
Implementation Experience of large Wind Projects in the Middle East

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LAHMEYER INTERNATIONAL - A COMPANY OF TRACTEBEL

- Key Figures (Tractebel Group)



4,500
employees



33
countries



605 M€
turnover

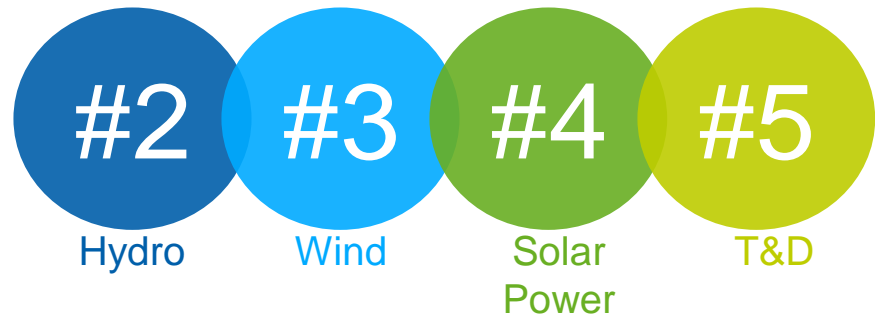
150

> 150 years
Of experience

- Business Lines



- ENR Ranking



Engineering News-Record publishes rankings of the largest construction and engineering firms annually. 2017's ranking.

Experience

Gulf of El Zayet Wind Farm Project

CLIENT

New and Renewable Energy Authority (NREA), Egypt, financed by JICA

LOCATION

Egypt

PERIOD

2012 – 2021

CAPACITY

220 MW
110 units SGRE G80

SERVICES PROVIDED

- Topographical and geotechnical survey
- Design of electrical and civil works
- Preparation of tender documents for the four (4) LOTs (wind turbines, electrical works, civil works, 220 kV substation expansion by 250 MVA)
- Assistance during tendering, tender evaluation, contract negotiations, contract preparation
- Construction, commissioning and EPC contract supervision
- Supervising of three year defect liability, O&M maintenance performance of the wind farm



Experience

Al Rajef Wind Farm Project

CLIENT

Green Watts Alcazar Energy

LOCATION

Jordan

PERIOD

2016 – 2018

CAPACITY

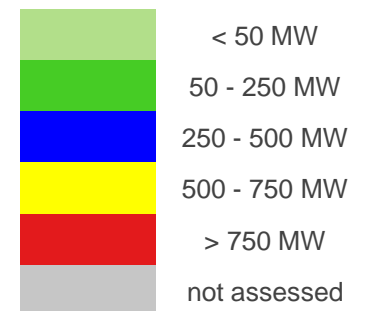
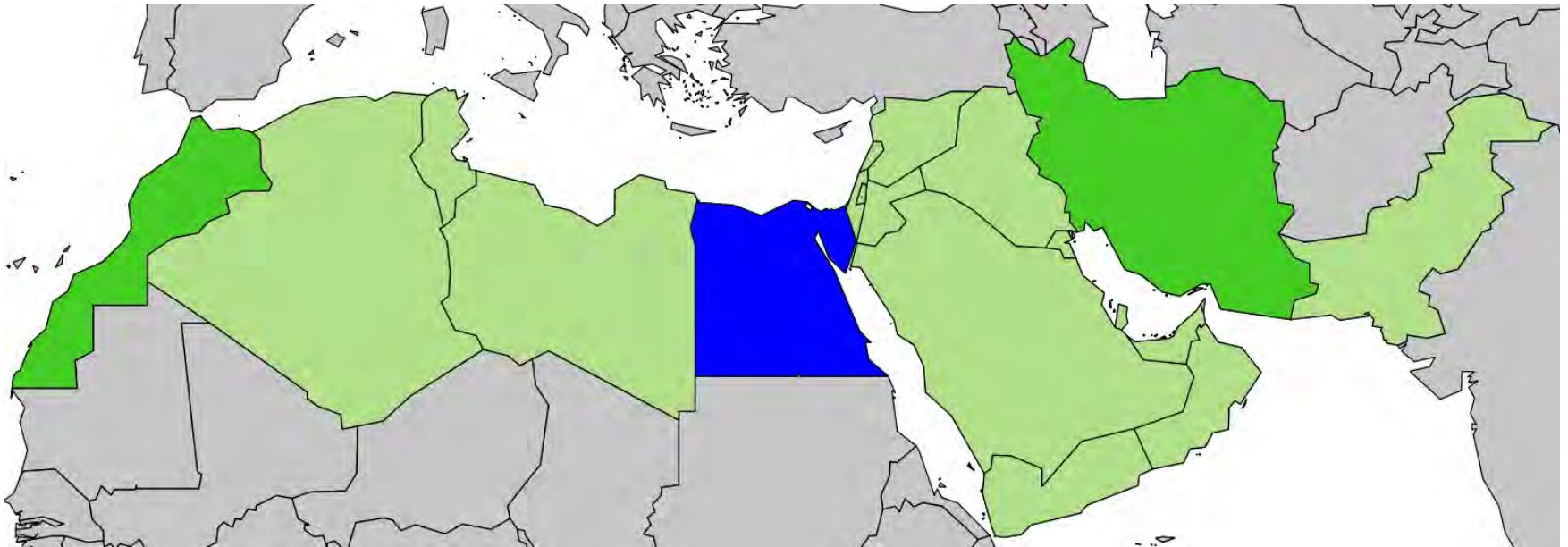
86 MW
SGRE Turbines

