

MARKET OPPORTUNITY

Korea



OVERVIEW

- A turnaround in South Korea's energy policy will see further movement towards green and renewable energy. Renewable energy, currently less than 5% of total power generation, is planned to increase to 11.7% by 2029 according to the 7th Basic Plan for Long-Term Electricity Supply and Demand (July 2015).
- €1.5 billion was invested into the renewable energy sector in 2015. In 2017, forecasted public investment will reach €3.75 billion.
- Korean President Moon's government plans to reallocate the current coal and nuclear energy subsidies into the renewable energy industry, as well as impose high taxes on coal and nuclear power, increasing prospects for natural gas and renewable energy producers.
- The Korean Renewable Portfolio Standard (RPS) obliges power generators to generate 7% of total electricity from renewable energy source by 2020 (from 4.0% in 2017).

Top Business Opportunities for EU companies

1. Specialising in **Low-carbon Power Generation**: Energy Storage Systems (ESS); Ultra-Supercritical (USC) Generation Systems; Mega Gas Turbines; Carbon Capture and Storage (CCS); Ultra High-Voltage Direct Current (HVDCs), and; Low-Voltage Direct Current (micro-grids)
2. Offering technologies and solutions for **Energy Prosumers**: Smart Grids; Zero-Energy Buildings; Eco-Friendly Energy Towns, and; Household PVs
3. Systems-based technologies: **Convergence Technology** Building Energy Management Systems (BEMS); Factory Energy Management Systems (FEMS), and; Home Energy Management Systems (HEMS)
4. Specialising in Environmentally-Friendly Refrigerants
5. Offer cost-reduction for **Self-Sustaining Power Generation** Offshore Wind Power; Solar PV; Energy Efficient Electric Grid(lines), and; Intelligent Power ICT-Systems
6. Open to collaboration with domestic companies on **Demand Response Market or Virtual Power Plants**
7. Offering technologies in the **Waste-to-Energy** sub-sector, including waste energy recycling

Sector Characteristics

- **Renewable Portfolio Standard (RPS)** is the overarching policy requiring power generators above 500 MW in scale have to generate a portion of electricity from green energy sources (MOTIE²).
- Plans to foster a "**New Energy Industry**" are comprised of Energy Prosumers, Low-Carbon Development, Electric Vehicles, and Environmentally-friendly processes.
- **Solar photovoltaic (PV)** and **Wind power** energy sub-sectors are considered as the next generation of growth and expect to have a year-on-year increase in their share of energy portfolio.
- **Waste-to-Energy** sub-sector holds the largest share of the energy portfolio, where a 50% jump in demand is expected between 2017 and 2019.
- **Increased demand for ESS** products and solutions to foster New Energy Industry; strong business opportunities for this are being promoted in Korea.
- Various **national level attempts to foster green energy market activation**, such as Naju Energy Valley and Pohang's New Renewable Energy Green Village.

Seoul
(10.4 mn)

Investment by 2020
€ 35 billion

 Job creation
14,000

5th largest renewable
energy powerhouse
by 2035

Sources:

1. 2nd Korea Energy Master Plan (January 2014)
2. MOTIE (Ministry of Trade, Industry & Energy)



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Drivers

- Public concerns over air pollution and nuclear safety, coupled with a clear commitment from President Moon's newly inaugurated government to cut carbon emissions and move to clean energy
- Increasingly favourable investment climate for renewables and natural gas include increased subsidies, plans to shut down/halt coal-fired and nuclear plants and impose higher taxes on coal and nuclear
- Need to ensure energy security will open receptiveness to new solutions and technologies for affordable electricity
- Plans to transform renewable energy market from "government-led" to "private public partnership"-led model will enhance the marketability of renewable energies (technology level driven market competition)

Barriers

- Importance of base load energy, which are coal and nuclear power plants, still needs to be clearly addressed
- Relatively low price for the electricity produced from conventional energy sources
- Government roadmap for the new energy policy is still being concretised (at the time of publication) – regulations must clearly and realistically ensure energy security and the assure affordable energy
- Uncertainty in existing regulations on new and renewable energies
- Cultural customs and norms that are unique to doing business in Korea

Technology	Key Players	Core competence	Possible Needs
1 Solar Photovoltaic	 Hanwha	Vertical value chain integration	<ul style="list-style-type: none"> - Lack of effective technologies for operating and maintaining solar PV industry - High quality construction technology - Power generation forecast, construction evaluation - Partnership with overseas companies to win overseas projects - From 2017, new businesses for constructing 2.3GW scale solar and off-shore wind energy plants are to be implemented
	 OCI	Polysilicon, BOS	
	 S-Energy	O&M, PV module	
2 Wind Energy	 UNISON	Turbines, O&M, EPC	<ul style="list-style-type: none"> - Lack of competitiveness in the domestic wind energy related technologies - Lack of effective technologies for operating and maintaining wind industry
3 Waste-to-Energy	 (주)천일에너지	Wood Chips	<ul style="list-style-type: none"> - High demand for biomass energy in IPP and GENCOs to respond to RPS - Lack of price competitiveness (expensive) in Korean biomass energies
4 Energy Storage System (ESS)	 LG Chem	LiB battery (ESS)	<ul style="list-style-type: none"> - Lack of competitiveness in large scale ESS technologies in Korea - More Renewable Energy Certificate (REC) will be given to solar energies which apply ESS - Energy stored in ESS is permitted to be sold in the general consumer market
	 SAMSUNG SDI	Mid-large sized batteries	
5 Energy Management	 KEPCO	Smart Grid, Virtual power plant	<ul style="list-style-type: none"> - AMI (Advanced Metering Infrastructure) - Smart meter - Energy efficiency management in buildings

Sources: 2nd Korea Energy Master Plan (January 2014); 7th Basic Plan for Long-Term Electricity Supply and Demand (July 2015)