

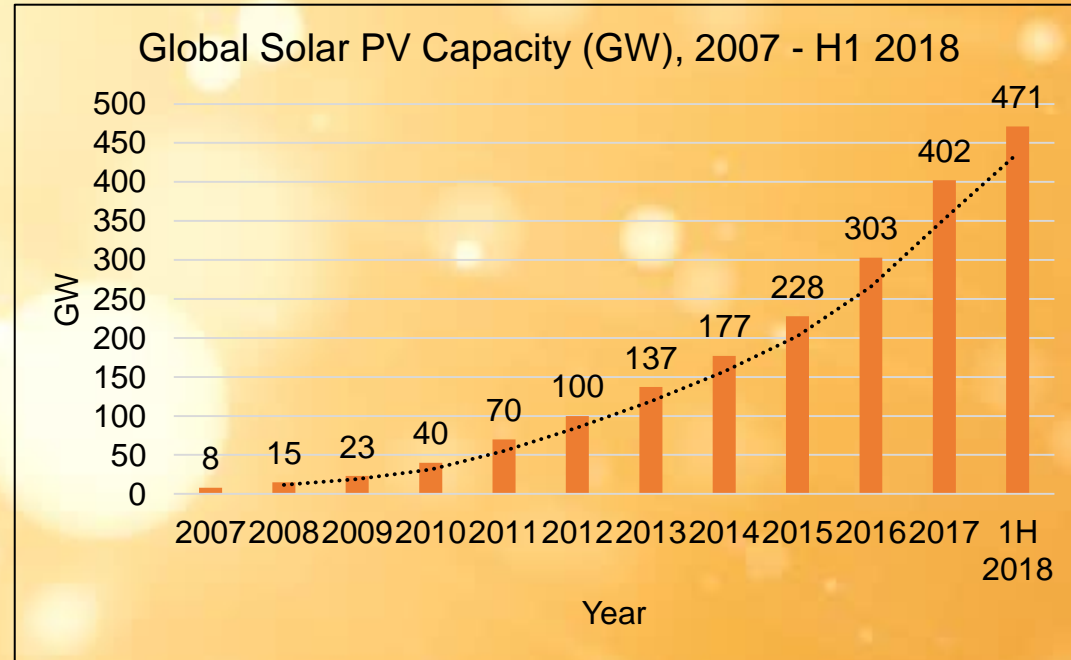


SOLAR ENERGY OPPORTUNITIES IN THE GULF

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- Solar energy is arguably the fastest growing source of power
 - Since 2006, CAGR of global PV installations = 45%
 - Over 470 GW currently installed worldwide
- Solar technologies, namely solar PV, have experienced tremendous cost declines
 - Module prices now hover at or below \$0.25 US cents/watt



Source: Bloomberg NEF

- We expect strong growth in the following market segments:

Energy Storage

- Solar PV plus battery storage
- Concentrated Solar Power (CSP)

Electric Vehicles

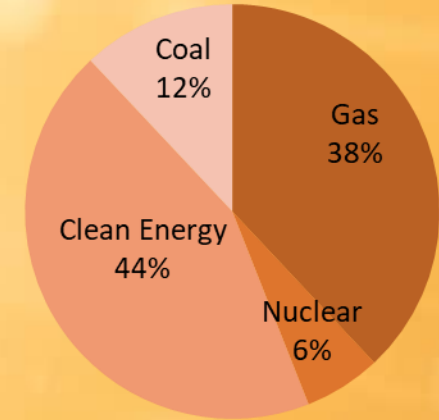
- EVs sales in the region are growing
- Supporting regulation still needed in most markets

Distributed Generation

- Regulation to support the DG market still lacking in some markets
- Segment is very promising, especially the C&I space

Part in % in Energy Mix

- UAE launched “Energy Strategy 2050” - aiming to increase clean energy contribution to 50% by 2050
- Dubai Clean Energy Strategy – produce 75% of energy from clean sources by 2050



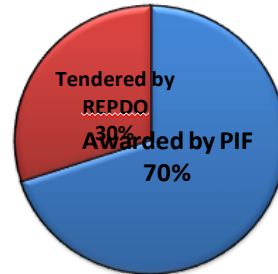
- Abu Dhabi - EWEC EOI for 2 GW of solar PV
- Dubai- DEWA RFQ for 900MW solar PV, the 5th phase of the Mohammed bin Rashid Al Maktoum Solar Park