SERVICES PROVIDED

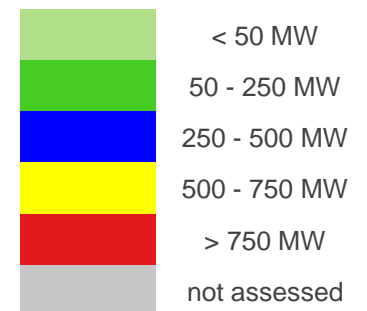
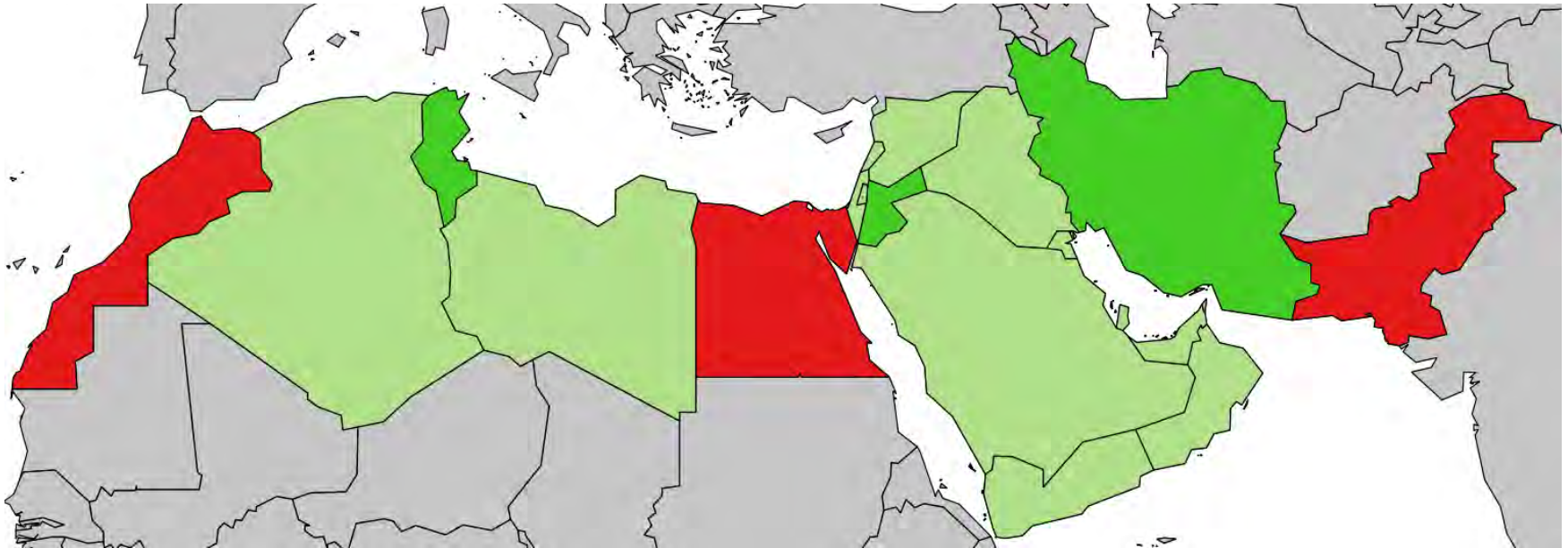
- Review of wind resource assessment
- Assistance during tendering, tender evaluation, contract negotiations, contract preparation
- Detailed Design Review
- Construction and commissioning supervision



