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January 2004

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North Korea

The Democratic Peoples Republic of Korea (North Korea) occupies a strategic location bordering China, South Korea, and Russia. In 1994, North Korea signed an agreement (the "Agreed Framework") sponsored by the United States, Japan, and South Korea to halt its graphite technology nuclear program in exchange for two light water nuclear reactors. In early October 2002, North Korea disclosed to U.S. officials that it had violated the terms of the Agreed Framework by pursuing a nuclear weapons program, and that North Korea considered the agreement nullified.

Note: Information contained in this report is the best available as of January 2004 and can change.



GENERAL BACKGROUND

North Korea's economy, which remains under tight state control (collectivized agriculture and state-owned companies account for about 90% of all economic activity) grew by only 1.2% in 2002, after growing 3.7% in 2001, according to estimates by South Korea's central bank. Strong increases in agricultural, fishing, and mining output contributed to this growth. The modest growth in real Gross Domestic Product (GDP) over the last four years followed a steady economic contraction from 1990 through 1998. While an estimate for 2003 has not yet been released, there are early indications that North Korea's economy may have slowed, largely due to cutbacks in foreign assistance and fuel shipments.

North Korea's communist ideology has been based on the concept of "juche," or self-reliance. Severe economic problems have, however, forced the country to accept international food aid and embark on a series of limited market reforms. Famine in North Korea has reportedly killed hundreds of thousands of people over the last decade. Several governments, including the United States, have provided funding to the United Nations' World Food Program (WFP) for emergency food aid to North Korea.

North Korea has permitted a small amount of foreign investment in recent years, mainly by South Korean firms. According to South Korean figures, South Korea surpassed China in 2002 as North

Korea's largest trading partner.

North Korean-South Korean Relations

In mid-June 2000, the leaders of the two Koreas held their first summit meeting in Pyongyang. The summit led to a joint statement by the two leaders which supported, in general terms, the goal of eventual reunification of the two Korean states, reunification of families divided since the Korean War, and economic cooperation. Developments in inter-Korean relations since 2002 have been mixed. A naval clash near the two countries maritime frontier in June 2002 heightened tensions, but progress has been made in some areas, such as the commencement of work in September 2002 on clearing parts of the Demilitarized Zone (DMZ) to facilitate possible road and rail links. The new South Korean president, Roh Moo-Hyun has continued a policy of engagement with the North.

United States Economic Sanctions

The United States announced on June 19, 2000 that it was easing some of the economic sanctions which have been in place with North Korea under the Trading With the Enemy Act since the start of the Korean War in 1950. Licenses are still required from the Treasury Department's Office of Foreign Assets Control (OFAC) for many transactions, and sales of military and "dual-use" items are still restricted. (See the OFAC [Fact Sheet on North Korea Sanctions](#) for more information.) The designation of North Korea as a state supporter of terrorism by the United States also effectively precludes lending by international financial institutions such as the World Bank.

DOMESTIC ENERGY RESOURCES

North Korea relies on two domestic sources of commercial energy -- coal and hydropower -- for most of its energy needs. In 2001, coal accounted for about 86% of the country's primary energy consumption.

North Korea's electric generating capacity is split nearly evenly between coal-fired thermal plants and hydroelectric plants. In 2001, hydroelectric power plants generated about 69% of North Korea's electricity and thermal plants about 31%. The country's thermal generating capacity is underutilized due to a lack of fuels. The country's total electricity consumption in 2001 was only 58% of what it had been in 1991. The only year-on-year increase in electricity consumption during the entire period from 1992 to 2001 was for 1999 -- and that was only 1%.

As a result of its electricity shortage, the country often experiences blackouts for extended periods of time, and power losses due to an antiquated transmission grid are high. Some hydroelectric facilities are believed to still be out of operation due to flood damage from major flooding in 1996.

The prospect of South Korean help for North Korea's electricity shortage was discussed at the June 2000 summit, and North Korea has been seeking electricity from South Korea since then. A linkage between the electric grids of the two Koreas is one possibility, but it would be of limited immediate value due to the North's poor transmission infrastructure. At present, South Korea has not agreed to supply the North with electricity from its own transmission grid.

Problems with the North Korean coal industry are closely related to the problem with electricity supply. Coal-fired power plants have been running well under capacity in recent years, due in part to problems with rail transportation of coal.

PETROLEUM

North Korea lacks domestic petroleum reserves, but the West Korea Bay may contain hydrocarbon reserves, as it is considered to be a geological extension of China's Bohai Bay. Offshore exploration

concessions previously held by Sweden's Taurus Petroleum, Britain's Soco, and Australia's Beach Petroleum have been allowed to lapse, having failed to find oil in commercial quantities. Petronas of Malaysia has taken over Block A, previously held by Soco.

