

KOREA: INVENTORY OF ESTIMATED BUDGETARY SUPPORT AND TAX EXPENDITURES FOR FOSSIL-FUELS

Energy resources and market structure

Korea has minimal fossil-fuel resources and imports all but 1% of its coal supplies, 1% of its oil and 1% of its natural gas. Korea is the world's second-largest importer of liquefied natural gas (LNG) after Japan, and is the fifth-largest importer of oil. The country relies heavily on fossil energy, with oil accounting for 38% of primary energy supply, coal 29% and gas 15%. Nuclear power accounts for 16% and renewables for the rest. The share of oil has fallen sharply over the last decade, as supplies of coal, gas and nuclear power have increased. Overall, over 85% of Korea's energy is imported, even treating nuclear power as indigenous production (all its uranium fuel needs are imported).

There is significant state ownership in Korea's energy industry. While the downstream oil industry and coal mining have been largely privatised, the gas, electricity and district heating sectors remain primarily under public ownership. The state-owned Korea National Oil Corporation (KNOC) is responsible for Korea's strategic oil reserves, as well as for the exploration, development and production of oil and natural gas within and outside of the country. Private companies dominate refining, wholesale imports, distribution and retailing. The leading oil companies are SK, GS Caltex, S-Oil, and Hyundai Oil Bank.

Five of the country's eight anthracite mines (all bituminous coal is imported) are privately owned. The remaining three mines are run by the state-owned Korea Coal Corporation (KCC), which is also responsible for managing the supply of domestic anthracite and supporting the development of the domestic coal market, including the workforce and new technologies. Private-sector and other government-owned companies import coal from the world market for their own needs directly or through a private intermediary, mostly under medium- or long-term contracts. In support of the government's policy of developing overseas energy projects, private Korean companies and the Korea Resources Corporation (KORES) are currently involved in more than a dozen overseas bituminous-coal projects.

The Korea Gas Corporation (KOGAS), a state-owned and operated company, holds a monopoly on natural-gas imports, transmission and wholesale supply, though some companies are allowed to import gas directly for their own use. The retail market is made up of more than 30 city gas companies. The central government oversees the wholesale market; local governments and provinces oversee the retail market. Moves to privatise and deregulate the sector and open up the wholesale and retail markets to competition have largely stalled.

Korea's electricity industry is dominated by the Korea Electric Power Corporation (KEPCO), a 50% state-owned vertically integrated utility. In 2001, KEPCO was reorganised into six power-generation subsidiaries (gencos): Korea Hydro and Nuclear Power (KHNP), which owns the nation's nuclear plants and large hydroelectric dams, and five companies with thermal generation assets. KEPCO also retained the national transmission and distribution grids. At the same time, a power market, the state-owned Korea Power Exchange (KPX), was established. Currently the six power-generation companies, which control about four-fifths of capacity, and independent producers sell their output into a power pool, while KEPCO is the sole buyer. Plans in the early 2000s for the five thermal-generation companies to be privatised have been shelved. The state-owned

Korea District Heating Corporation (KDHC) supplies about 60% of all heat sales in Korea; the rest of the market is supplied by around 20 other companies, approximately 15% of which are privately owned.

Prices, taxes and support mechanisms

The wholesale and retail prices of oil and bituminous coal are completely deregulated. The wholesale prices for domestically-produced anthracite coal and briquettes are set by the government as part of a subsidy to support uneconomic mining. Gas and heat prices are controlled directly by the Ministry of Commerce, Industry and Energy (MOCIE). The Korea Electricity Commission (KOREC), a quasi-autonomous body within MOCIE, is responsible for regulating KPX and final electricity prices. Final decisions are made by MOCIE following the rulings or deliberations of KOREC; in practice, the minister does not usually overrule KOREC.