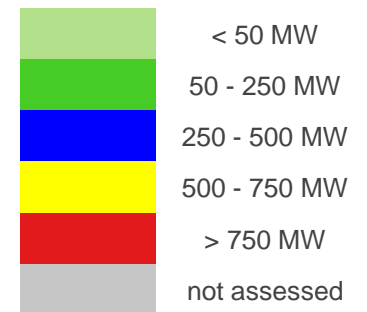
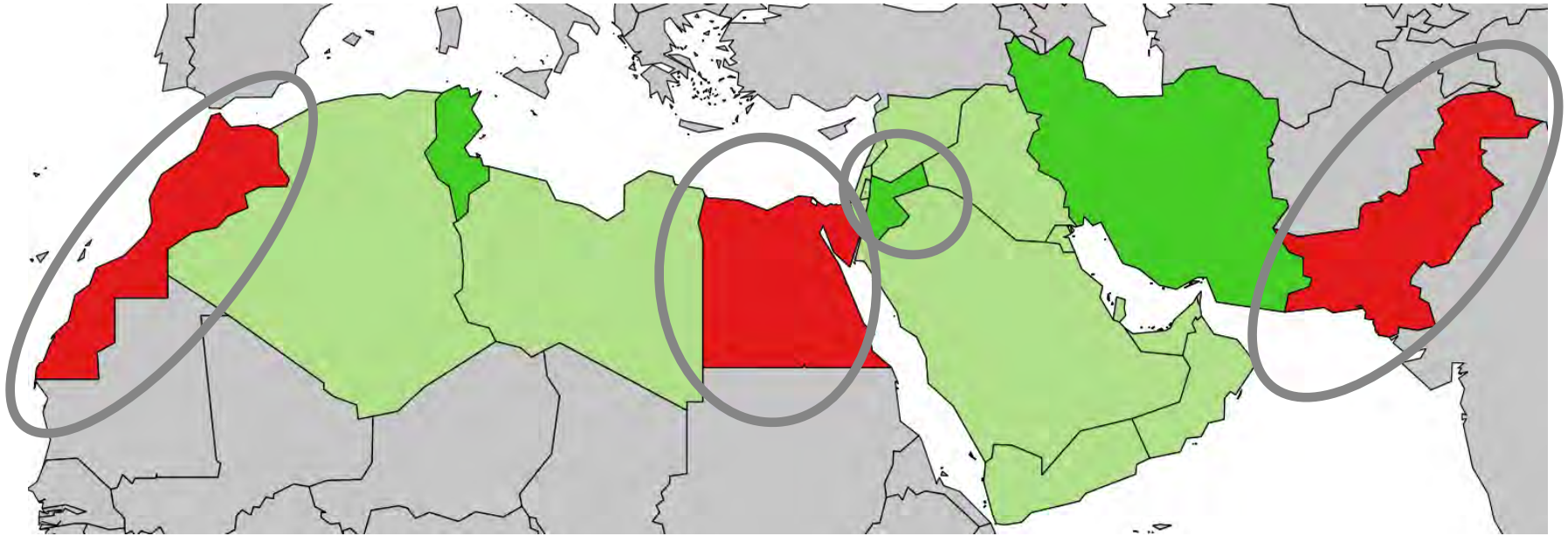
Installed Wind Energy Capacity MENA 2007



