KOREA

1. GOALS FOR EFFICIENCY IMPROVEMENT

1.1. Overall Energy Efficiency Improvement Goals

The 2nd National Energy Master Plan (NEMP) (2014ï 2035), published in 2014, stipulates that Korea will reduce its final energy consumption to 216.4 Mtoe (million tons of oil equivalent) by 2035 from 249.4 Mtoe, compared to business-as-usual (BAU). This is a reduction of more than 13%.

1.2. Sectoral Energy Efficiency Improvement Goals

As part of the NEMP, the government set interim sectoral energy efficiency improvement goals for 2017 (compared to BAU) as follows:

- Industrial sector: reduction in energy use of 5.3 Mtoe.
- Transport sector: reduction in energy use of 2.5 Mtoe.
- Buildings sector: reduction in energy use of 1.2 Mtoe.
- Public sector and others: reduction in energy use of 0.3 Mtoe.

1.3. Action Plans for Promoting Energy Efficiency

The 5th Energy Use Rationalization Plan (2013ï 2017) is the action plan arising from the NEMP to promote energy efficiency.

a) Objectives

The 5th Energy Use Rationalization Plan aims for a 4.1% reduction of the final energy consumption and an improvement in energy intensity of 3.8% by 2017 (compared to BAU).

b) Applicable sectors

Industrial, transport, residential and commercial, public, and others.

c) Outline

The plan is designed to cope with high global oil prices and climate change as well as to improve the balance of trade. Sectoral energy-saving programs have been implemented using various incentives and regulation policies, such as financing, tax reductions, research and development (R&D) subsidies, and certification.

New demand-side management (DSM) technologies supporting policies and market schemes in the electricity sector are expected to help achieve the targets.

The plan also aims to improve coal thermal efficiency and utilize heat recovery to reduce conversion losses. It will redesign power market mechanisms in order to reduce prices, improve market efficiency, and provide consumers with effective price signals. In addition, it will increase the availability of energy information, thus raising public awareness.

Other initiatives in the plan include supporting R&D on demand-side management, improving financing and energy service company (ESCO) programs, re-inspecting and maintaining the three major energy efficiency programs, and enhancing security for thermal equipment to obtain energy efficiency improvements.

d) Method for monitoring and measuring the effects of action plans

The Ministry of Trade, Industry and Energy (MOTIE) and the Korea Energy Agency (KEA) are responsible for monitoring and reporting on their individual programs, which are conducted through the activities of energy efficiency program evaluation, statistics (information gathering), and benchmarking. Monitoring projects usually rely on R&D budgets from the MOTIE to some extent. These efforts are compiled into the Report to the National Energy Committee.

e) Expected results

Savings of 9.3 Mtoe of final energy consumption and the creation of 10,200 jobs by 2017.

f) Future tasks

Included is the establishment of an annual comprehensive action plan integrating regional energy efficiency schemes. The government is also looking to enhance the reporting scheme for individual and sectoral energy consumption, either statistically or using a sample survey.

1.4. Institutional Structure

a) Name of organization

The MOTIE, the KEA, and the Ministry of Land, Infrastructure and Transport (MOLIT) are responsible for energy efficiency improvements in Korea.

b) Status of organization

The MOTIE and the MOLIT are the policymaking bodies, while the KEA is the policy implementer.

c) Roles and responsibilities

The overall energy efficiency policy is driven by the MOTIE. In addition, energy-saving activities in the industrial and building sectors are managed by the MOTIE, while construction-related work for energy efficiency in the transport and building sectors is managed by the MOLIT. The Prime Minister has coordinated overall economy-wide energy efficiency programs through the National Energy Committee. The KEAôs role is to improve energy efficiency, diffuse renewables, and reduce greenhouse gases across various sectors. For this purpose, the KEA implements various projects aimed at rationalizing energy use. The KEA has 12 regional offices.

Local governments have promoted energy efficiency by setting up regional energy basic plans for a five-year period. Regional energy efficiency programs can be partially supported by the MOTIE, especially those focusing on public sector innovation and demonstrations for energy efficiency.

The KEAôs regional offices have cooperated with regional non-government organizations and research institutes in order to implement regional energy efficiency activities based on the plan.

For more information on the KEA, see http://www.energy.or.kr/renew_eng/main/main.aspx.

d) Covered sectors

Industrial (including agriculture), transport, residential and commercial, public, and others.

e) Established date

The KEA was established in 1980.

f) Number of staff members

The KEA included 489 staff members in 2015.