Korea imposes import duties on crude oil and refined products; the latter are taxed more heavily, providing a tax advantage for Korean refineries relative to product importers. Bituminous-coal imports also carry a duty. A flat-rate VAT of 10% is levied on all sales of fuels and energy services. Excise taxes are levied on oil products and gas sales to both households and businesses; transport fuels are also subject to additional taxes, including an education tax and an array of transport taxes (so-called traffic, energy, and environmental taxes).

Government support to fossil-energy production concerns mainly coal. Support to producers of anthracite coal has been in place for several decades, involving price support, subsidies for acquiring capital equipment, subsidies for exploration, and support of a more general nature. The price-support component was repealed at the end of 2010. Direct investments made by the government and public funding related to research and development by KCC and KORES were halted earlier. The government also provides support for the production of anthracite briquettes, mainly by setting prices below costs (to protect low-income households) and paying the difference to producers. Support is due to be phased out progressively and terminated by the end of 2020, though a scheme to provide vouchers to subsidise consumption is expected to be expanded to offset the impact of higher prices.

The government is also planning to introduce funding for a project to develop clean-coal technologies that is planned by SK Energy (Korea's largest oil refiner) and Pohang Iron and Steel Co (a domestic steel maker). The government already provides funding for research and development projects related to exploration technologies for oil and other mineral resources, as well as to integrated coal gasification combined-cycle (IGGCC) technology as part of its renewable-energy research programme. The Korean government also encourages private exploration and production overseas through tax benefits and the extension of credit lines to domestic companies by the Korea Export-Import bank.

Consumer support concerns mainly excise-tax exemptions for various fuels and categories of consumers. These include exemptions for farmers, fishing boats and certain types of coastal passenger ships from the various taxes that are usually levied on sales of oil products; exemptions on sales of anthracite coal and briquettes from VAT (as well as price controls as described above); and grants to disabled persons and so-called "state meritorious persons" to cover increases in fuel prices since 2001.

Data documentation

General notes

The fiscal year in Korea coincides with the calendar year.

Producer Support Estimate

Support to Coal Mining (data for 1989-)

The Korean government has been providing support to producers of anthracite coal for several decades. This support is usually provided in many different ways and reporting a complete breakdown would not be practical. For that reason, several measures are here bundled together under the same general heading of “Support to Coal Mining.” This includes various forms of support such as price support, subsidies for acquiring capital equipment, subsidies for exploration, and support of a more general nature. Note that the price-support component was repealed at the end of 2010 as mentioned in Korea’s last submission to the G-20 in the context of the 2009 Pittsburgh commitment to phase out fossil-fuel subsidies.

We aggregate the available data under this general heading by category of statutory incidence (output returns, capital, enterprise income, and knowledge). “Direct Support” thus includes bounties, deficiency payments, and subsidies covering freight costs. The “Capital and Facilities” category comprises support for mining enlargement, tunnelling, mining mechanisation, and acquisition of safety facilities. “Government Injection” refers to investments made directly by the government, and “Research Fund” contains funding related to company-specific R&D—the two beneficiaries were Korea Coal Corporation and Resources Corporation—and exploration. Support provided through the last two categories (government injection, R&D, and exploration) stopped earlier than 2009.

We allocate all the measures mentioned above to anthracite coal.

Sources: MIRECO (various years).

Legal Sources: Price Stabilisation Act, Article 2, Coal Industry Act, Article 29.

Tag: KOR_dt_07 to KOR_dt_10

Support to Briquette Production (data for 1989-)

Support to the production of coal briquettes in Korea is provided in many different ways and reporting a complete breakdown would not be practical. For that reason, several measures are here bundled together under the same general heading of “Support to Briquette Production”. These various measures involve mostly the subsidisation of manufacturing costs and freight costs incurred by briquette producers. Support is expected to be phased out progressively and terminated by the end of 2020 as indicated in Korea’s last submission to the G-20 in the context of the 2009 Pittsburgh commitment to phase out fossil-fuel subsidies.

Sources: MIRECO (various years).

