

Growing Solar Energy *Capabilities in the Middle East*



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OUR COMMITMENT

is to reduce energy consumption within our manufacturing group and to partner closely with Middle East and North Africa governments and energy associations to formalize solar power as a political priority

Management Approach

With our plants located in a region with 300 to 345 days of sunshine per year, INDEVCO identifies powering operations with solar energy among its key initiatives. INDEVCO has installed PV power plants across its member companies in Lebanon to leverage on the abundant and untapped renewable energy from the sun.

With topic boundaries extending past our plants, INDEVCO's Phoenix Energy also works to prioritize solar energy as a priority in Lebanon and Egypt partnering with ministries and municipalities, healthcare institutions and other organizations to launch solar projects in two countries.

Context

In order to meet the international target to keep the global temperature below two degrees Celsius, as set out in the Paris Accord of 2015, CO₂ emissions must be reduced significantly by transforming the current fossil-fuel dependent energy system to renewable energy. ^[1] Fulfilling the Agreement means deploying renewables six times faster, increasing the total share of renewable energy from around one-sixth of total world's energy consumption in 2018/2019 to around two-thirds by 2050. ^[2]

In 2018, the sector added nearly 175 GW of renewable energy capacity globally and 98 GW of solar energy. ^[3] The Middle East and North Africa (MENA) has faced rising electricity demand due to population and economic growth paired with increased industrial activity. Between 2018 and 2022, Arab Petroleum Investment Corporation (APICORP) estimates that MENA power capacity is expected to expand by an average of 6.4% per year. ^[4]

As countries across the region have started setting clean energy targets and the cost of solar energy technologies has fallen, investment in renewable energy projects within the region has grown. ^[5] Although lagging, Egypt is accelerating renewable and solar energy consumption at a rate faster than the global average, while Lebanon is falling behind with quantity and acceleration much slower than the global average. ^[6]

INTERNAL SOLAR SAVINGS AT INDEVCO COMPANIES

Lebanon

Phoenix Energy has partnered with sister companies in Lebanon to transition plants to renewable solar energy through photovoltaic (PV) power systems. Phoenix Energy, renewable energy solutions provider, has installed PV systems at INDEVCO HQ in Ajaltoun, Masterpak and Sanita plants in Zouk Mosbeh, Unipak and Unipak Tissue Mill in Halat, and Interstate Inks in Hosrayel.

Sanita Hosrayel Plant Solar PV Power System

In 2018, Phoenix Energy partnered with sister company Sanita to install a PV power system covering 4,000 m² at its Hosrayel plant. The PV system will decrease greenhouse gas (GHG) emissions resulting from the consumption of non-renewable energy by 702.6 MTCO₂E, 55.9 Kg NO_x, and 2.839 Kg SO₂.

IMPACT



2,000

Polycrystalline PV panels



688 kWp

Capacity



1,000 MWh

of energy / year



IMPACT

7,700

Polycrystalline PV panels

2.5 MWp

Combined Capacity

3,750 MWh

of energy / year

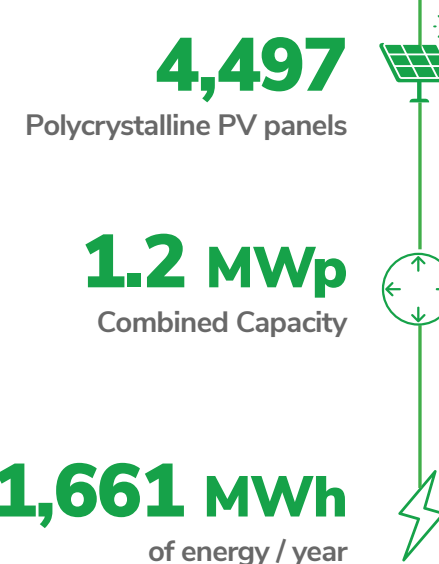


SOLAR INSTALLATIONS

Lebanon

Project name	Location	Year	Status	Capacity	Energy	# of PV panels	Area	GHG Reduction
Qabrikha Solar PV Power Project Land mounted, on-grid system	Qabrikha	2018	Complete	250 kWp	380 MWh / year	960	1,900 m ²	267.1 MTCO ₂ E 21.2 Kg NO _x 1.076 Kg SO ₂
Hashem Super Store Roof Mounted, on-grid system and working in synchronization with diesel generators	Rayfoun	2018	Complete	313 kWp	447.6 MWh / year	1,152	2,900 m ²	314.7 MTCO ₂ E 24.9 Kg NO _x 1.268 Kg SO ₂
Caritas Project for Lebanese General Security Roof Mounted, on-grid system	Achrafieh	2018	Complete	37 kWp	53 MWh / year	115	600 m ²	37.3 MTCO ₂ E 3 Kg NO _x 0.15 Kg SO ₂
Centre Hospitalier Universitaire Notre Dame Des Secours PV Project	Jbeil	2017 - 2018	Complete	600 kWp	780 MWh / year	2,270	5,000 m ²	1,000 MTCO ₂ E/year

