



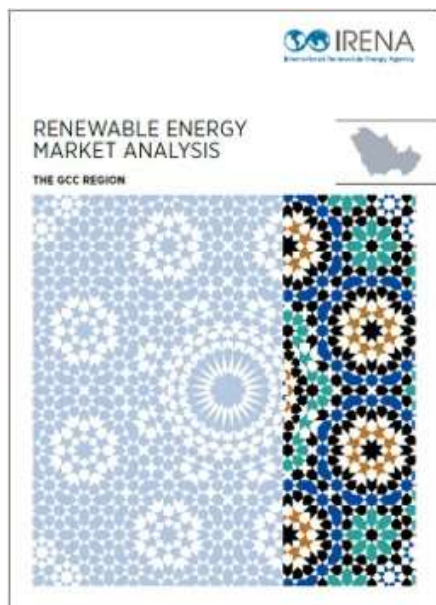
RENEWABLE ENERGY MARKET ANALYSIS

GCC 2019

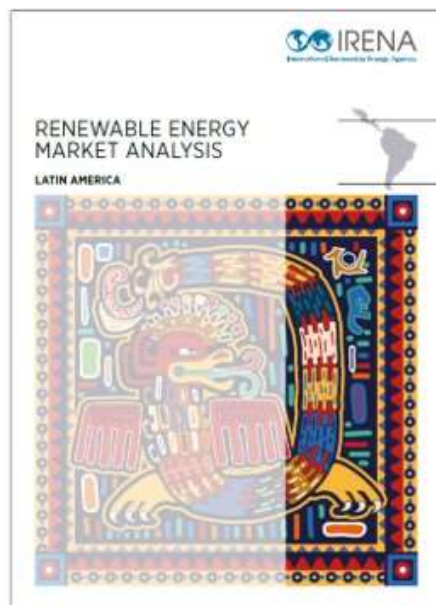




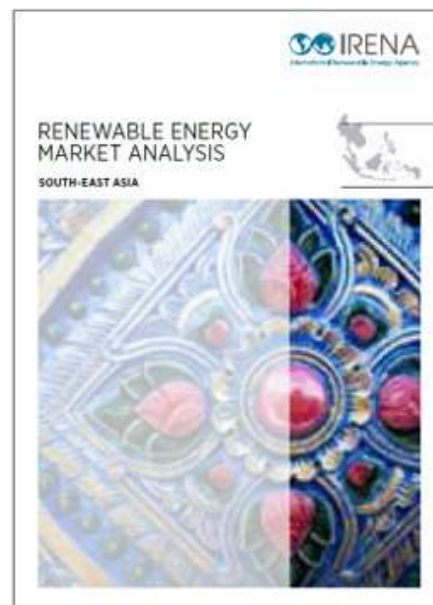
The Renewable Energy Market Analysis Series



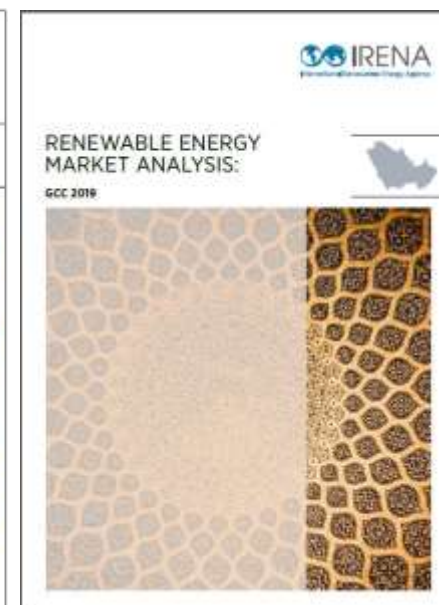
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Energy sector
overview