Installed Wind Energy Capacity MENA 2017

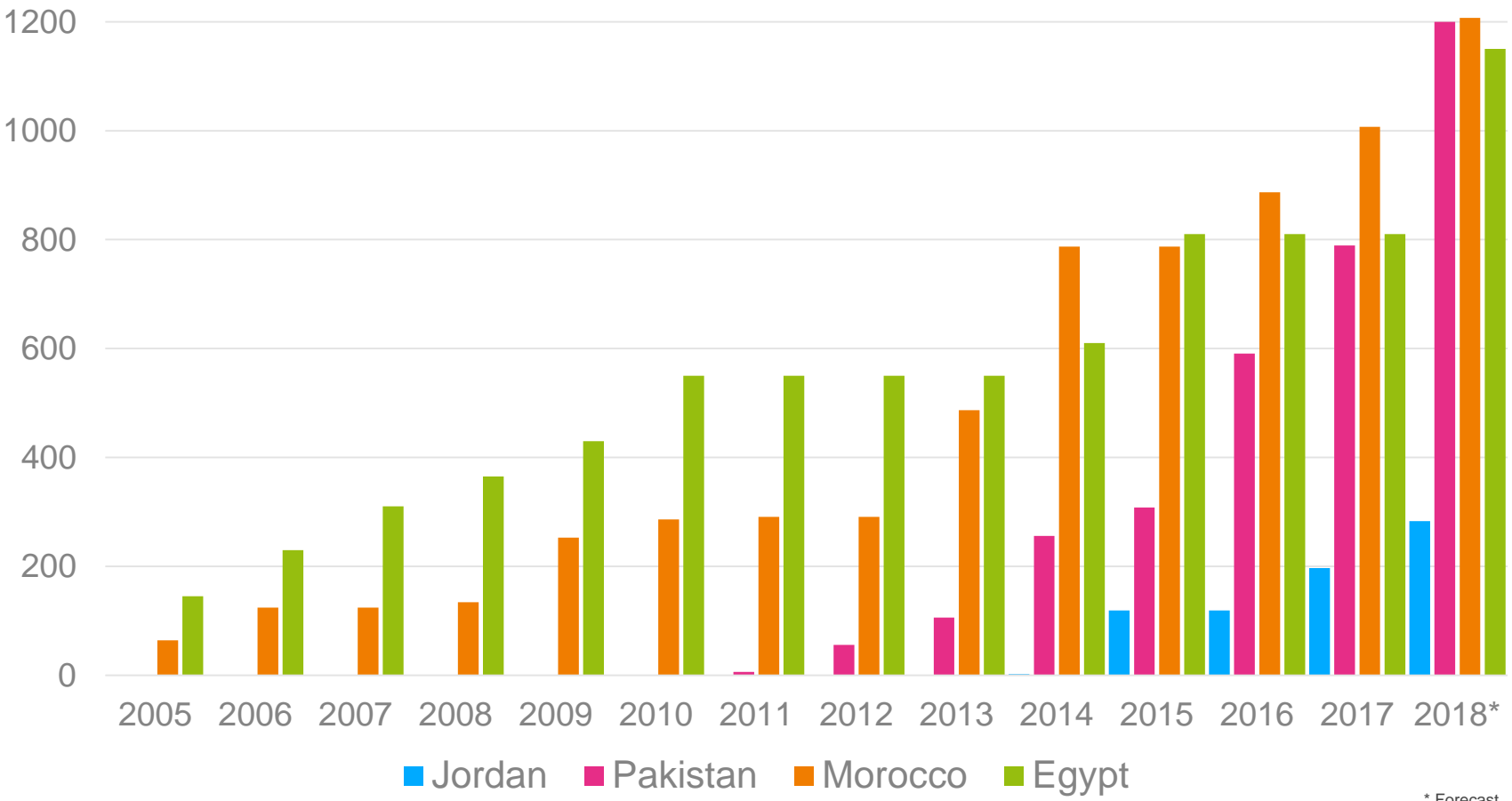


Installed Wind Energy Capacity MENA 2017



Development of Selected Countries

Cumulated installed wind energy capacity [MW]



