

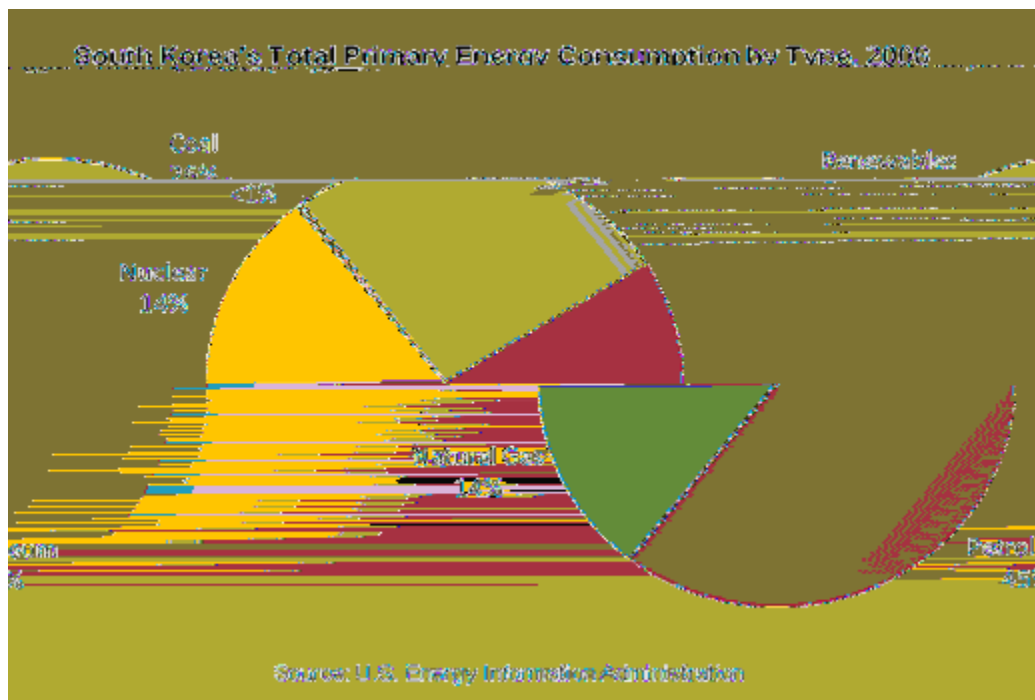
South Korea

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Background

South Korea is a major energy importer, including oil, natural gas, and coal.

South Korea was the world's tenth largest energy consumer in 2008, and with its lack of domestic reserves, Korea is one of the top energy importer



Oil

South Korea has a large refining sector, but relies on crude imports for all of its oil needs.

South Korea consumed over 2.2 million barrels of oil per day (bbl/d) in 2010, making it the ninth largest consumer of oil in the world. The country has no proven domestic crude oil reserves, and is wholly reliant on imports to meet its demand. Although there is no domestic crude oil production, both its state-owned and private oil companies engage in numerous overseas exploration and production projects. South Korea is home to three of the ten largest crude oil refineries in the world, and produced almost 2.5 million bbl/d of refined products in 2009.

Following a period of rapid growth that lasted through the 1990's, South Korea's oil consumption has remained relatively steady over the past decade. South Korea imported over 3.1 million bbl/d of total oil in 2010, and was the world's fifth largest crude oil importer in 2010 at 2.4 million bbl/d. South Korea is highly dependent on the Middle East for its oil supply, with the Persian Gulf

Sector Organization

The Korea National Oil Corporation (KNOC) is the largest entity in the country's upstream sector with a daily production capacity of 50 thousand bbl/d in 2009 at its overseas production sites. KNOC has executed its strategic plan to develop into a top-50 oil company by 2012 with a production capacity of 300 thousand bbl/d and 2 billion barrels of oil and gas reserves. KNOC has pursued this goal through both acquisitions of overseas companies as well as cooperation with major international and national oil companies.

Korea's downstream sector is home to several large international oil companies including SK Energy, the nation's largest International Oil Company (IOC). SK Energy has a roughly 34 percent share of the petroleum product market (excluding LPGs), followed by GS Caltex, S-Oil, and Hyundai Oilbank. These corporations have historically focused on refining, but some have put increasing emphasis on crude extraction projects in other countries. SK Energy also owns the largest stake in the Daehan Oil Pipeline Corporation (DOPCO), which exclusively owns and manages Korea's oil pipelines, although most of the country's oil is distributed in tankers or tank trucks.