Renewable energy
landscape

Policy framework

Investment
framework

In-focus
discussion

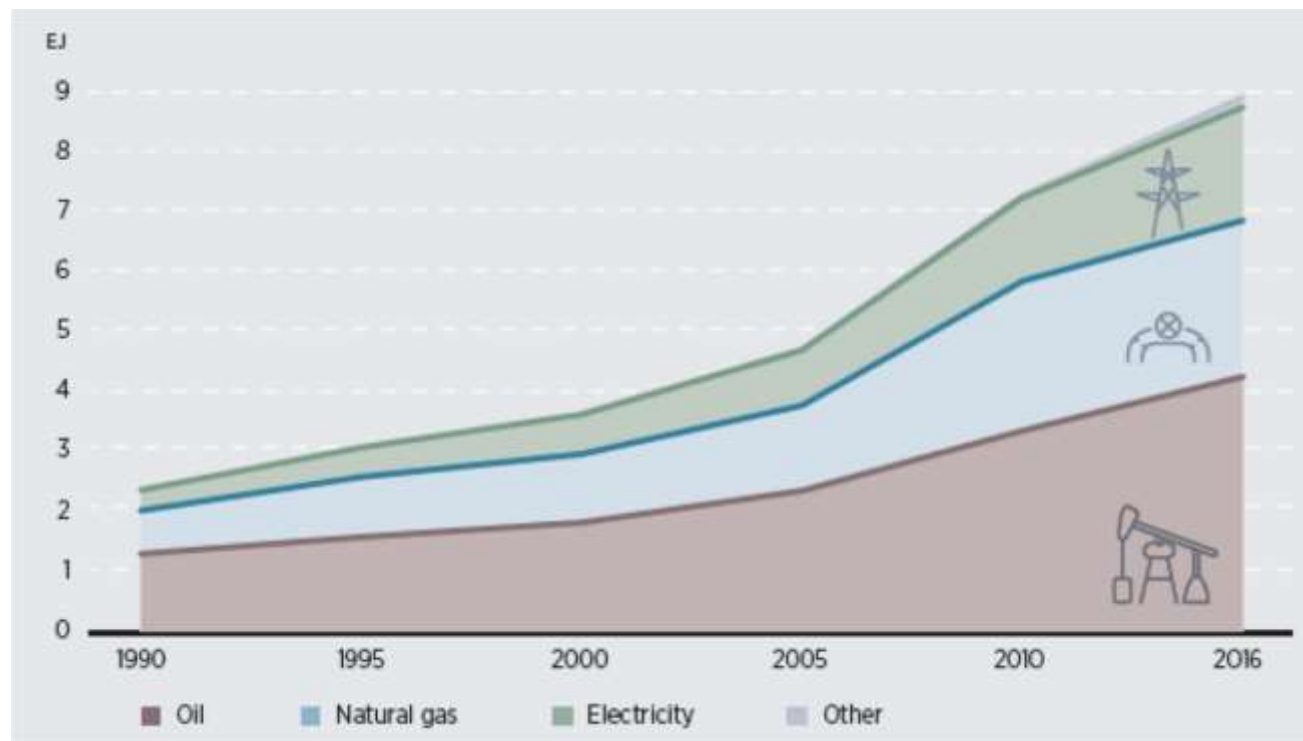
The way forward





Rapidly growing energy demand of the GCC

Total final energy consumption by source in the GCC, 1990-2016



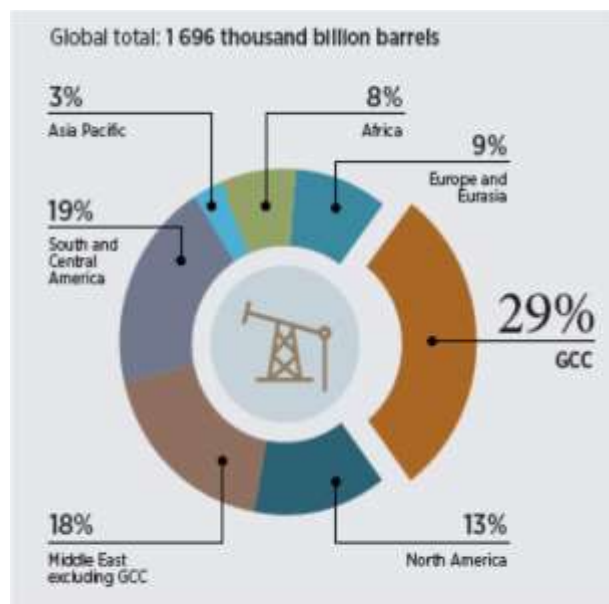
- Total final energy consumption quadrupled since 1990
- Drivers:
 - Economic growth
 - Population growth
 - Fuel and power subsidies
- Energy demand per capita higher in GCC countries than most other industrialised countries
- Energy supply: Oil and natural gas





