

# KOREA

## ENERGY EFFICIENCY GOALS

### 1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

Korea's energy efficiency policy is guided by the Energy Use Rationalisation Act (EURA) of 1980 and wholly amended in 2007. The Act aims to stabilise energy demand and supply, improve efficiency, and reduce environmental damage caused by energy consumption in all energy end-use sectors.

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

The full text is available at <http://www.moleg.go.kr/english/korLawEng?pstSeq=57721>.

### 2. ENERGY EFFICIENCY STRATEGY

The 2nd National Energy Master Plan (NEMP) (2014–2035) published in 2014, provides a comprehensive strategy of energy policies at the national level, including energy efficiency promotion. The 5th Energy Use Rationalisation Plan, announced in 2014, plays a role as an action plan for the NEMP.

#### FUNDING

No Information available.

#### LINKS

NEMP: [http://www.motie.go.kr/motie/ne/presse/press2/bbs/bbsView.do?bbs\\_seq\\_n=78654&bbs\\_cd\\_n=81](http://www.motie.go.kr/motie/ne/presse/press2/bbs/bbsView.do?bbs_seq_n=78654&bbs_cd_n=81)

### 3. ENERGY EFFICIENCY ACTION PLAN

The 5th Energy Use Rationalisation Plan (2013–2017) is the action plan arising from the NEMP to promote energy efficiency. The plan is designed to cope with high global oil prices and climate change as well as to improve the balance of trade. The plan introduces policies to support new demand-side management (DSM) technologies and market schemes in the electricity sector which are expected to help achieve the targets. The plan also aims to improve coal thermal efficiency and utilise 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) programmes, re-inspecting and maintaining the three major energy efficiency programmes, and enhancing security for thermal equipment to obtain energy efficiency improvements.

#### FUNDING

Sectoral energy-saving programmes have been implemented using various incentives and regulation policies, such as financing, tax reductions, research and development (R&D) subsidies, and certification.

#### LINKS

5<sup>th</sup> Energy Use Rationalisation Plan:

[http://www.motie.go.kr/motie/ne/presse/press2/bbs/bbsView.do?bbs\\_seq\\_n=156772&bbs\\_cd\\_n=81](http://www.motie.go.kr/motie/ne/presse/press2/bbs/bbsView.do?bbs_seq_n=156772&bbs_cd_n=81)

### 4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

The 2nd National Energy Master Plan (NEMP) (2014–2035), published in 2014, stipulates that Korea will reduce its final energy consumption to 216.4 Mtoe (million tons of oil equivalent) by 2035 from an estimated 249.4 Mtoe (13%) in the business-as-usual (BAU) estimation.

The 5th Energy Use Rationalisation 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).

#### LINKS

NEMP documents:

[http://www.motie.go.kr/motie/ne/presse/press2/bbs/bbsView.do?bbs\\_seq\\_n=78654&bbs\\_cd\\_n=81](http://www.motie.go.kr/motie/ne/presse/press2/bbs/bbsView.do?bbs_seq_n=78654&bbs_cd_n=81)

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[http://www.motie.go.kr/motie/ne/presse/press2/bbs/bbsView.do?bbs\\_seq\\_n=156772&bbs\\_cd\\_n=81](http://www.motie.go.kr/motie/ne/presse/press2/bbs/bbsView.do?bbs_seq_n=156772&bbs_cd_n=81)

### 5. SECTORAL ENERGY EFFICIENCY TARGETS

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.

#### LINKS

MOTIE: [http://www.motie.go.kr/motie/ne/presse/press2/bbs/bbsView.do?bbs\\_seq\\_n=78654&bbs\\_cd\\_n=81](http://www.motie.go.kr/motie/ne/presse/press2/bbs/bbsView.do?bbs_seq_n=78654&bbs_cd_n=81)

## 6. LEAD ENERGY EFFICIENCY INSTITUTIONS

The Ministry of Trade, Industry and Energy (MOTIE). The ministry was established at the birth of the Republic of Korea in 1948 as the Ministry of Trade and Industry (MTI) with the mission to coordinate the nation's industries. In 1993, the MTI was merged with the Ministry of Energy and Resources, an agency charged with ensure stable energy supply, to create the MOTIE. The ministry was reorganised in 1998 as the Ministry of Commerce, Industry, and Energy (MOCIE), in 2008 as the Ministry of Knowledge Economy (MKE), and in 2013 as the MOTIE.

### INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

MOTIE runs the Office of Energy and Resources which includes the Energy Efficiency & Climate Change Bureau to drive overall energy efficiency policy of the economy. The bureau consists of three divisions: energy efficiency policy division, energy management division, and new energy-related industry division.

### STAFF AND BUDGET

MOTIE has 1,293 staff as of August 2017. Specific information on the energy efficiency budget is not available.

### BUDGET USE

Not available

### LINKS

<http://english.motie.go.kr/www/main.do>

## 7. OTHER ENERGY EFFICIENCY AGENCIES

MOTIE, KEA, and the Ministry of Land, Infrastructure, and Transport (MOLIT) are responsible for energy efficiency improvements in Korea. MOTIE and MOLIT are the policymaking bodies, while the KEA is the policy implementer.

