

MARKET OPPORTUNITY

Korea

OVERVIEW

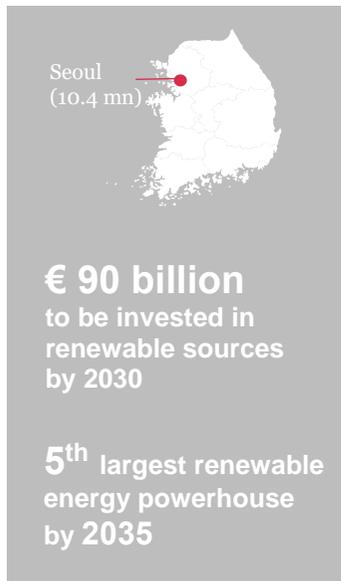
- This year, Korea announced plans to expand the share of renewable energy sources to 35% by 2040 (more than 4 times the current 7.6%).
- Increased efficiency will mark energy consumption policy. By 2040, government plans to strengthen demand management from the industrial, transport and construction sectors while streamlining the pricing system to improve energy efficiency by 38% and reduce demand by 18.6%.
- € 3.4 billion will be invested into a new power market ecosystem, according to the 2nd Basic Plan of Smart Grids in Korea (2018-2022). There will be a sharp focus on customer-centricity and smart applications.
- Strong opportunities for European companies within developments continuing and foreseen for Energy Valley, Korea's first energy industrial complex and designated as the hub for the country's new energy industry.

Top Business Opportunities for EU companies

1. Offering technologies and solutions for **smart power grids**:
Digital substations, smart distribution, wide area monitoring systems (WAMS), wide area control systems (WACS), smart electricity equipment, smart grid total engineering solutions
2. Offering technologies and solutions for **smart consumers**:
Zero-energy and green buildings, eco-friendly energy towns and household photovoltaics (PVs), green internet data centres (IDCs), green factories, building energy management systems (BEMS), factory energy management systems (FEMS), advanced metering infrastructure application systems
3. With energy solutions for **smart transportation**:
Power conversion systems for vehicle-to-grid systems (V2G), V2G systems, mobile asset management systems (AMS), medium and large electric vehicles (EVs), EV virtual power plants, advanced EV systems, hydrogen powered cells
4. Operating within the value chain for **smart renewables**:
Large-scale renewable power generation-connected stabilisers, operational equipment for distribution network micro grids, power conversion devices for medium and large scale storage systems, smart renewable power generation connected facilities, micro-grid systems
5. Offering solutions to create and support **smart electricity services**:
Real-time demand response solutions, smart power market solutions, integrated power market and international power trading solutions and applications
6. Other technologies and solutions in **floating offshore wind, energy-efficient PV modules, recycling and reprocessing of PVs, reuse of ESS batteries, next gen ESS batteries with low fire risk and power conversion system (PCS) technologies to improve reliability and safety**

Sector Characteristics

- The Renewable Portfolio Standard (RPS) requires power generators above 500 MW in scale to generate a portion of electricity from green energy sources.
 - Year-on-year requirements: 6% (2019), 7% (2020), 8% (2021), 9% (2022), 10% (2023).
 - Renewable Energy Certificate (REC) multiples for waste and biomass combustion to reduce to zero in the coming years.
- The Renewable Energy 3020 Implementation Plan (2017) continues to take effect. Plans to foster a Renewable Energy Industry include demand response, energy prosumers, electric vehicles, solar and wind power. Additional tasks include expanding PV use in urban areas, agriculture and large-scale projects. 2019 marks the start of the 2nd phase of Korea's plan, including:
 - Activation of a power brokerage market
 - Fostering future energy industries such as renewable energy-hydrogen efficiency linkages. 2040 foresees 2.9 million hydrogen fuelled cars and 10.1GW fuel cells as well as a diversified production method for green hydrogen
 - Improvements to the power-gas-heat market system to accelerate energy transfer and the establishment of an energy big data platform to promote new industries.



Seoul
(10.4 mn)

€ 90 billion
to be invested in
renewable sources
by 2030

5th largest renewable
energy powerhouse
by 2035

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**GREEN
ENERGY
TECHNOLOGIES**

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 (PV)	 Hanwha	Vertical value chain integration	<ul style="list-style-type: none"> - Lack of effective technologies for O&M in the 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 2.3 GW scale solar and off-shore wind energy plants will be implemented
	 OCI	Polysilicon, BOS	
	 S-Energy	Operations & Maintenance (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 Systems (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 Certificates 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 to large sized batteries	
5 Energy Management	 KEPCO	Smart grids, virtual power plants	<ul style="list-style-type: none"> - Advanced metering infrastructure - Smart meters - Energy efficiency management in buildings