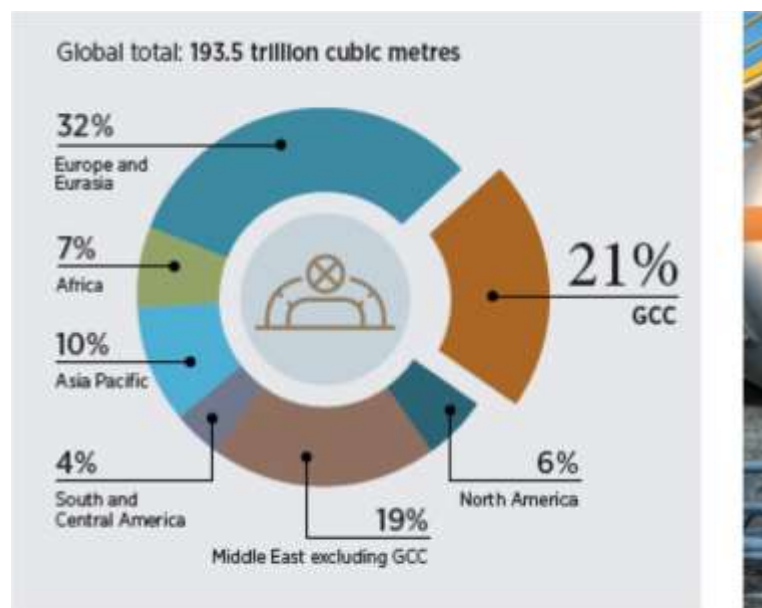
Energy resources: oil and natural gas

Crude oil reserves by region in 2017 as a share of world total



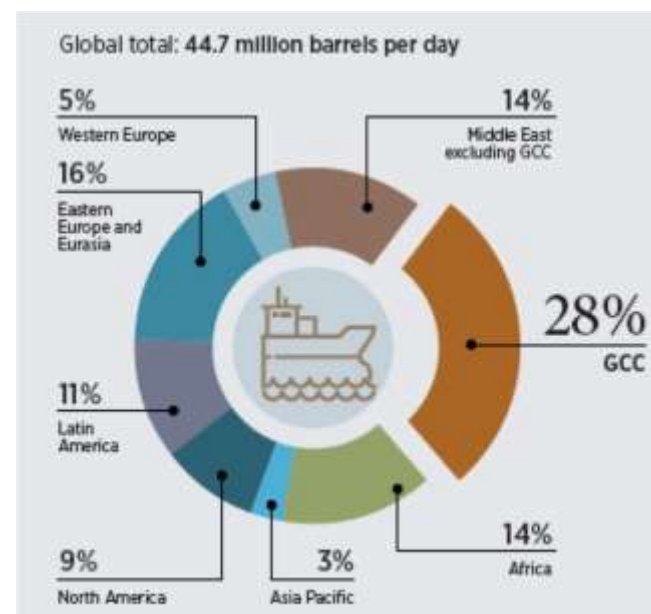
Source: BP, 2018.

Natural gas reserves by region in 2017 as a share of world total



Source: BP, 2018.

