all vulnerable populations with an improved, equitable, and gender appropriate access to electricity in terms of quality, quantity and sustainability by the year of 2020. By enhancing electrical services and capacity at the national and local levels in a sustainable manner, the Energy sector contributes to the LCRP's third strategic objective of supporting service provision through national systems, and the fourth strategic objective of reinforcing Lebanon's economic, social and environmental stability.

In 2018, 4 partners have actively implemented projects in the Energy Sector under LCRP. The projects implemented by these partners focus on the installation of renewable energy equipment (Output 1.1: Increase in electricity production through implementation of renewable energy) 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) as per the sector's priorities.

In terms of the installation of renewable energy, the off-grid street lighting has been installed in one municipality and the more installation is ongoing. Solar PV systems were installed in four public institutions (wastewater treatment plants, public market, municipalities) and four Non-profit organizations (child welfare center, medical center for elderly and physically disabled persons, primary health care centre), and three schools, reducing the burden of increased electricity cost while also adding total 771 kWp of renewable energy capacity in Lebanon. With the investment of about \$ 807,000, this will save around 1,117,950 kWh of electricity consumption per year and could provide around \$ 167,692 a year of electricity bills reduction. These activities under Output 1.1 contribute to the sector's impact through filling the electricity supply/demand gap, which has been significantly expanded by the influx of displaced populations.

The reinforcement of the distribution network is one of the key interventions aiming to increase its capacity to deliver quality electricity to additional end-users, especially to the most vulnerable people and communities. Installation of the new transformers was conducted in five vulnerable cazas (Baalbek, Zahle, Marjaayoun, Saida, and Sour) and approximately 17,800 individuals are now benefiting from the improved quality of grid electricity. Through a project that aims at the prevention of illegal connections, a total of 131 legal electrical connections along with the net metering systems have been installed in West Bekaa, Akkar, Baalbek, Zahleh, and Miniyeh-Danniyeh.

Overall, the Energy Sector reached 281,912 population out of 1,119,172 target population in 2018 from January to August.

## CHALLENGES

The electricity supply and demand gap remains significant, aggravating the availability of the grid electricity and causing the financial burdens for both vulnerable Lebanese and displaced people, and public institution due to the heavy reliance on pollutive and expensive diesel generators during the power-cut. More investment in renewable energy and energy efficiency products is required to fill this gap. Given solar PV's 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 for support to public institutions, and 2) leverage private investment through technical and financial support with grant.

Overloading of the distribution network due to increased demand especially in localities hosting large numbers of displaced people is a critical and urgent issue because it causes a decline in the quality of electricity supply to households and increases the risk of fire and damage in overburdened transformers. The ministry estimated that the installation of approximately 700 new MV/LV transformers are needed to accommodate the demand increase while the partners have installed 122 transformers to date. Because the 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.

## KEY PRIORITIES AND GAPS FORESEEN FOR THE NEXT 4 MONTHS

The lack of funding remains a critical issue in the Energy sector, and the sector has to address this challenge through more effective advocacy and coordination with the other sectors and stakeholders by tapping into the broad benefits of the energy-related projects.

At intervention level, the installation of distributed renewable energy will contribute to job creation and promote the circulation of money within local communities by utilizing their natural resources such as biomass residues. In addition, through the partner's intervention (highlighted in the below session), it was shown that the installation of solar PV in the public institutions such as schools and hospitals could have short pay-back-periods (3-9 years) and generate monetary savings over the course of its lifespan (c.a. 20 years), making it as an ideal long-term/sustainable solution. Given that the large amount of funds is being spent every year to provide/cover essential public services such as school enrolment and healthcare, such an investment can be an ideal transition solution if energy savings are shifted toward education and health-related service. Moreover, these savings can potentially and partially finance enrolment fees and other services that are currently supported by international donors (over a constant 20-year period) since the electricity cost of public institutions are also borne by the government.

Considering this, the sector's key priority for next 4 months are the installation and promotion of distributed renewable energy solutions for other sectors

## HUMAN INTEREST STORY

The frequent power outage and low-quality electricity supply are affecting the most vulnerable population and critical public services in Lebanon. The electricity supply from the grid is unequal for poor regions as highlighted in the fact that the grid electricity is available for average 20 hours in Beirut while it is around 10 hours in the other governorates. During the blackouts, vulnerable people and institutions have been forced to purchase electricity from costly and environmentally unfriendly private diesel generators. The cost of reliance on diesel generators places an additional fiscal burden on already-stretched public institutions such as schools, health care centres and hospitals that provide service to Lebanese and displaced populations.



In the meantime, distributed solar PV systems are fast becoming a cost-effective energy solution in Lebanon and are being widely adopted in industrial and commercial sectors due to their decreasing price and soft loan. The hybrid PV-Diesel solution, which was demonstrated in Lebanon, has been increasingly installed in the private sectors due to its unique architecture that is best suited for Lebanon to minimize the use of private generators.