1.5. Information Dissemination, Awareness Raising, and Capacity Building

a) Information Dissemination

A wide range of energy efficiency information is readily available to Korean energy consumers through the KEAôs website and other media. A mandatory procurement guideline on purchasing energy-efficient products has been applied to public institutions.

b) Awareness Raising

Awareness campaigns have been undertaken with specific initiatives such as energy-saving campaigns (Heating 2018 in winter, Energy Minus Love Plus in summer), National Energy Efficiency Awards, designation of November as Energy Saving Month, public relations (PR) activities through the media (television, radio), a prize contest for PR materials (poster, catch phrases), an economy-wide exhibition (Korea Energy Show); mobile exhibitions, and early education in elementary and middle school.

c) Capacity Building

Capacity-building programs have been undertaken for various actors, such as energy managers in high energy-consuming industries or buildings above 2,000 toe per annum, boiler and pressure vessel operators, local government officials, and energy auditors.

1.6. Research and Development in Energy Efficiency and Conservation

The government recognizes the role of new technology and R&D in achieving its energy objectives. In May 2006, it announced the Basic Scheme for National Energy Resource Technology Development (2006ï 2015), which includes the promotion of R&D in energy efficiency and conservation.

The 2nd National Energy Master Plan (2014ï 2035) also reinforces technological development. Korea will increase its support for R&D to improve the energy efficiency of industrial equipment and facility upgrades as well as provide support for companies that invest in energy efficiency.

The Korea Institute of Energy Technology Evaluation and Planning (KETEP) was established in December 2007, with the key missions of advancing energy technology R&D and supporting the MOTIE in formulating energy technology policies. The Energy Efficiency R&D Program has been undertaken by the KETEP with the objective of securing additional energy saving potential of 5% of the total primary energy supply during 2006ï 2015. The seven Runner Programs that focus on typical energy consuming end-use devices have been prioritized in energy efficiency R&D. The seven objects identified for R&D that cover approximately 41% of total final energy consumption include super boilers, premium electric motors, HVACs, industrial furnaces, dryers, lighting, and home appliances. Individual R&D projects are generally undertaken in cooperation with enterprises, and R&D subsidies can be provided in part for the required total investment.

2. MEASURES FOR ENERGY EFFICIENCY IMPROVEMENT

2.1. Government Laws, Decrees, and Acts

a) Name

Energy Use Rationalization Act (EURA)

b) Purpose

The EURA aims to stabilize energy demand and supply, increase rational and efficient energy use, and reduce environmental damage caused by energy consumption.

c) Applicable sectors

The EURA is applied to all energy end-use sectors.

d) Outline

In the wake of the second oil shock in 1979, the Ministry of Energy and Resources (later incorporated with the Ministry of Trade, Industry and Energy) was established to exclusively administer the planning and enforcement of energy policies. In the following year, the EURA was promulgated in an attempt to ensure energy security and promote energy efficiency and conservation.

The purpose of the act is to contribute to the sound development of the economy and the promotion of welfare and international efforts in order to minimize global warming, stabilize demand and supply of energy, increase the rational and efficient use of energy, and reduce the environmental damage caused by the consumption of energy.

The EURA is comprised of the following chapters: General Provisions; Plans and Measures for Rationalization of Energy Use; Policies for Rationalization of Energy Use; Management of Heat-Using Machinery/Equipment or Materials; Organization of Constructors; Energy Management Corporation; Supplementary Provisions; and Panel Provisions.

Since its enactment, the EURA has been amended several times, with the latest amendment passed in January 2010. The full text is available at http://elaw.klri.re.kr by typing ñEnergy Use Rationalization Actò in the search menu.

2.2. Regulatory measures

2.2.1. Minimum Energy Performance Standards (MEPS) and Labeling

a) Name

Energy Efficiency Label and Standard Program

b) Purpose

To save energy by enabling consumers to easily identify high-efficiency products and encouraging manufacturers (importers) to produce (import) and sell these products. It employs a label that indicates the energy efficiency grade of each product on a 1 to 5 grading scale.

The labeling scheme works in tandem with the minimum energy performance standard (MEPS) scheme, which bans low-efficiency products from entering the market. It also promote the manufacturersô technical development by setting up and controlling the minimum required efficiency standard.

c) Applicable sectors

Appliances, lighting, and equipment in the residential, commercial, and industrial sectors.

d) Outline

The Energy Efficiency Labeling and Standard Program enables consumers to easily identify energy-efficient products through the use of mandatory energy efficiency labels, mandatory reporting, and the application of MEPS.