Crude oil exports by region in 2017 as a share of world total



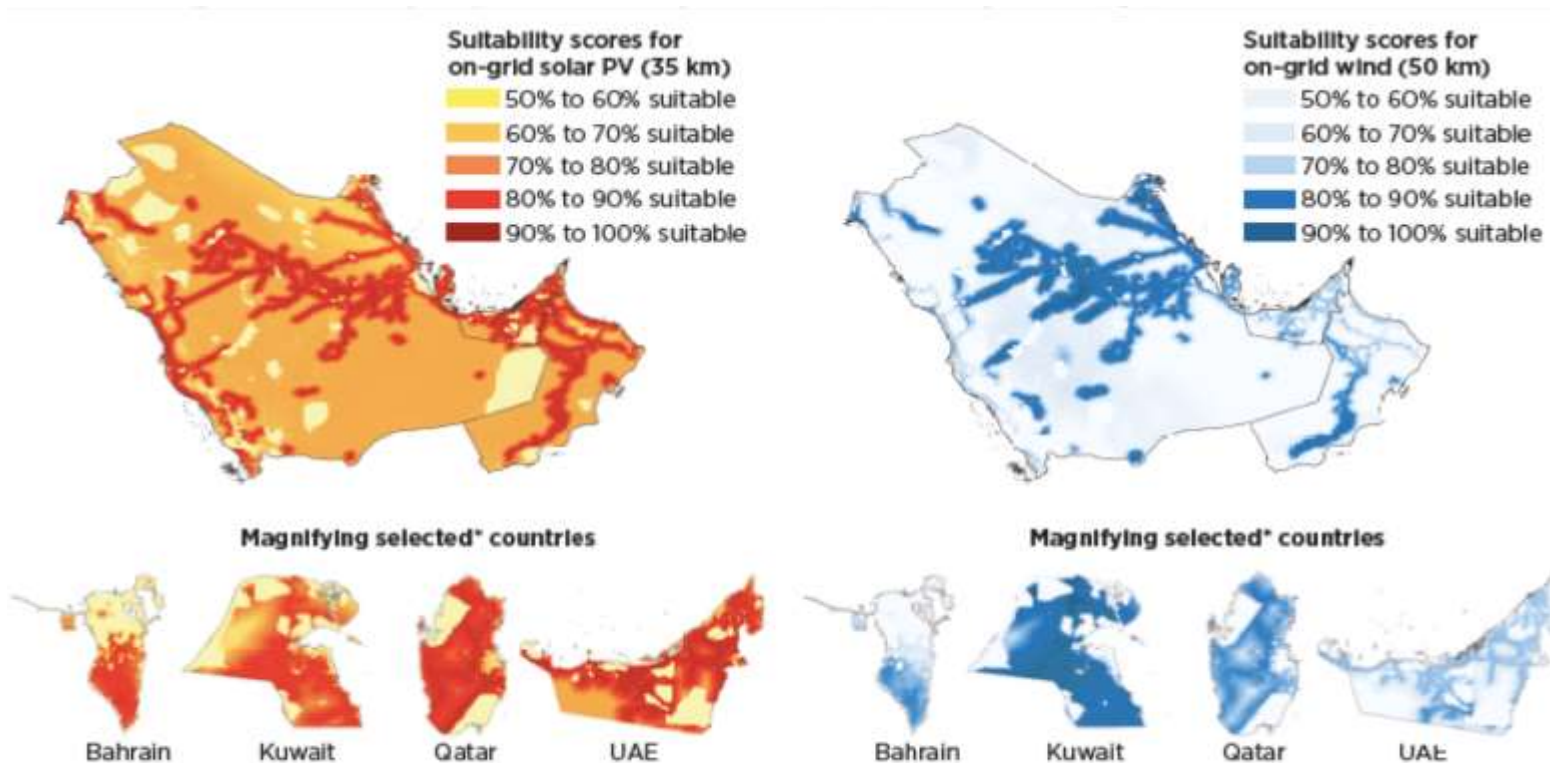
Source: Based on OPEC (2018).





The GCC's promising energy resource: renewables

Suitability analysis results for on-grid solar PV (left) and on-grid wind (right)