The overall energy efficiency policy is driven by MOTIE. In addition, energy-saving activities in the industrial and building sectors are managed by MOTIE, while construction-related work for energy efficiency in the transport and building sectors is managed by MOLIT. The Prime Minister has coordinated overall economy-wide energy efficiency programmes through the National Energy Committee. KEA's role is to improve energy efficiency, diffuse renewables, and reduce greenhouse gases across various sectors. For this purpose, KEA implements various projects aimed at rationalising energy use. 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 programmes can be partially supported by MOTIE, especially those focusing on public sector innovation and demonstrations for energy efficiency.

KEA's regional offices have cooperated with regional non-government organisations and research institutes to implement regional energy efficiency activities based on the plan.

### LINKS

KEA: [http://www.energy.or.kr/renew\\_eng/main/main.aspx](http://www.energy.or.kr/renew_eng/main/main.aspx)

## 8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

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

### LINKS

KEA: [http://www.energy.or.kr/renew\\_eng/energy/industry/enms.aspx](http://www.energy.or.kr/renew_eng/energy/industry/enms.aspx)

## 9. ENERGY EFFICIENCY AWARENESS RAISING

Awareness campaigns have been undertaken with specific initiatives such as the Heating 2018 in winter or the Energy Minus Love Plus campaign in summer aimed at increase awareness of space conditioning. Also National Energy Efficiency Awards for businesses, the designation of November as energy saving month are good examples. Other examples include some public relations activities through the media (television, radio), a prize contest for branding materials (poster, catch phrases), an economy-wide exhibition (Korea Energy Show), mobile exhibitions, and early education in elementary and middle school.

### LINKS

KEA campaign: [http://www.energy.or.kr/renew\\_eng/pr/pr/campaign.aspx](http://www.energy.or.kr/renew_eng/pr/pr/campaign.aspx)

KEA exhibition: [http://www.energy.or.kr/renew\\_eng/pr/pr/exhibition.aspx](http://www.energy.or.kr/renew_eng/pr/pr/exhibition.aspx)

## 10. GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

Capacity-building programmes 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.

### LINKS

KEA training: [http://www.energy.or.kr/renew\\_eng/pr/education/training.aspx](http://www.energy.or.kr/renew_eng/pr/education/training.aspx)

## 11. PRIVATELY OPERATED TRAINING

No information provided

### LINKS

No information provided

## 12. GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

The government recognises 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 (2006–2015), which includes the promotion of R&D in energy efficiency and conservation.

The 2nd National Energy Master Plan (2014–2035) 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 mission of advancing energy technology R&D and supporting MOTIE in formulating energy technology policies. The Energy Efficiency R&D Programme has been undertaken by KETEP with the objective of securing additional energy saving potential of 5% of the total primary energy supply during 2006–2015. The seven Runner Programmes that focus on typical energy consuming end-use devices have been prioritised 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.

## LINKS

EE R&D: [http://www.ketep.re.kr/contents/siteMain.do?srch\\_mu\\_lang=CDIDX00023](http://www.ketep.re.kr/contents/siteMain.do?srch_mu_lang=CDIDX00023)

# ENERGY EFFICIENCY MEASURES

## 13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

At the national level, MOTIE is responsible for energy efficiency policy and analysis. Assessments of programmes are generally carried out ex-post either by the Ministry or externally at the Ministry's request.

### LEGAL POWER

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### Legal Powers

MOTIE has the authority to consolidate energy demand and supply data to establish NEMP and energy policies. It also provides national energy statistics to the public via the Korea Energy Statistics Information System that is operated by Korea Energy Economics Institute (KEEI). Other institutions that are responsible for providing related statistics include:

- KEEI - Energy balance and national energy demand and supply
- KEA - New and renewable energy(NRE) and group energy
- Korea National Oil Company(KNOC) - Oil and oil product
- Korea Power Exchange(KPX) - Electricity related
- Korea Gas Company(KOGAS) - Natural gas
- Korea Coal Association - Coal production

- Korea City Gas Association - City gas consumption.

#### LINKS

Korea Energy Statistics: <https://www.kesis.net/>

### 14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

MOTIE is responsible to establish the long term 'Energy Use Rationalisation Plan', which is based on the overall evaluation of energy consumption and efficiency, every five years according to the 'Energy Use Rationalisation Act'.

#### LINKS

Legislation: <http://www.moleg.go.kr/english/korLawEng?pstSeq=57721>

### 15. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

Government funded programmes are usually required to conduct an intermediate and ex-post evaluation.

### 16. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

#### **Tax Reduction and Exemption Act (by National Tax Service)**

##### OBJECTIVE

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

##### 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.

#### LINKS

KEA Tax breaks: [http://www.energy.or.kr/renew\\_eng/energy/industry/benefits.aspx](http://www.energy.or.kr/renew_eng/energy/industry/benefits.aspx)

#### **Energy Use Rationalisation Fund (1980)**

##### OBJECTIVE

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

##### OUTLINE

Since 1980, the government has provided long-term, low-interest loans for energy efficiency and conservation investments, along with tax incentives. KEA oversees the operation and monitoring the loan. The rate of the loans is 1.75% per year, as of the first quarter of 2017.