The Korea-Oil Producing Nations Exchange (KOPEX) was started in 2006 by the Korea Petroleum Association (KPA) to maintain good relations with supplier nations and to offer technology training to producing nations in the downstream sector. The Ministry of Knowledge Economy has established oil and gas self-sufficiency targets for South Korean companies of 20 percent of all imports in 2012, and the government provides financial support to win bids through the Special Accounts for Energy and Resources (SAER), administered by KNOC, for support on exploration and production projects.

Exploration and Production

In spite of South Korea's lack of known oil reserves, new technologies have allowed KNOC to begin investigating the largely unexplored Ulleung, Yellow, and Jeju Basins for possible drilling sites. KNOC's domestic upstream earnings come primarily from natural gas production at the Donghae-1 gas field (see Natural Gas section). Although new discoveries might improve domestic oil prospects, overseas exploration and production (E&P) plays an essential role in Korea's oil industry, with 189 projects in 36 countries, 43 of which were in production as of December, 2010.

KNOC's Domestic Exploration Blocks

Source: KNOC

The Korean government has helped to encourage private E&P overseas through tax benefits and the extension of credit lines to IOCs by the Korea Export-Import Bank, as well as by providing diplomatic aid in overseas negotiations. KNOC has oil interests in production fields in Vietnam and the Gulf of Mexico, in addition to exploration and development projects in several other countries (see map below for greater detail). Through the company's oil acquisition of Harvest Energy in Canada, KNOC acquired the lease for BlackGold Oilsands, an oil sands site with an estimated 259 million barrels of recoverable bitumen reserves. KNOC also acquired two other

Source: KNOC

Downstream and Refining

According to Oil and Gas Journal, South Korea had 2.7 million bbl/d of crude oil refining capacity at six facilities as of January 1, 2011. South Korea has the sixth largest refining capacity in the world. The country's three largest refineries are owned by SK Energy, GS Caltex, and S-Oil, the latter of which is partially owned by Saudi Aramco.

Korean refineries are increasingly producing more light clean products as a result of refinery upgrades that have taken place in recent years. The increasing sophistication of the Korean refining market is likely to increase capacity utilization, which is already quite high for some refineries. As a result, Korea is expected to remain a leading refiner in its region, with significant exports to China, Singapore, and Indonesia. Korean refiners are taking their expertise in capacity expansion and construction to other parts of the world as well, with foreign oil companies, especially in the Middle East, granting several major Engineering, Procurement, and Construction (EPC) contracts to Korean oil companies in the first half of 2010.

South Korea is also a major producer of petrochemicals with 7.3 million tons per year of ethylene capacity. Most of the nation's petrochemical plants

total primary energy consumption by 2012 due to

related activities. As KOGAS seeks new opportunities for growth however, its focus on overseas upstream activities is increasing.

Exploration and Production

South Korea produced about 19 Bcf of natural gas (about 1.3 percent of consumption) in 2010 from the only domestic gas field in production, Donghae-1 in the Ulleung Basin. The Korea National Oil Corporation (KNOC) will continue production operations until 2018, when the project

pipeline construction option will most likely not be deemed economically feasible without the cooperation of North Korea.

Electricity

Nuclear power accounts for more than one third of South Korea's electricity generation.

South Korea generated about 417 Billion Kilowatthours (BkWh) of net electricity in 2009. Of this amount, 65 percent came from conventional th

Korea increased by over one-third between 2005 and 2010, driven primarily by growing demand from the electric power sector. The electric power sector accounts for more than half of coal consumption, while the industrial sector accounts for most of the remainder.

Generation Structure

South Korea generates the majority of its electricity from conventional thermal sources. According to the Korea Energy Economics Institute, in 2008 about 67 percent of thermal generation was coal-fired, 29 percent was natural gas-fired, and less than 3 percent was oil-fired.

South Korea has the sixth-highest nuclear generation capacity in the world. Its first nuclear plant