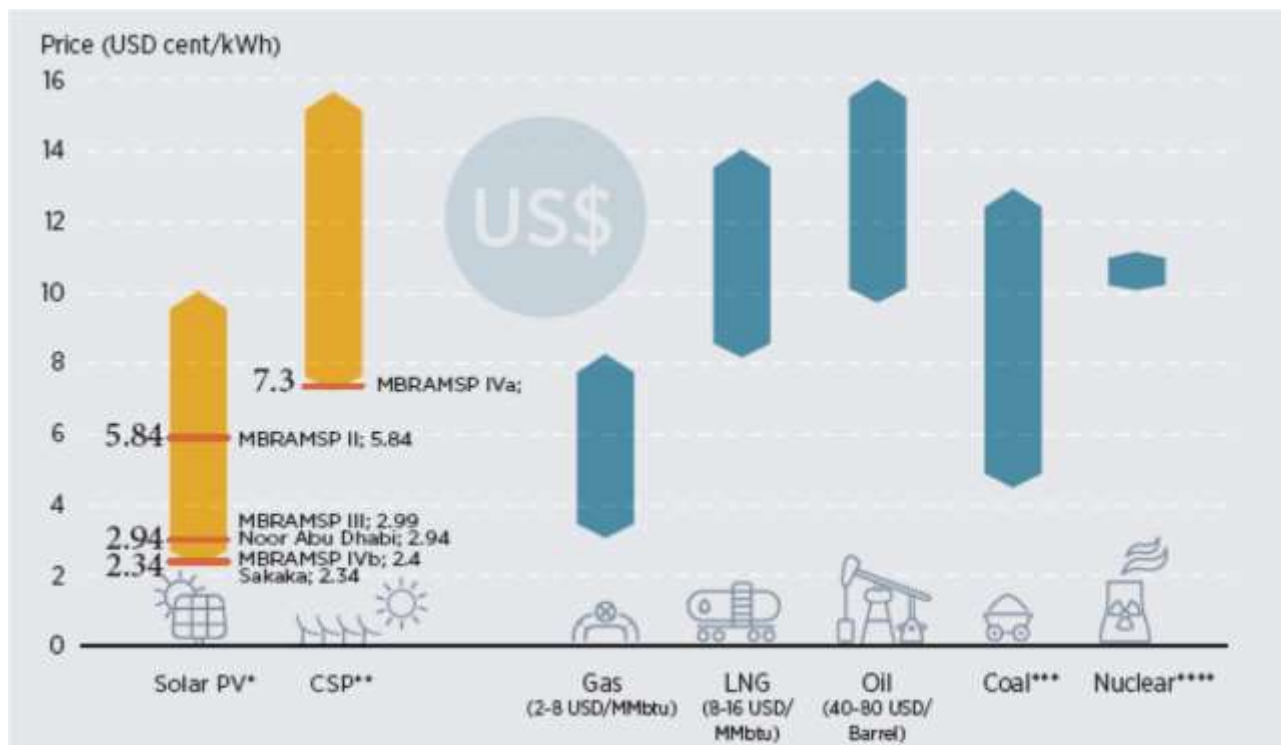
Source: IRENA (2019d), Global Atlas Suitability Map, Solar PV Map Data: World Bank Group, 2018, Global Horizontal Irradiation kWh/m² World 1km, Wind Map Data: Technical University of Denmark Global Wind Atlas, Average Wind Speed 1km at 100m height





Falling prices of renewables usher deployment

Price of utility-scale electricity generation technologies in the GCC



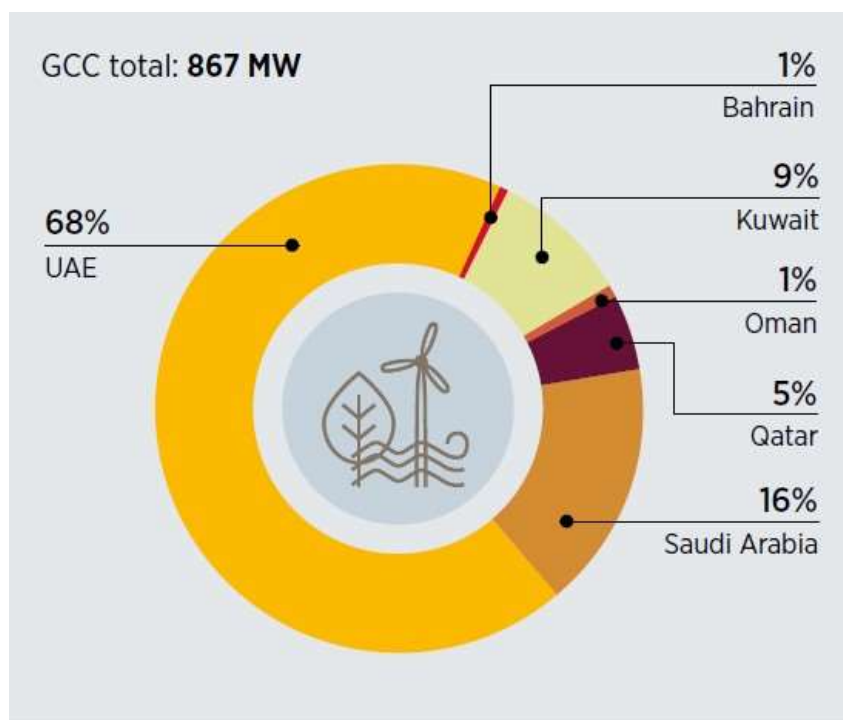
Sources: Derived from Mills, 2018; Channell et al., 2015; Manaar, 2014; Scribblor, 2015.