IMPACT



ASSOCIATION LEADERSHIP



Rabih Osta, Area General Manager, Phoenix Group of Companies

- Lebanese Foundation for Renewable Energy - Founding Member
- Lebanese Order of Engineers & Architects - Beirut Member
- Lebanese Solar Energy Society - Vice President
- World Energy Council Advisory - Board Member

ASSOCIATION MEMBERSHIPS

- Association of Lebanese Industrialists
- Lebanese Solar Energy Society
- World Energy Council

SOLAR INSTALLATIONS

Egypt

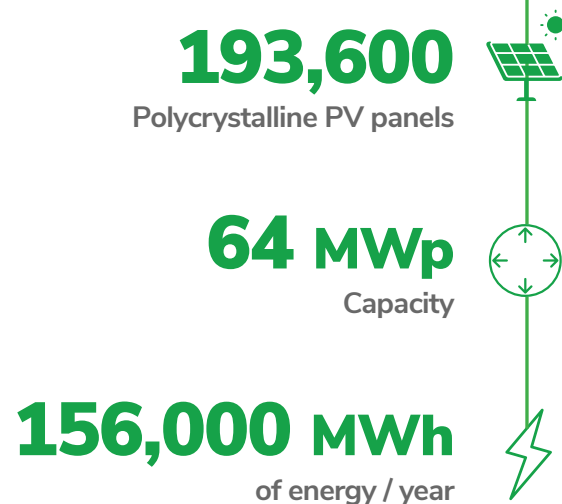
Benban Solar Park: The World’s Largest Solar Power Farm

In Q1 2018, Phoenix Energy began construction of the Benban Solar Park’s Phoenix Power One project alongside project partners Infinity Solar and BPE Partners of Egypt and IB Vogt of Germany. The target commercial operation date (COD) was January 2019. The 64 MWp PV power plant will power 50,000 homes once installed and operational. By the end of 2018, Phoenix Power One project construction was completed and testing commenced.

The project is part of the larger Benban Solar Park which will operate a total capacity of 1,600 MW, remain operational for 25 years and sell electricity to the Egypt Electricity Transmission Company (EETC). This is part of Egypt’s Feed in Tariff (FiT) program, first introduced in 2014.

Area	1.1 million m²
GHG Emission Reduced Annually	74,000 MTCO₂E

IMPACT



Memorandum of Understanding with ENOVA

Phoenix Energy signed a Memorandum of Understanding in 2018 with ENOVA, regional leader in integrated energy and multi-technical services, to launch on-grid PV power systems at three major Majid El Futtaim malls in Egypt: Mall of Egypt in Giza, Maadi City Center in Cairo, and Alexandria City Center in Alexandria.

Capacity	1.75 MWp	Area	10,144 m²
Energy	2,842.9 MWh / yr	GHG Emission Reduced Annually	1,988.5 MTCO₂ 158.5 Kg NO_x 8.1 Kg SO₂
# of PV Panels	5,170		

See Appendix F for references.

APPENDIX F

Growing Solar Energy Capabilities in the Middle East References:

1. IRENA (2018). Global Energy Transition: A Roadmap to 2050.
<https://www.irena.org/publications/2018/Apr/Global-Energy-Transition-A-Roadmap-to-2050>
2. IRENA (2019). People, Planet, & Prosperity: Raising Climate Ambitions through Renewables.
<https://www.irena.org/publications/2019/Jul/People-Planet-and-Prosperity>
3. IRENA (2019). Renewable Energy Statistics 2019.
<https://www.irena.org/publications/2019/Jul/Renewable-energy-statistics-2019>
4. Arab Petroleum Investment Corporation – APICORP (2018, April). PRESS RELEASE: APICORP forecasts US\$260 billion investment needed to meet MENA electricity demand over next 5 years.
<http://www.apicorp.org/press-release-apicorp-forecasts-us260-billion-investment-needed-to-meet-mena-electricity-demand-over-next-5-years>
5. Middle East Solar Industry Association – MESIA (2019, January). Solar Outlook Report 2019.
<https://www.mesia.com/wp-content/uploads/2019/01/MESIA-Solar-Outlook-Report-Single-2019.pdf>
6. IRENA (2019). Renewable Energy Statistics 2019.
<https://www.irena.org/publications/2019/Jul/Renewable-energy-statistics-2019>