* Forecast



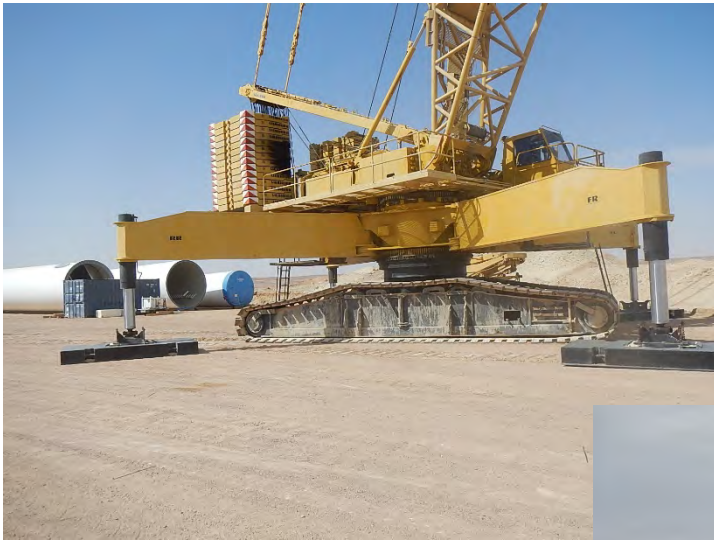
Ownership of Installed Wind Energy Projects

Country	2007	2017	Tendency
Jordan	n/a	Private	Private
Pakistan	n/a	Private	Private
Morocco	Public/Private	Mostly private	Mostly private
Egypt	Public	Public	Mostly private

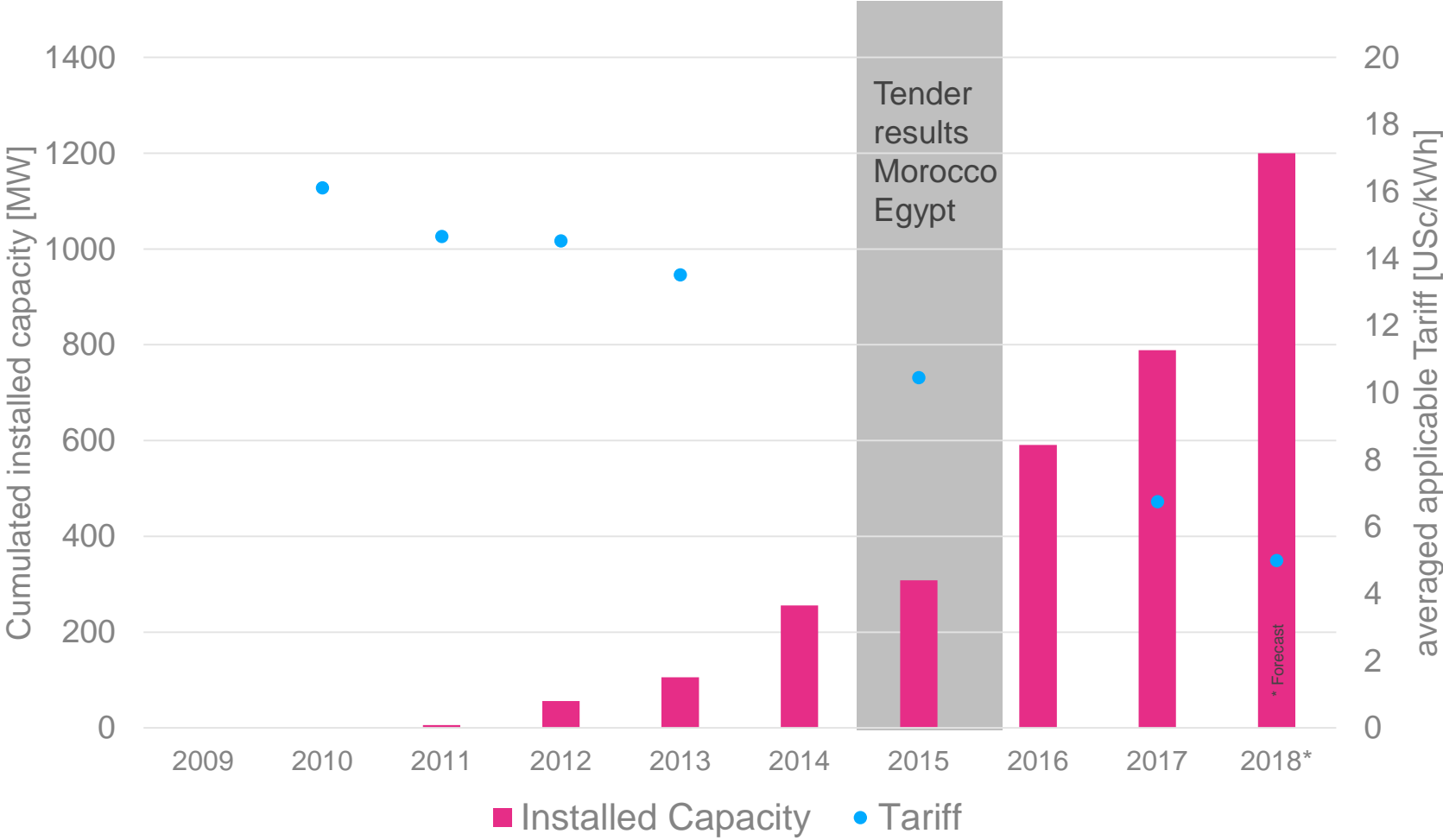
250 MW BOO Project (ENGIE, TTC, Orascom), 25.10.2018