The efficiency scale of the labels includes five grades with Grade 1 products being the most efficient. In fact, Grade 1 products are 30% to 40% more efficient than a Grade 5 product. In order to keep the scheme current and to incentivize further development, the MOTIE and the KEA constantly revise the requirements. If the standard is strengthened, then different grades can be seen, even among the same products.

The MEPS bans the production, importation, and sale of low energy-efficient products that fall below the MEPS. Those that fail to reach the MEPS are not allowed to be manufactured and sold. The MEPS is applied to 35 items.

e) Financial resources and budget allocation

No information is available.

f) Expected results

No information is available.

2.2.2. Building Energy Codes

a) Name

Energy Saving Design Criteria for Buildings

b) Purpose

To improve energy efficiency in the design and construction of new buildings.

c) Applicable sectors

Residential and non-residential.

d) Outline

The MOLIT developed the building energy codes, while local government building officials enforce the codes as part of the building permitting process for new buildings. The property owner must fill out an energy saving worksheet and submit it to the local government in order to obtain a building permit.

The submission of energy saving plans has become mandatory for buildings larger than certain sizes in order to reinforce insulation, increase the supply of high-efficiency and new/renewable energy facilities, and promote the energy saving mindset among building owners.

e) Financial resources and budget allocation

No information is available.

f) Expected results

No information is available.

2.2.3. Fuel Efficiency Standards

a) Name

Average Fuel Economy (AFE) Program

b) Purpose

To manage the fuel efficiency of passenger vehicles by requiring manufacturers to achieve an average fuel efficiency for all vehicles sold by each manufacturer (calculated by dividing the sum of the fuel efficiencies of the vehicles sold during the previous year by the quantity sold).

c) Applicable sectors

Transport

d) Outline

If a manufacturerôs average fuel efficiency does not satisfy the limit set by the government, then it may order the improvement of fuel efficiency by a certain time period. If the improvement order is not performed, then a corresponding announcement may be published through the press.

Average fuel efficiency standard:

1) 2013 ï 16.0 km/l
2) 2015 ï 17.0 km/l
3) By 2020 ï 24.3 km/l

2.2.4. Energy Auditing

a) Name

Energy Process Auditing

b) Purpose

To improve the energy efficiency of businesses that use large amounts of energy.

c) Applicable sectors

Industrial and commercial.

d) Outline

Energy auditing started in 1990 as a voluntary program. In 2007, it was made mandatory for businesses using more than 2,000 toe in order to improve the efficiency of large energy consumers. This was in response to the implementation of the United Nations Framework Convention on Climate Change and the Kyoto Protocol.

The KEA has implemented energy auditing for more than 30 years in domestic industrial and building sites. It has also conducted important research activities to find energy distribution optimization models and other related opportunities.

The KEA achieved the ISO 9001 Quality Management System certification for the energy auditing service.

2.3. Voluntary Measures

The main voluntary measures include certification for high-efficiency products, eco-driving, the ñno car once-a-weekò initiative, demand-side management by energy suppliers, and community energy supply systems.

2.3.1. Building Energy Efficiency Rating

a) Name

Building Certification System

b) Purpose

To provide objective information regarding the energy performance of buildings such as energy consumption, carbon dioxide emissions, and energy-saving opportunities that could benefit relevant stakeholders, including construction companies, building owners, building managers, and building users.

c) Applicable sectors

Office and residential.

d) Outline

Building companies apply for certification of new buildings based on design information after which preliminary certification may be awarded. Final certification of the energy efficiency grade is provided after completion of an evaluation using final design drawings and field surveys.

2.3.2. Energy Service Company (ESCO)

a) Name

Energy Service Company

b) Purpose

To encourage investments in energy-saving facilities through ESCOs that provide a broad range of energy-saving solutions with investment costs covered by energy bill reductions.

c) Applicable sectors

Industrial and commercial.

d) Outline

The ESCO program was launched in 1993. In the beginning, there were only three registered ESCOs and by 2011, the number increased to 209. ESCOs mainly focus on high-efficiency lighting, waste heat recovery, heating and cooling systems, and manufacturing process improvement.

When energy users want to replace/improve existing facilities or are unable to do so due to technical or financial problems, they can make a contract with ESCOs. After the terms of the contract are set, the ESCOs will make the investment on behalf of the energy users after which the ESCOs profit from the energy cost savings.

The legal grounds for ESCOs were established under the Energy Use Rationalization Act in 1991. ESCOs have been registered and in operation since 1992.