VISION 2030: 50% of the world's Solar Energy in KSA

Previously	Present
9.5 GW Planned	58.7 GW by 2030

Pipeline

2.7GW CSP, 40GW Solar and 16GW Wind Projects



- **Round 1:** Successfully awarded 300 MW PV facility in Sakaka and the Dumat Al Jandal 400 MW wind farm with record LCOEs
- **Round 2:** 1.5 GW of Solar PV, over 265 responses received to 7 EOIs. **2019:** 12 pre-developed projects will be tendered with a total capacity of ~3.1 GW (2.2 GW solar & 850 MW wind)
 - Madinah (50 MW)
 - Mahd Aldhab (20 MW)
 - Rafha (45 MW)
 - Qurrayat (200 MW)
 - Alfaisaliah (600 MW)
 - Rabigh (300 MW)
 - Jeddah (300 MW)
 - Saad (600 MW)
 - Alras (300 MW)
 - Wadi Adwawser (70 MW)
 - Qurrayat (40 MW)
 - Yanbu (850 MW)

265 Responses to EOI	35+ Parks by 2030
Over 50% the Kingdoms companies	KSA to promote regional development across all regions
75 New Suppliers Registered.	Mitigating technology risks via gradual deployment

PUBLIC INVESTMENT FUND (PIF)

- Negotiated deal with international partner
- Captive Offtake from large scale manufacturing
- Target Output 2-3GW per year
- Fast track localisation

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KACARE program – 4 RFPs issued: solar heating for industrial processes, solar cooling, shallow geo thermal cooling, energy storage.

OMAN

- Ibri Project: 500 MW - In March 2019, a consortium led by Saudi Arabia's Acwa Power won a deal to build and operate a \$400m solar IPP
- Amin solar PV project: 100 MW – Marubeni signed the PPA in February 2019 with PDO
- Solar IPP 2022: 500MW – 1000 MW – Advisor tenders recently awarded.

QATAR

- 900 MW Qatar Solar IPP. RFP process underway (issued 31/1/19). To be delivered in two phases (Initial Phase of 350MWac)

BAHRAIN

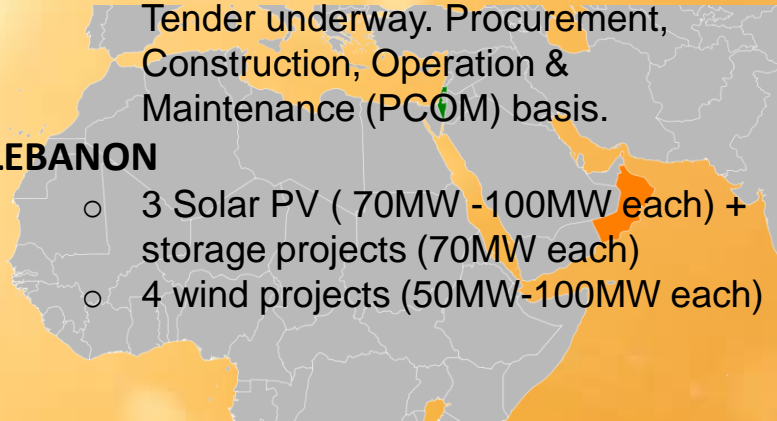
- Solar PV 100 MW Plant at Askar landfill. Awarded to ACWA

KUWAIT

- Al Dibdibah Solar Project 1.5GWac– Tender underway. Procurement, Construction, Operation & Maintenance (PCOM) basis.

LEBANON

- 3 Solar PV (70MW -100MW each) + storage projects (70MW each)
- 4 wind projects (50MW-100MW each)



- **Net Metering** regulations issued in number of countries – UAE, KSA, Jordan
- No FIT paid but credits are offset against future bills.
- Oman – introduced Sahim scheme. Second phase involves installation on residential rooftops and excess generation can be exported to the grid for payment from distribution company at agreed tariffs.
- **Subsidised Tariffs** remains a key issue in developing this market.

PRIVATE PPA

Between private sector companies

- NADEC Dairy (KSA) 30MW PV
- Cement companies – KSA
- Aramex, Nestle, Al Naboodah – UAE
- Wheeling projects Jordan (hotels, telco, etc)



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She has over 19 years of legal experience and has worked in the Middle East since 2007, advising on the procurement of major projects across the transport, energy and infrastructure sectors.