“Ready for Preinstallation, but too much wind today”

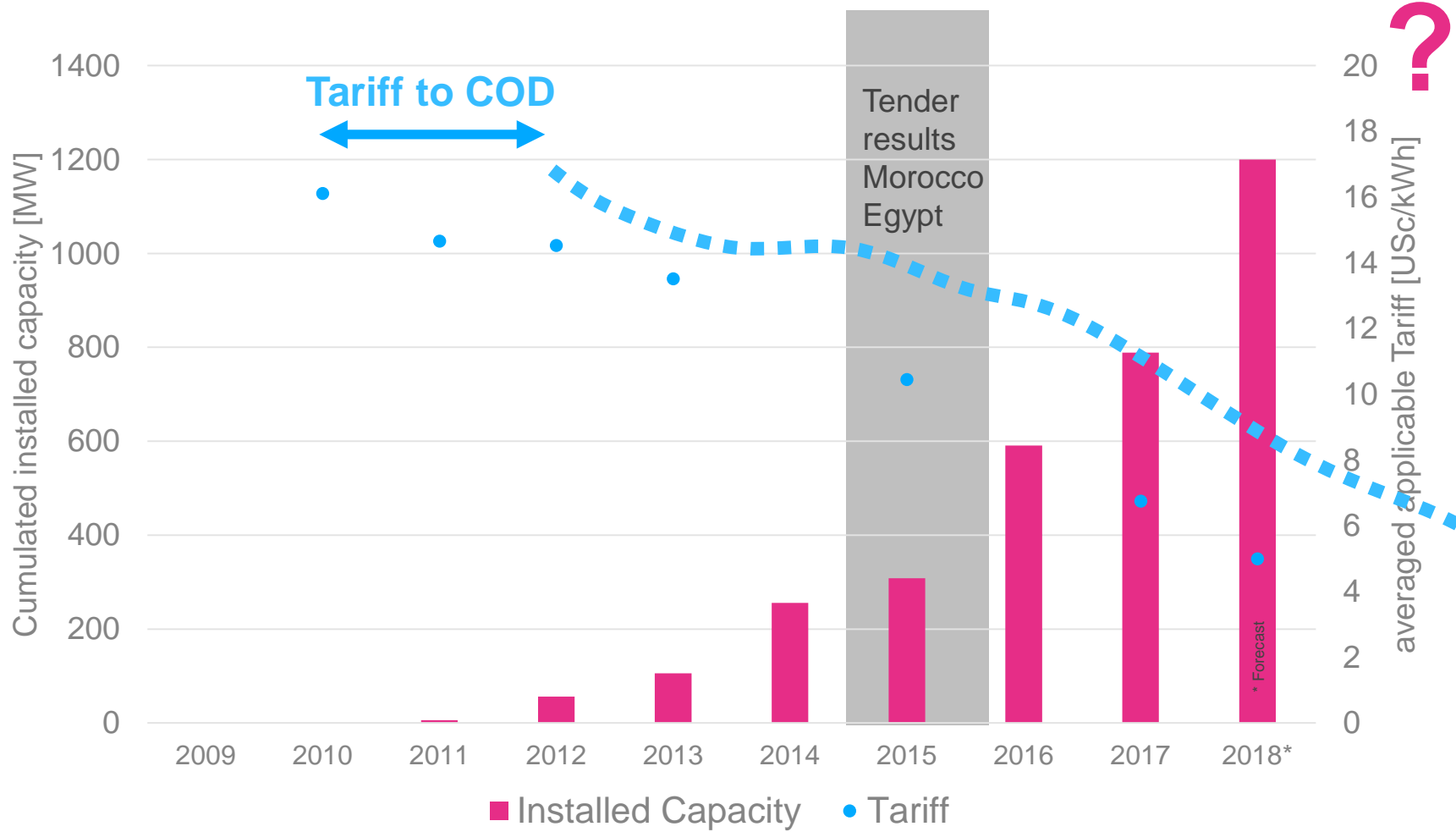
Project Director OE, Bungo Ezawa



Development of Wind Energy in Pakistan



Development of Wind Energy in Pakistan



Jordan – Strategy and Resources

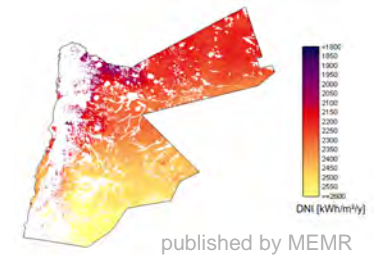
• Energy Strategy of Jordan

- Increasing local energy portion in total energy mix
- 10% renewable energy in the energy mix by 2020
- Improving the flexibility of the grid to handle fluctuating renewable energies

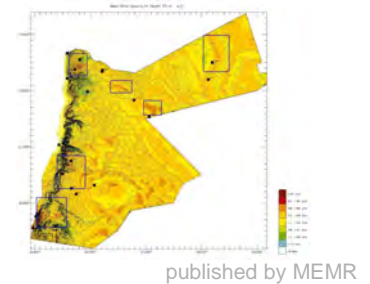
• Renewable Energy Resources in Jordan

- Located within world solar belt: 300-320 days of full sunshine
- Good wind speeds in global perspective: 7 m/s
- Extensive land areas available for large solar and wind energy plants

Solar Map of Jordan



Wind Map of Jordan



Jordan - 4-Track Approach

- Direct Proposal Scheme
For specific projects, e.g. first wind projects, energy storage projects, or for public entities, like utilities, universities
- Competitive Bidding
Several rounds for utility scale grid connected Wind / PV projects are executed, in realisation or planned
- EPC Turn Key Projects
Based on Grants by IFIs / development cooperations
- Small Scale RE Schemes (Net Metering)
Possibility of generation for own consumption and sell of surplus to DisCos at fixed tariff



Stable growth over recent years



Conclusion

- Large wind farms have been successfully established in MENA region
- Good/very good wind resources are available
- Strong tendency towards private projects in several markets, requires reliable conditions
- High interest available of private investors to establish projects under reasonable conditions
- Changes of framework conditions can undermine trust of developers and stop/delay further developments



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