The scopes of the projects include the following:

1) Projects related to energy-saving plant investments.

2) Management/service projects for saving energy in energy-using facilities.

3) Projects related to energy saving such as energy management, diagnosis, etc.

2.4. Financial Measures Taken by the Government

2.4.1. Tax Scheme

a) Name

Tax Reduction and Exemption Act (by National Tax Service)

b) Purpose

To strengthen the competitiveness of business enterprises by promoting investments in energy-saving facilities.

c) Applicable sectors

Industrial and building (commercial).

d) Outline

In case of investments in the installation of specified energy-efficient facilities, 10% of the relevant investment amount shall be deducted from the total income tax or corporate tax. This scheme started in 1982, and it has been temporarily applied during designated time periods.

2.4.2. Soft Loans

a) Name

Energy Use Rationalization Fund (1980)

b) Purpose

To strengthen the competitiveness of business enterprises by promoting investments in energy-saving facilities

c) Applicable sectors

Industrial and building (commercial).

d) Outline

Since 1980, the government has provided long-term, low-interest loans for energy efficiency and conservation investments, along with tax incentives. The KEA is in charge of operating and monitoring the loan. The rate of the loans is 1.75% per year, as of the first quarter of 2015.

e) Financial resources and budget allocation

USD 454 million is allocated to the fund from a government financial source called the Special Accounts for Rational Energy Utilization.

f) Expected results

No information is available.

2.4.3. Other Incentives

a) Name

Incentives for small-sized vehicles.

b) Purpose

To promote low energy-consuming, lightweight passenger vehicles.

c) Applicable sectors

Transport

d) Outline

Several incentives such as tax exemptions for purchasing, registration and acquisition, 50% discounts on parking fees and tolls, and congestion charges, are provided.

2.5. Energy Pricing

The consumer price of oil products is determined by market-based pricing systems, but the major part of the price includes taxes. Prices of electricity, city gas, and thermal energy supply can be influenced by the government by adjusting the corporate-investment maintenance ratio that is required by each tariff structure.

Currently, progressive electricity pricing, according to the amount of use, has been applied to the residential sector. However, a pricing system that exposes consumers to the full cost of energy (or high costs) in order to stimulate energy efficiency or greenhouse gas emission reductions is unfeasible, since it would be a difficult process with low social acceptance. Until now, subsidies and tax incentives have been used to promote consumer behavior for energy efficiency.

2.6. Other Efforts for Energy Efficiency Improvements

2.6.1. Cooperation with Non-Government Organizations (NGOs)

Energy efficiency campaign programs, which require the participation of the private sector, have been performed in cooperation with NGOs. NGOs act as a representative voice of the attitude or behavior regarding citizensô energy efficiency.

2.6.2. Cooperation through Bilateral, Regional, and Multilateral Schemes

Korea has been actively participating in international cooperative activities such as IEA 4E, APEC EGEE&C, IPEEC, etc., to develop policies to enhance energy efficiency in the facilities and equipment sectors as well as strengthen international cooperation systems.

IEA 4E (Implementing Agreement on Efficient Electrical End-Use Equipment) is one of the implementation agreements of the International Energy Agency (IEA), which seeks to promote the adjustment and development of policies of various economies through collaborative research and forums aimed at enhancing machine efficiency.

In cooperation with the IEA 4E, the MOTIE and the KEA are participating in the main annex, Mapping & Benchmarking (M&B). The overall goal of the M&B annex is to provide policymakers with a single source of knowledge on product performance and associated policies employed by economies across the world, thus enabling more informed policymaking at the economy and regional levels.

APEC EGEE&C (Expert Group on Energy Efficiency and Conservation) is one of the expert groups under the Energy Working Group (EWG), which targets energy saving as well as the development of energy efficiency policies and technologies. Established in 2002 to exchange information on energy efficiency standards and labeling systems, it is operated using funds shared by all of the economies. Korea hosted the 49th APEC EWG meeting in Gyeongju on June 2015.

The EGEE&C has maintained the Energy Standards Information System (ESIS) since 2002. The ESIS provides the latest information about energy standards and regulations for appliances and equipment. The MOTIE and the KEA funded USD 10,000 for this ESIS project in 2007 and both organizations continue to take an active role in this system.

IPEEC (International Partnership for Energy Efficiency Cooperation) is an international partnership for energy efficiency cooperation among the European Union, the G8 countries (United States, United Kingdom, France, Germany, Italy, Canada, Japan, and Russia), and seven additional countries (China, India, Brazil, Mexico, Korea, Australia, and South Africa).