- **Auctions** in GCC resulted in world record low prices for PV and CSP
- **Key factors for low prices**
 - well-designed auctions
 - favourable financing conditions
 - declining technology costs
- **Investments** in the value chain:
 - project developers
 - manufacturing companies
 - R&D



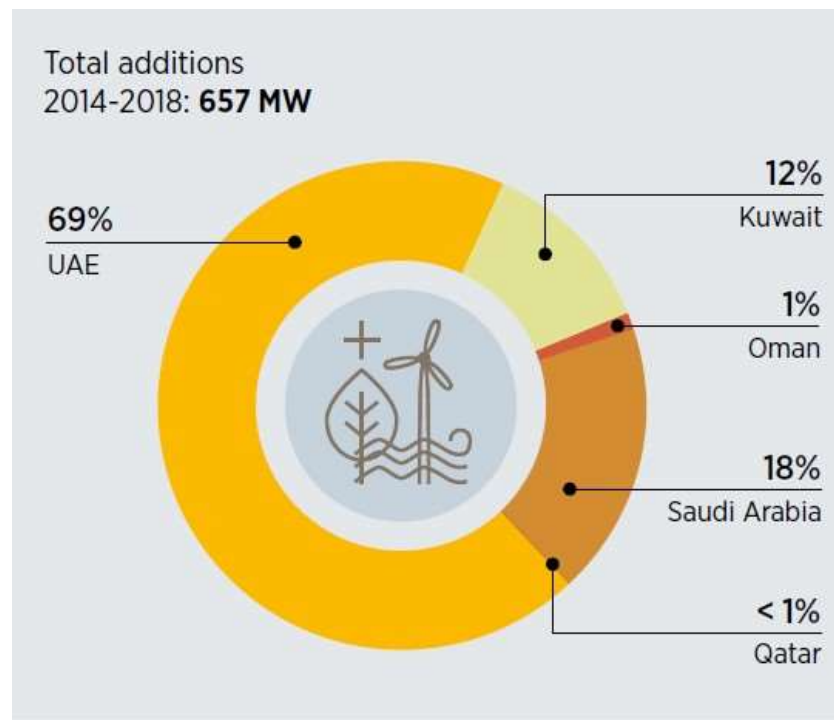
Rapid increase in deployment

Installed renewable energy capacity in GCC countries as a share of the total by 2018



Source: IRENA, 2018a.

