

## South Korea's National Basic Plan for New and Renewable Energies

Hwang In-Ha, Senior Researcher  
 Energy Demand, Supply and Forecast Analysis Group  
 Energy Data and Modelling Center (EDMC)

On September 19, 2014, the South Korean government held 2014 2nd Energy Committee meeting, established the 3rd Energy Committee, and announced domestic/international resource development and the long-term basic plan for the new and renewable energies (NRE) field.

The 4th basic plan for NRE that was announced at this meeting clarified the details of the 2nd energy master plan. It included an implementation proposal towards the target of providing 11% of the total primary energy supply (TPES) with NRE by 2035 and a proposal to step up overseas expansion of NRE that was discussed at the new industry debate on energy held on September 4.

### 4th Basic Plan visions and targets

1. By 2035, provide 11.0% of TPES with NRE, with a mean annual NRE growth rate of 6.2% from 2014 to 2035 (mean annual growth rate of 0.7% for TPES).

Table 1. Supply targets for new and renewable energies

	2012	2014	2020	2025	2030	2035
Ratio of total primary energy supply (%)	3.2	3.6	5.0	7.7	9.7	11.0

2. Reduce the relative importance of waste while developing solar and wind power as main energy resources, so that 13.4% of total electric energy is supplied by NRE by 2035.

Table 2. New and renewable energy supply composition ratio (unit: %)

	2012	2014	2025	2035	Mean annual growth rate
Solar - thermal	0.3	0.5	3.7	7.9	21.2
Solar - PV	2.7	4.9	12.9	14.1	11.7
Wind	2.2	2.6	15.6	18.2	16.5
Biomass	15.2	13.3	19.0	18.0	7.7
Hydraulic	9.3	9.7	4.1	2.9	0.3
Geothermal	0.7	0.9	4.4	8.5	18.0
Marine	1.1	1.1	1.6	1.3	6.7
Waste	68.4	67.0	38.8	29.2	2.0

3. Focus on building NRE market base to shift from a government-led system to one that is driven by private partnerships

Increase self-motivated private investment by designing systems that are compatible with the market, presenting profit-based business models, easing regulations and discovering models suited to increasing the expansion of NRE

4. Secure self-sustainability for sustainable growth through expansion into foreign markets

Create mutually virtuous cycles with expansion of domestic use by actively engaging in foreign expansion past the small domestic market.

## **Priorities**

1. Consumer-compatible expansion policies

Expand use of consumer participation profit models (e.g. community participation, eco-friendly energy towns), have private companies take responsibility for all services from design and installation to after-sales service without subsidies and expand rental business where consumers pay rental fees.