Tag: KOR_dt_13

Funding for Clean-Coal R&D (no data available)

SK Energy (Korea’s largest oil refiner) and Pohang Iron and Steel Co (a domestic steel maker) are planning to develop jointly clean-coal technologies at a total cost of KRW 3 350 billion (about USD 2.9 billion). The two companies envisage developing a manufacturing process for synthetic natural gas and the production of synthetic crude oil. The Korean government is to provide funding for KRW 25 billion (USD 21.6 million) in support of these initiatives.

No data are available yet given the recent nature of the project.

Sources: KETEP (2009).

Consumer Support Estimate

Fuel-Tax Exemption for Agriculture (data for 2004-)

This tax provision was introduced in 1986. It exempts farmers from the various taxes that are usually levied on sales of petroleum products in Korea. The country's end-user price for motor fuels comprises several layers of taxes such as the regular VAT (10%), the education tax, and an array of transport taxes (the so-called traffic, energy, and environmental taxes). In the case of heavy oil, kerosene, and LPG, an "individual consumption" tax is levied in lieu of the transport taxes.

Because a breakdown by type of tax could not be found, we report the exemptions for agriculture as a single measure under the general heading of "Fuel- Tax Exemption for Agriculture". Fuel-specific data were, however, available so that no further manipulation proved necessary. Year coverage becomes consistent starting in 2004 with only the years 1990, 1995, and 2000 being available before that.

Sources: MIAFF (various years).

Legal Sources: Restriction of Special Taxation Act, Article 106-2.

Tag: KOR_te_01

Fuel-Tax Exemption for Fisheries (data for 2004-)

This measure dates back to 1972 and is similar to the fuel-tax exemption benefitting agriculture (see "KOR_te_01"), except that it was seemingly introduced earlier and that it applies to the fisheries sector. Certain coastal passenger ships are also eligible for this exemption provided that fuel is being supplied directly to the Korea Shipping Association.

Because a breakdown by type of tax could not be found, we report the exemptions for fisheries as a single measure under the general heading of "Fuel- Tax Exemption for Fisheries". Fuel-specific data were, however, available so that no further manipulation proved necessary. The amounts reported under this heading do not include the exemption for coastal passenger ships noted above.

Sources: MIAFF (various years).

Legal Sources: Restriction of Special Taxation Act, Article 106-2.

Tag: KOR_te_02

VAT Exemption for Briquettes (data for 2001-)

The Value-Added Act exempts sales of coal briquettes from the value-added tax, which normally amounts to 10% of the pre-tax sale price in Korea. This exemption was introduced in 1976 and is meant to benefit low-income households through lower prices.

We estimate the cost of this exemption using the revenue-foregone method, meaning that we apply the standard rate of VAT (10%) to the total value of briquettes sold in a given year.

Sources: KEI (2007), KEEI (2010).

Legal Sources: Value-Added Tax Act, Article 12, 1-3.

Tag: KOR_te_03

VAT Exemption for Anthracite Coal (data for 2001-2006)

Sales of anthracite coal in Korea are exempt from the standard rate of value-added tax (10%). This exemption is meant to benefit low-income households through lower prices.

As for the VAT exemption applicable to sales of briquettes, we estimate the cost of this provision using the revenue-foregone method, meaning that we apply the standard rate of VAT (10%) to the total value of anthracite coal sold in a given year. Data are only available for the 2001-06 period.

Sources: KEI (2007), KEEI (2010).

Legal Sources: Value-Added Tax Act, Article 12, 1-3.

Tag: KOR_te_04

Fuel Subsidy for Certain Users (data for 2001-2005)

This measure provides buses, taxis, freight transport, and passenger ships operating in coastal waters with direct grants covering 50% of the increase in the price of fuel between 2001 and 2002, and 100% of the increase that followed 2003. Support is also provided to disabled persons and so-called “State meritorious persons” for the entire price increase since 2001.