Growth in renewable energy capacity in the GCC by country, 2014-2018

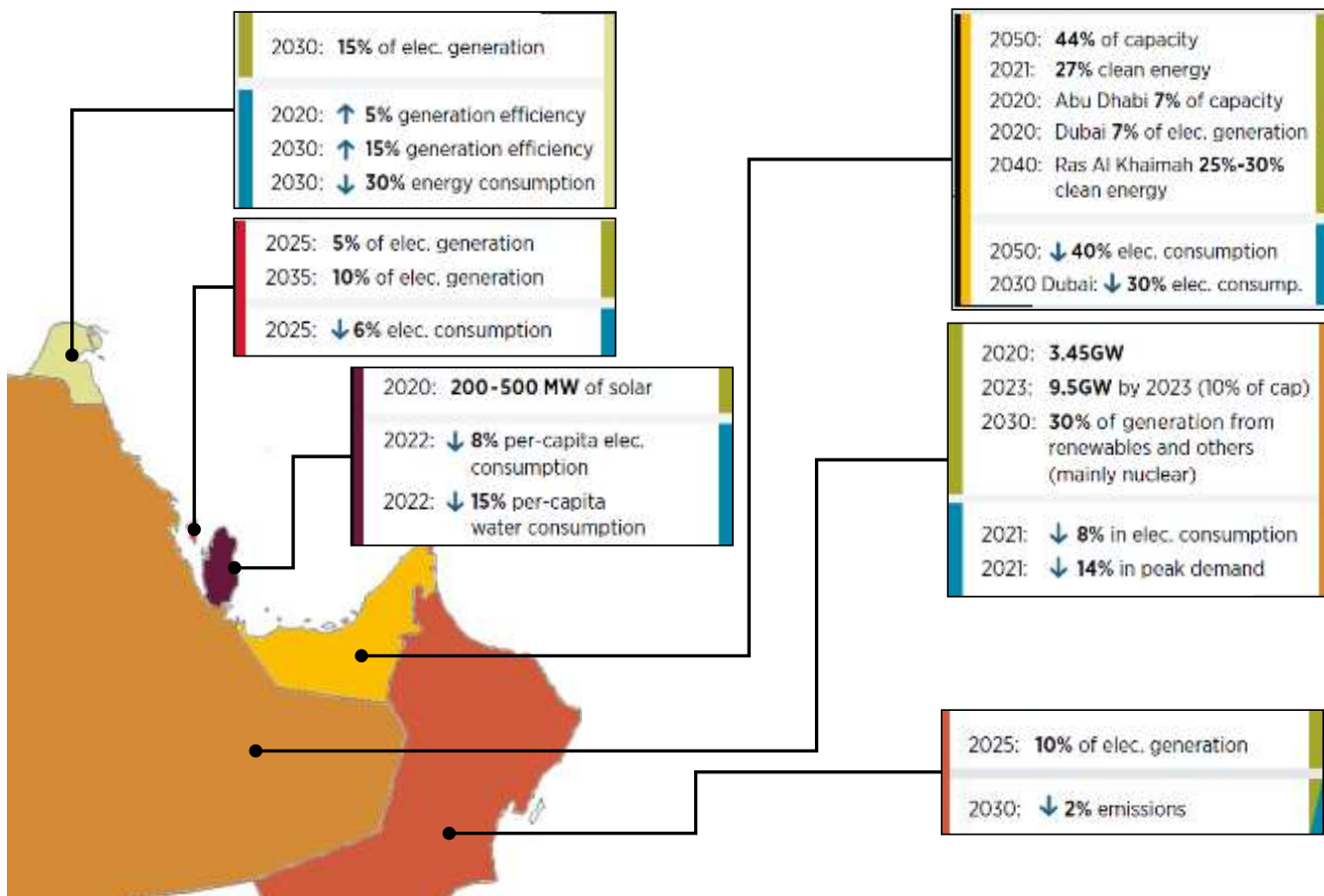


Source: IRENA, 2018a.





Sustainability plans in the GCC



- Strong increase in **renewable energy and energy efficiency plans**, often integrated in national energy and/or climate strategies
- Many targets not yet part of legislation
- **Long-term targets** translating into concrete policies and medium-term projects



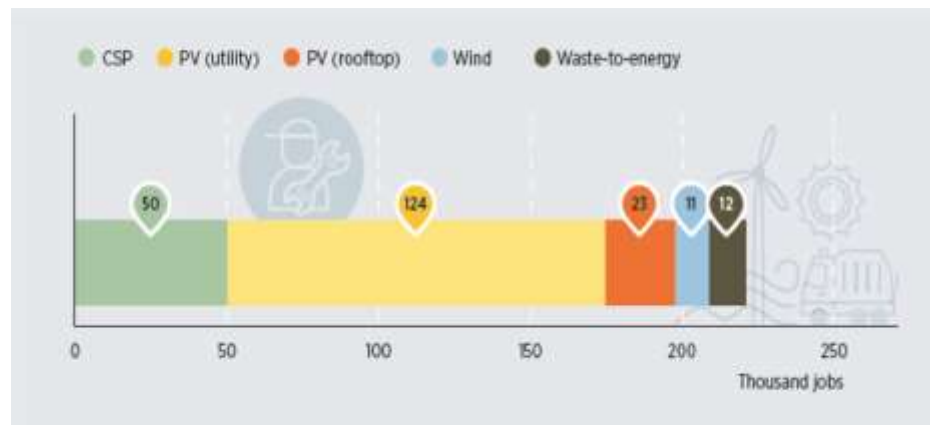
Benefits of renewable energy

Benefits of renewable energy deployment in the GCC



Note: MBOE = million barrels of oil equivalent; BBOE = billion barrels of oil equivalent; MtCO₂ = million tonnes of carbon dioxide.