Although public-sector institutions and communities could benefit from these solutions, they cannot often afford the relatively high initial capital investment costs required for renewable energy technologies. To support the vulnerable public and non-governmental organizations in mitigating their financial burden in terms of electricity bills, Hybrid Solar PV-Diesel systems have been installed by the UNDP with the funding from the Netherlands. The project so far installed hybrid solar PV systems in 12 public institutions such as schools and hospitals across Lebanon. In total 1,411 kWp of solar PV systems were installed. This will save around 2,080 MWh of electricity consumption per year from the diesel generator and the grid and provide around \$375,000 a year of electricity bills reduction. These public institutions are providing their services to around 1,000,000 persons who are indirectly benefiting from the installation of the solar PV system with improved quality and supply hours of electricity.

Through the provision of the grant, some of the beneficiaries (e.g. private hospital and school) can even mobilize their own capital from the financial savings it provided to invest in renewable energy or even in enhancing some of their services, hence multiplying the impacts of the grant element.

Furthermore, the project demonstrated the community-led centralized solar PV system with the virtual net metering scheme in the village of Qabrikha with, a new system architecture can be developed where the centralized diesel generators are replaced by a grid connected battery energy storage system (Find the booklet here: <http://www.cedro-undp.org/Publications/National%20Studies/153>). This innovative scheme would allow the community to co-invest and share its benefit, thereby has the potential to further accelerate installation of solar PV systems in Lebanon.

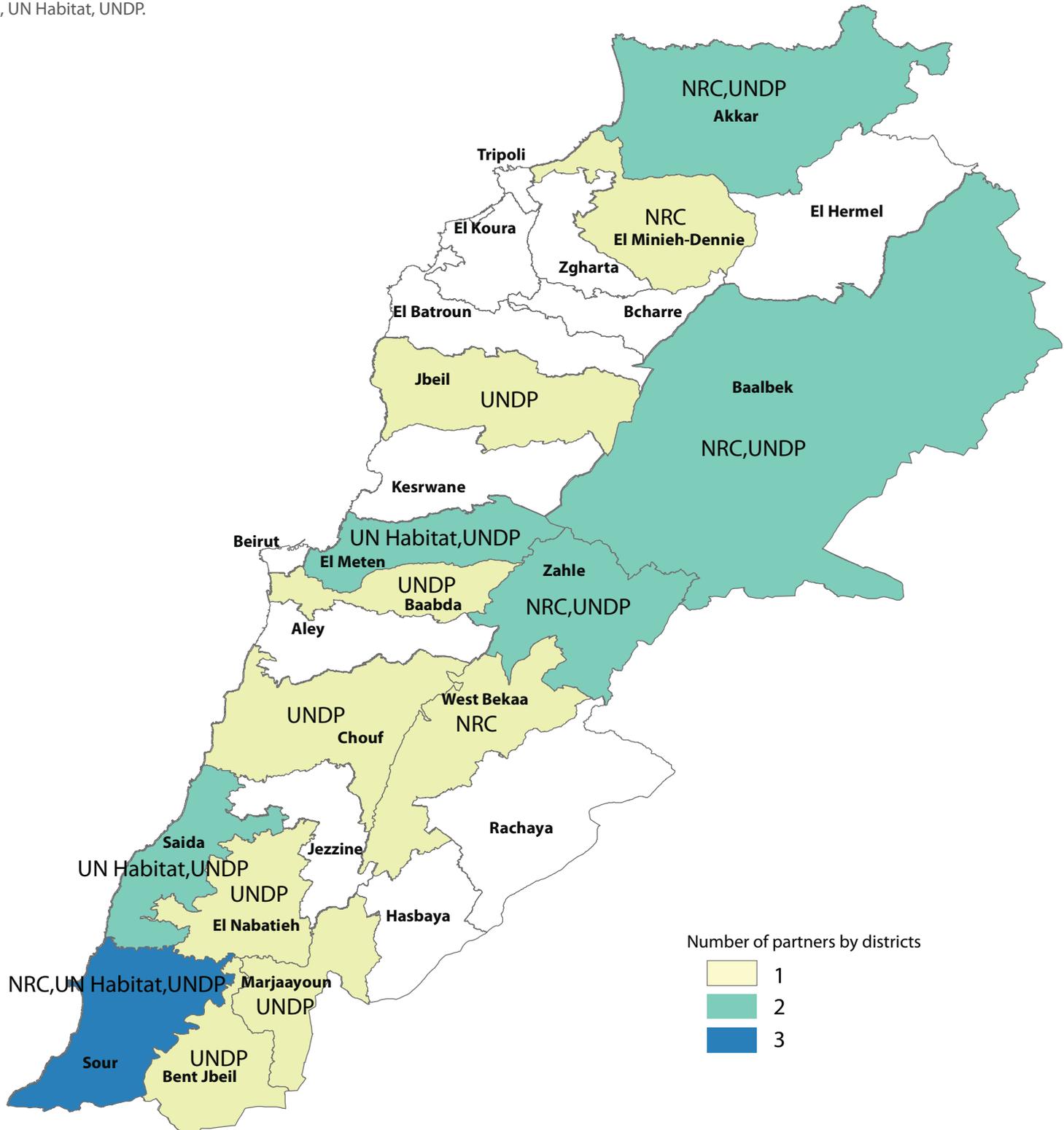




# Organizations per district

The achievements described in this dashboard are the collective work of the following 3 organizations:

NRC, UN Habitat, 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.