

Appendix II: Renewable Technologies and their Application in the MENA

Technology	Features	MENA Resource Potential	Cost Profile	Conclusion: Future Role in MENA Energy Mix
Geothermal	(+) Well-established technology (+) Dispatchable; suitable for generating base-load power or year-round supply of heat (also suitable for cooling) (-) Heat content not suitable for long-distance transmission (-) Environmental impact: air, water, landscape	Proven geothermal potential plus (in many cases) existing geological knowledge due to hydrocarbon production	Costs can be competitive with conventional fossil fuels where access to high-temperature geothermal resources exists IEA current cost estimate: US\$50–80/MWh (flash, high temperature); US\$60–200/MWh (binary)	LT Potential in countries with geothermal resources but missing exploration currently hinders establishment of local advantages

Box 1: Renewable energy targets in the MENA Region at End-2013

North Africa

Algeria: 6% of electricity generation by 2015; 15% by 2020; 40% by 2030, of which 37% is solar (PV and CSP) and 3% is wind

Libya: 3% of electricity generation by 2015; 7% by 2020; 10% by 2025

Morocco: 42% of installed power generation capacity by 2020

Tunisia: 11% of electricity generation by 2016; 25% by 2030; 16% of installed power capacity by 2016; 40% by 2030

East Mediterranean

Egypt: 20% of electricity generation by 2020, of which 12% is wind

Israel: 5% of electricity generation by 2014; 10% by 2020

Jordan: 7% of primary energy by 2015; 10% by 2020

Lebanon: 12% of electrical and thermal energy by 2020

Palestine: 25% of energy from renewables by 2020; 10% (or at least 240 GWh) of electricity generation by 2020

Syria: n/a

The Gulf States

Bahrain: 5% by 2020

Iran: n/a

Iraq: 2% of electricity generation by 2016

Kuwait: 5% of electricity generation by 2015; 10% by 2020

Oman: 10% of electricity generation by 2020

Qatar: At least 2% of electricity generation from solar energy sources by 2020

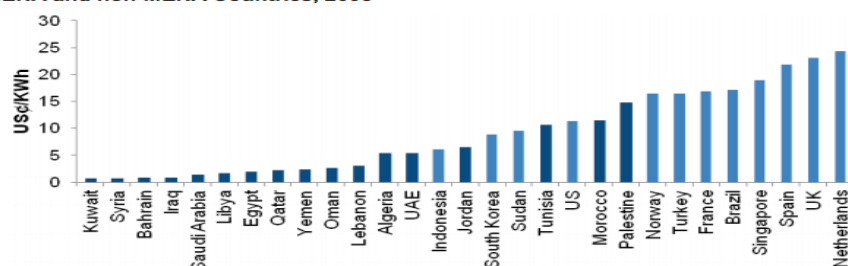
Saudi Arabia: 50% of electricity from non-hydrocarbon resources by 2032: 54GW from renewables (of which: 41GW from PV and CSP, 9GW wind, 3GW waste-to-energy, 1GW geothermal), 17.6GW from nuclear

UAE: Dubai: 5% of electricity by 2030; Abu Dhabi: 7% of electricity generation capacity by 2020

Yemen: 15% of electricity generation by 2025

Source: REN21/ISEP (2013); Author.

Figure 6: Cross-Country Comparison of Average Residential Electricity Prices in Selected MENA and non-MENA Countries, 2008



Source: El-Katiri, Fattouh and Segal (2011); EIA (2013)