Available data allow a distinction to be made between types of fuels and users so that we break the programme into six different items (one for each type of recipient). Estimates are, however, only available for the 2001-05 period.

Sources: KEI (2007).

Legal Sources: Passenger Transport Service Act, Article 43 and 50.

Tag: KOR_dt_01 to KOR_dt_06

General Services Support Estimate

Coal Mining - Inherited Environmental Liabilities (data for 1989-2006)

This general heading covers annual funding dedicated to environmental protection and reclamation of mining areas. Payments seem to have stopped after 2006.

We allocate this measure to the GSSE since it does not increase current production or consumption of coal.

Sources: MIRECO (various years).

Tag: KOR_dt_11

Coal Mining - Inherited Social Liabilities (data for 1989-)

This general heading includes funding for welfare programmes, the treatment of pneumoconiosis (i.e. the so-called “black-lung disease” that affects coal miners), accident compensation insurance, and elementary education and scholarship funds for miners’ children. Some support is also provided to alleviate the economic impacts of mine closures.

We allocate this measure to the GSSE since it does not increase current production or consumption of coal.

Sources: MIRECO (various years).

Tag: KOR_dt_12

Funding for CCS and Clean-Fuel R&D (data for 2000-)

The Korean government provides annual funding for R&D activities in relation to carbon capture and storage as well as cleaner fuels, with a heavy focus on clean-coal technologies.

We add this measure to the GSSE since it benefits Korea’s coal industry as a whole. It also does not necessarily increase current production or consumption of fossil fuels. We allocate the annual amounts reported in official publications to anthracite, bituminous coal, and sub-bituminous coal on the basis of the IEA’s Energy Balances for the power-generation sector.

Sources: KETEP (2009), IEA.

Tag: KOR_dt_16

R&D Funding for Resources Technologies (data for 2000-)

This programme provides annual funding in support of R&D projects connected to exploration technologies for oil and other mineral resources.

We add this measure to the GSSE since it benefits Korea’s hydrocarbon sector as a whole. It also does not necessarily increase current production or consumption of fossil fuels. We use production data from the IEA’s Energy Balances to allocate the annual amounts reported in official publications to oil and natural-gas extraction.

Sources: KETEP (2009), IEA.

Tag: KOR_dt_17

R&D Funding for Renewable Energy (data for 2000-)

The Korean government contributes to funding R&D projects in relation to Integrated-Gasification Combined-Cycle (IGCC) technologies as part of its renewable-energy research programme.

We add this measure to the GSSE since it benefits Korea's coal industry as a whole. It also does not necessarily increase current production or consumption of fossil fuels. We allocate the annual amounts reported in official publications to anthracite, bituminous coal, and sub-bituminous coal on the basis of the IEA's Energy Balances for the power-generation sector.

Sources: KETEP (2009), IEA.

Tag: KOR_dt_18

Sources

Policies or transfers

Coal Industry Act; Passenger Transport Service Act; Price Stabilisation Act; Restriction of Special Taxation Act, Value-Added Tax Act. Available at: elaw.klri.re.kr.

MIAFF (various years), *Statistical Yearbook*, Ministry for Food, Agriculture, Forestry and Fisheries, Korean Government, Available at: english.miaff.go.kr.

MIRECO (various years), *Yearbook of MIRECO Statistics*, Mine Reclamation Corporation, Available at: www.mireco.or.kr.

KEEI (2010), *Yearbook of Energy Statistics*, Korea Energy Economics Institute, Available at: www.keei.re.kr.

KEI (2007), *The Environmentally Friendly Reform and its Effect of Subsidies in the Energy and Electric Power Sectors (I)*, Korea Environment Institute.

KETEP (2009), *Energy R&D Statistics*, Korea Institute of Energy Technology Evaluation and Planning, Available at: ketep.re.kr.

Energy statistics

IEA (2011), *Energy Balances of OECD Countries*, International Energy Agency, Paris.