

Korea's Smart Grid Roadmap 2030

Laying the Foundation for Low Carbon, Green Growth by 2030



A Smart Grid refers to a next-generation network that integrates information technology (Smart) into the existing power grid (Grid) to optimize energy efficiency through a two-way exchange of electricity information between suppliers and consumers in real time. Building a Smart Grid can induce reasonable energy consumption, enable the provision of high-quality energy, and provide a wide array of added services. Since Smart Grids are open systems, it is more feasible to incorporate into them clean, green technologies such as renewable energy and electric vehicles. Smart Grids have drawn keen attention and rigorous participation from countries around the world because their deployment addresses climate change issues, improves energy efficiency, and creates new growth engines. Korea is no exception. Korea has outlined its vision in a policy to build a low-carbon, green-growth economy through a Smart Grid by 2030.



Goals by Phase

	Phase 1 (2010~2012) Demonstration Complex Development and Operation (Technical Verification)	Phase 2 (2013~2020) Wide Area Extension (Consumer Intelligence)	Phase 3 (2021~2030) National Smart Grid Completion (Whole Power Grid Intelligence)
Smart Power Grid	Smart Power Grid-based technology development	Urban Smart Power Grid development	National unit's Smart Power Grid operation
Smart Consumer	Real-time price information infra development	AMI-based DR system development	AMI-based automatic power trading
Smart Transportation	Demonstration complex charging infra development	V2G and VPP technology acquisition	EV and charging service generalization
Smart Renewables	Development and demonstration of Smart Renewables Generation Platform	Smart new renewables-linked technologies acquisition	Large scale's new renewables supply infra development
Smart Electricity Service	RTP and real-time demand responsive resources operating system development	Smart power trading system development	Integrated power trading and service development

Implementation Roadmap in Five Sectors

· Smart Power Grid

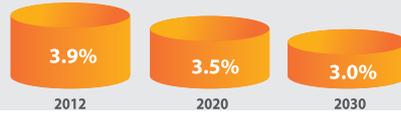
Open power grids will be built to allow various kinds of interconnections between consumption and supply sources. The roll-out of such networks will pave the way for new business models, and the building of a power grid malfunction and automatic recovery system that will ensure a reliable and high quality power supply.

Target level by key index

Blackout time per household



Power transmission & distribution loss rate



· Smart Consumer

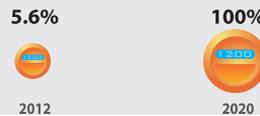
It aims to encourage consumers to save energy by using real-time information and producing smart home appliances that operate in response to electric utility rates.

Target level by key index

Maximum power reduction



Smart meters and AMI penetration rate



· Smart Transportation

It aims to build a nationwide charging infrastructure that will allow electric vehicles to be charged anywhere. It also establishes a V2G (Vehicle to Grid) system where the batteries of electric vehicles are charged during off-peak times while the resale of surplus electricity takes place during peak times.

Target level by key index

Total number of EV distributed

(Unit: 1,000, cumulative)



Quick-charging stations

(Unit: Number, cumulative)



· Smart Renewables

It aims to build a smart renewable energy power generation complex across the nation by rolling out microgrids. This will ultimately lead to the emergence of houses, buildings, and villages which can achieve energy self-sufficiency through the deployment of small-scale renewable energy generation units in every end-user premise.

Target level by key index

Renewable energy ratio



Household electricity energy self-sufficiency ratio



· Smart Electricity Service

With the launch of a variety of energy-saving electricity rate plans, this service aims to improve consumers' right to choose by satisfying their different needs. In addition, it wants to deliver a wide array of added electricity services through the marriage of electricity and ICT, and to put in place real-time electricity trading system for the transactions of electricity and derivatives.

Target level by key index

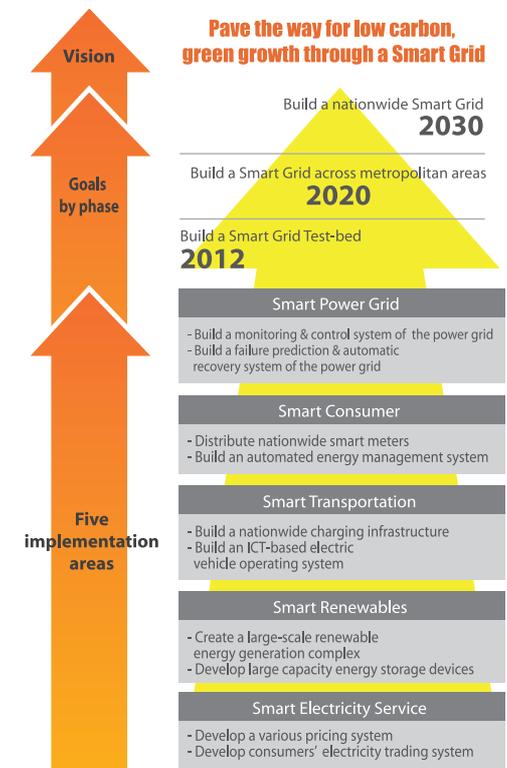
Consumers' right to choose their electricity rate plan



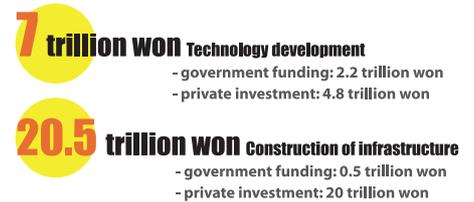
Market participation rate of consumers



Vision and Goals of Korea's Smart Grid



Investment Plan for the Roadmap Implementation



Expected Effects in 2030

QBM's simulation model was used for this projection. Index reflects step-by-step goals in five areas presented in the roadmap)



For more information, visit www.smartgrid.or.kr

CONTACT : jcsn@smartgrid.or.kr Tel : +82-2-6009-4941 Fax : +82-2-6009-4949
18F Korea Technology Center, 305 Teheranno Gangnam-gu, Seoul 135-513, Korea