2. Management of systems that are market-compatible: Improvement in obligatory NRE system (renewable portfolio standard)

Figure 1. Renewable portfolio standard (RPS) strategy and plans for improvement

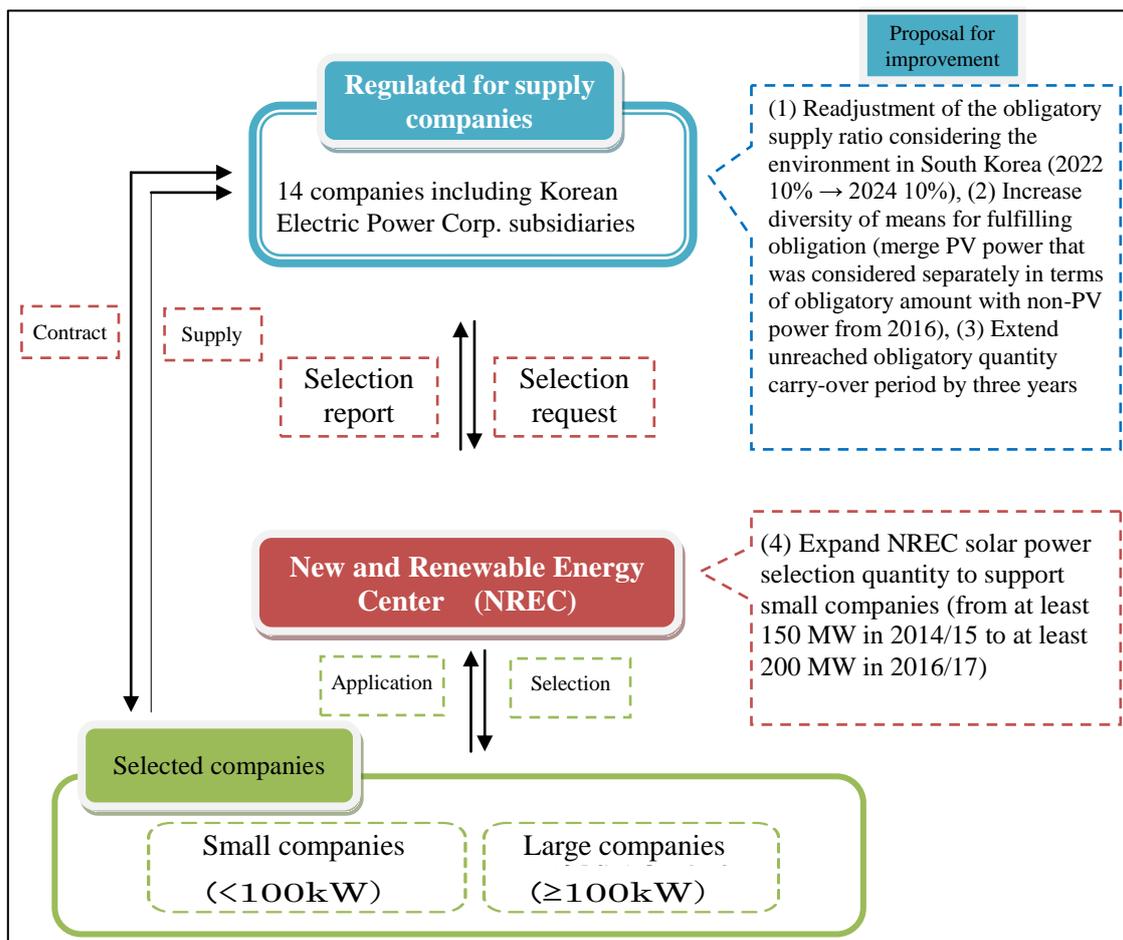


Table 3. Adjustment of regulated supply ratio in RPS (proposal; unit: %)

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Current	3.5	4.0	5.0	6.0	7.0	8.0	9.0	10.0		
After changes	3.0	3.5	4.0	4.5	5.0	6.0	7.0	8.0	9.0	10.0

### 3. Expansion into foreign NRE markets

(1) Expand support scope of NRE financial support programs that are currently limited to South Korea only, (2) Establish new programs to enable support of small and medium companies expanding business overseas, (3) Formulate a strategy that is compatible with each promising country through foreign market analysis by the end of the year and establish policies for developing foreign diplomacy between two countries on a government level, (4) Discover opportunities for foreign expansion through partnerships with international institutions.

#### 4. Creating new NRE markets

Formulate a plan that involves shifting from a market that is primarily of electric energy to one that utilizes more transport fuel and thermal energy (e.g. heated effluent) and active exploration of usable NRE sources that are being wasted. Implement the Renewable Fuel Standard starting with biodiesel from July 2015. A bill to implement a Renewable Heat Obligation system that would shift the supply of thermal energy for use in buildings to NRE at a fixed rate is also under Diet deliberation.

#### 5. Reinforce NRE research and development and enhance the institutional foundation

(1) Reduction in power rates to promote early propagation, (2) commercial technology-centered short-term use research and development such as commercialization tests, (3) promotion of pioneering technologies and integrated long-term R&D to secure global competitiveness in technology, (4) Standardize NRE facility certification with Korean Industrial Standards (KS) and redesign relevant regulations so that they are compatible with the market to reduce the burden to companies.

### **Issues and disputes that must be addressed when implementing a new basic plan for NRE technology**

Right after the South Korean government announced the new basic plan for NRE, a debate began on whether or not to consider effluent from power plants to be an NRE. Specifically, there was concern that it would cause shrinkage in investment in other sources such as photovoltaic, wind and tidal energy.

Despite an annual discharge of about 32 billion tons of heated effluent from power plants, for a scale of about 240 million Gcal, only roughly 1.18 million Gcal (0.48%) is recycled. If heated effluent from power plants was recycled as an NRE source, regulated supply companies could easily reach their assigned targets. As the energy used in large-scale aggregated farmland could be appropriated free of cost, with everything going to profits, the South Korean government decided to include heated effluent from power plants under the NRE umbrella. The mass media, however, claims that environmental groups and NRE companies are opposed to the decision.

The argument from environmental groups in South Korea is that heated effluent from power plants is considered marine environment pollution by the UN Convention on the Law of the Sea, and including it as an NRE opposes international standards. They claim that, while this may temporarily help the power plants that have been charged a multibillion-won penalty for two consecutive years, it would eventually cause reduced investment in NRE in South Korea, moving against the global trend of expansion in NRE supply.

South Korea has been experiencing numerous difficulties in the construction of power

generation facilities to implement measures for NRE expansion. On October 6, the Ministry of Environment decided that the environmental impact statement for the Garorim Bay Tidal Power Station project was inadequate, refusing the plan. The reasoning of the Ministry of Environment was that predictions concerning changes in tidal flat erosion and sedimentation at Garorim Bay were insufficient, and building the power station could damage the harbor seal habitat. The Ministry's disapproval of the project essentially brought plans for the Garorim Bay Tidal Power Station project back to square one.

The power station, for which planning began eight years ago, was intended to be a large-scale tidal power station with a 520 MW capacity, closing off two km of Garorim Bay with a seawall. It would have twice the capacity as the one at Sihwa Lake (254 MW) that is currently South Korea's first tidal power station and the largest in operation in the world. Plans for other tidal power stations, for example at Incheon Bay, have also been put on hold. South Korea relies on foreign energy for 96% of its energy, and large-scale power stations are essential for achieving the target of NRE as 11% of the energy supply by 2035. Nevertheless, there is a strong opinion that other methods must be sought at present.

With the numerous problems it is facing, South Korea has experiencing slightly setbacks in its 4th basic plan for NRE technology development and deployment, such as the two-year delay in reaching an RPS obligation rate of 10% in the 3rd plan. That said, resolving these arguments and issues will surely make it possible to reach the goals for widespread NRE supply of the 4th basic plan.

Please direct inquiries to: [report@tky.ieej.or.jp](mailto:report@tky.ieej.or.jp)