## LINKS

KEA EE investment support: [http://www.energy.or.kr/renew\\_eng/energy/industry/benefits.aspx](http://www.energy.or.kr/renew_eng/energy/industry/benefits.aspx)

## 17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

### **Energy Process Auditing**

#### OBJECTIVE

To improve the energy efficiency of businesses that use large amounts of energy in industrial and commercial sectors.

#### OUTLINE

Energy auditing started in 1990 as a voluntary programme. 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.

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 optimisation models and other related opportunities.

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

#### LINKS

KEA Energy auditing: [http://www.energy.or.kr/renew\\_eng/energy/industry/audit.aspx](http://www.energy.or.kr/renew_eng/energy/industry/audit.aspx)

### **Energy Service Company (ESCO)**

#### OBJECTIVE

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.

#### OUTLINE

The ESCO programme was launched in 1993. There were only three registered ESCOs at the time, but by June 2017, the number has increased to 360. ESCOs mainly focus on high-efficiency lighting, waste heat recovery, heating and cooling systems, and manufacturing process improvement.

When energy users want to replace or improve existing facilities but 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 Rationalisation Act in 1991. ESCOs have been registered and in operation since 1992. The scopes of the projects include the following:

- Projects related to energy-saving plant investments

- Management of service projects for saving energy in energy-using facilities
- Projects related to energy saving such as energy management, and diagnosis.

#### LINKS

KEA ESCO: [http://www.energy.or.kr/renew\\_eng/energy/industry/esco.aspx](http://www.energy.or.kr/renew_eng/energy/industry/esco.aspx)

## 18. TRANSPORT ENERGY EFFICIENCY INITIATIVES

### **Average Fuel Economy (AFE) Programme**

#### OBJECTIVE

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).

#### OUTLINE

If a manufacturer's 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. If the improvement order is not performed, then a corresponding announcement may be published through the press. The average fuel efficiency levels are:

- By 2013 – 16.0 km per litre
- By 2017 – 19.2 km per litre
- And by 2020 – 24.3 km per litre

#### LINKS

KEA Average Fuel Efficiency: [http://www.energy.or.kr/renew\\_eng/energy/transport/afe.aspx](http://www.energy.or.kr/renew_eng/energy/transport/afe.aspx)

### **Incentives for small vehicles**

#### OBJECTIVE

To promote low energy-consuming, lightweight passenger vehicles.

#### OUTLINE

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

#### LINKS

National Law Information Centre:

<http://www.law.go.kr/lsSc.do?menuId=0&subMenu=1&query=%EC%A7%80%EB%B0%A9%EC%84%B8%EB%B2%95%20%EC%8B%9C%ED%96%89%EB%A0%B9#AJAX>



## 19. BUILDING ENERGY EFFICIENCY INITIATIVES

### **Energy Efficiency and Label Standards Programme:**

#### OBJECTIVE

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

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

#### OUTLINE

The Energy Efficiency Labelling and Standards Programme enables consumers to identify energy-efficient products through 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. To keep the scheme current and to incentivise further development, MOTIE and KEA constantly revise the requirements. If the standard is strengthened, then different grades can be seen, even among the same products. MEPS ban the production, importation, and sale of products that fall below the minimum energy performance standard. MEPS are applied to 27 items.

#### LINKS

KEA Labelling: [http://www.energy.or.kr/renew\\_eng/energy/appliances/labeling.aspx](http://www.energy.or.kr/renew_eng/energy/appliances/labeling.aspx)

### **Energy Saving Design Criteria for Buildings**

#### OBJECTIVE

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

#### OUTLINE

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 developer 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.

#### LINKS

MOLIT: [http://www.molit.go.kr/USR/NEWS/m\\_71/dtl.jsp?id=95078442](http://www.molit.go.kr/USR/NEWS/m_71/dtl.jsp?id=95078442)

## Building Certification System

### OBJECTIVE

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.

### 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.

### LINKS

KEA Buildings:

[http://www.energy.or.kr/renew\\_eng/energy/buildings/buildings\\_certification.aspx](http://www.energy.or.kr/renew_eng/energy/buildings/buildings_certification.aspx)

## 20. ENERGY EFFICIENCY COOPERATION

### COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

Energy efficiency campaigns, which require the participation of the private sector, have been performed in cooperation with NGOs. NGOs act as a representative voice of the citizens' energy efficiency behaviour.

### BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

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, MOTIE and 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. Korea hosted the 49th APEC EWG meeting in Gyeongju on June 2015 and the 49th EGEE&C in Jeju on March 2017.

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

#### LINKS

KEA Cooperation: [http://www.energy.or.kr/renew\\_eng/pr/in/c1.apx](http://www.energy.or.kr/renew_eng/pr/in/c1.apx)

## 21. OTHER ENERGY EFFICIENCY EFFORTS

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 emissions 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 behaviour for energy efficiency.

#### LINKS

KEA: <http://home.kepco.co.kr/kepco/EN/F/htmlView/ENFBHP00101.do?menuCd=EN060201>