Renewable energy jobs in 2030, by technology





National and Regional Recommendations Building a regional strategy for industrial development



Axis n°1

Coordinate RE plans and policies

Axis n°2

Support development of local industry

Axis n°3

Promote cross-border trade, R&D collaboration and training

Axis n°4

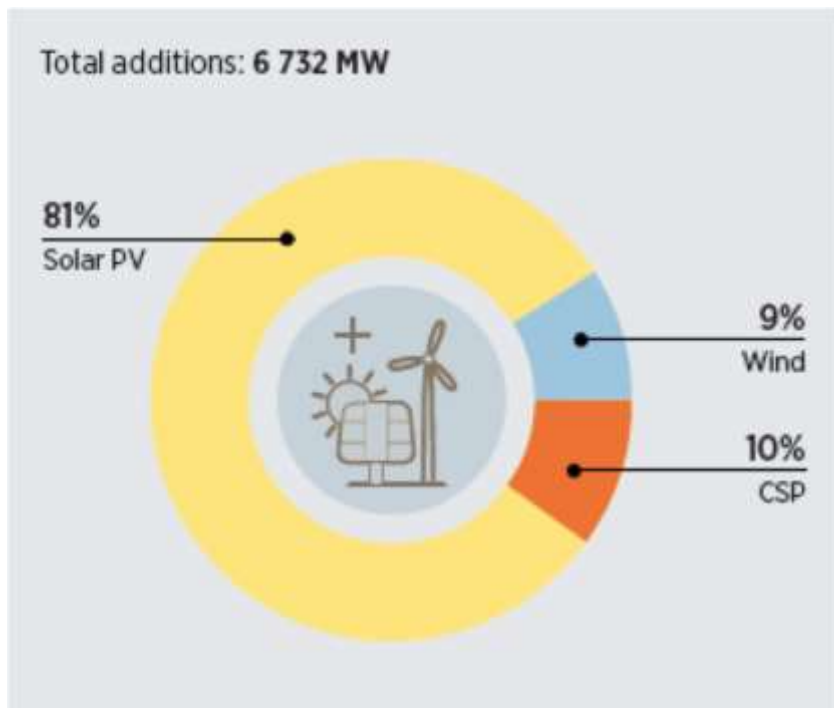
Establish regional financial framework & financing facility





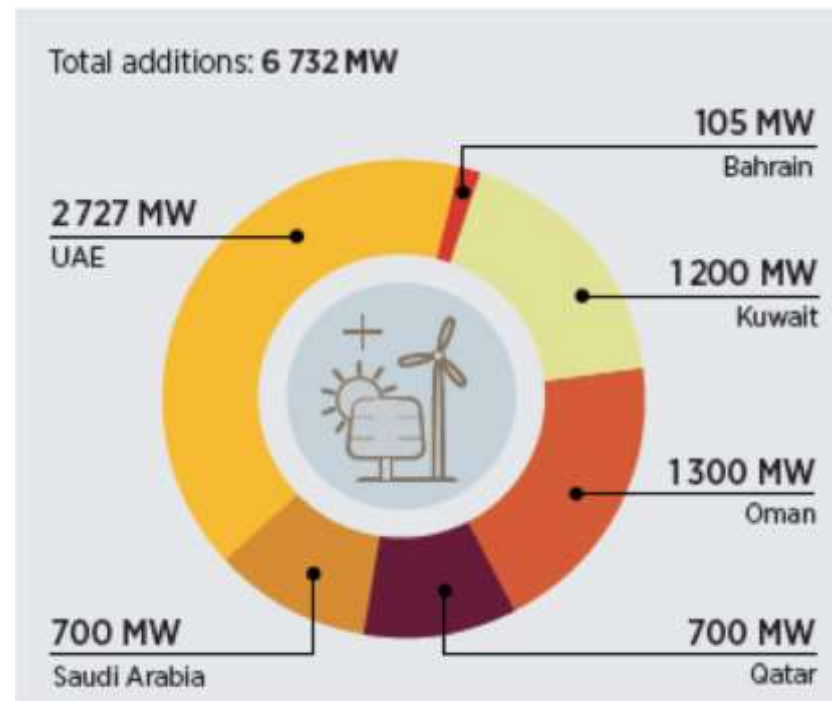
The way forward – rapid deployment

Renewable power planned additions by technology



Source: IRENA, 2018a.

Renewable power planned additions by country



Source: IRENA, 2018a.





The way forward – an evolving energy sector

Market for distributed generation



Renewable energy and energy efficiency



Integrating variable RE in power systems



The overarching role of policy





Thank you for your attention