In November 2001, the North Korean government awarded its first concession for an onshore block to Sovereign Ventures of Singapore, which covers an area in the Tachon-Rajin area near the Chinese border. In September 2002, the company reported that initial seismic survey results had indicated probable oil and natural gas deposits of modest size. Exploratory drilling began in 2003, but no information on results has yet been released.

Norway's Global GeoServices reported in October 2003 that it had signed an agreement for offshore surveys. The company says it intends to begin initial seismic survey work in the first half of 2004.

In the meantime, North Korea must import all of the oil it consumes. Oil accounts for about 6% of total North Korean primary energy consumption, and is mostly limited to non-substitutable uses such as motor gasoline, diesel, and jet fuel. Deliveries of subsidized fuel oil under the Agreed Framework ended in November 2002, after the disclosure of North Korea's nuclear weapons program.

Natural Gas Transportation

South Korea has held discussions with China, Russia, and BP about the possibility of importing natural gas from Russia's huge Kovykta gas field near Irkutsk. While China would be a major importer of gas through the pipeline, the project could be made more economical by adding a link to South Korea, which currently gets the vast majority of its natural gas by tanker as liquefied natural gas (LNG). North Korea is one possible route for the pipeline link to South Korea, and would be less costly than the subsea alternative. It now appear, though, the the pipeline will reach South Korea via a subsea route, bypassing North Korea. A final decision on the pipeline route is expected by mid-2003. Another idea which has been under discussion is the possibility of supplying South Korea with natural gas from the Russian island of Sakhalin via North Korea. It could cover incremental demand in the next decade, after the completion of the pipeline from Irkutsk, but would face the same political risk barriers.

NUCLEAR ENERGY

Prior to 1994, North Korea's nuclear program had been a major concern for regional security, since its graphite reactor technology produced fissionable plutonium which can be used in nuclear weapons. North Korea withdrew from the Nuclear Non-Proliferation Treaty in 1993.

Under the Agreed Framework negotiated with the United States in 1994, North Korea had agreed to freeze its nuclear program in exchange for two new pressurized light-water reactors (which are considered less capable of producing weapons-grade plutonium) and 500,000 metric tons per year (about 3.3 million barrels) of heavy fuel oil to meet its energy needs until the first new reactor becomes operational. KEDO, an international consortium led by the U.S. government (with South Korea, Japan, the European Union, and others), was established to implement the agreement. The European Union joined KEDO in September 1997.

Japan signed a contract in May 1999 committing to provide its \$1 billion contribution to KEDO to fund the new light-water reactors, an action which had been delayed by North Korea's missile test in August 1998. The project was expected to cost a total of \$4.6 billion, with South Korea providing the greatest share of funding at \$3.2 billion. The United States and the European Union also had pledged to contribute funds.

Construction of the light water reactors was to be performed under a turnkey contract with KEPCO, which was awarded in December 1999. Initial site preparation work had begun, and the concrete foundation at the site was laid in August 2002. Training of North Korean technicians who were to operate the reactors had begun in June 2002. The project had faced many delays, and the completion date for the first reactor has been pushed back to at least 2008, from an original completion date of 2003. One hurdle the project had faced was the issue of indemnity for potential liabilities created by the plant. General Electric had originally been chosen to supply the generators, but pulled out of the project when the issue was not resolved to its satisfaction. In January 2001, it was announced that a consortium of Japanese firms, led by Hitachi and Toshiba, would supply the generators.

The disclosure by North Korea in October 2002 that it had a clandestine nuclear weapons program called into question the basis under the Agreed Framework for continuing construction of the reactors. On November 21, 2003, the Executive Board of KEDO, comprised of the United States, Japan, South Korea, and the European Union, made a formal determination that North Korea had not met the conditions necessary for the continuation of the light water reactor project. The project was suspended for a period of one year, beginning December 1, 2003. The future of the project is to be decided by the Executive Board before the end of the suspension period.

COUNTRY OVERVIEW

Head of State: Kim Jong Il (Chairman, National Defense Commission)

Independence: September 9, 1948

Population (2003E): 22.5 million

Location/Size: Eastern Asia/120,540 sq. kilometers (46,800 sq. miles), about the size of Pennsylvania

Major Cities: Pyongyang (capital), Hamhung, Chongjin

Language: Korean

Ethnic Groups: Korean

Religions: Buddhism, Christianity, Chundo Kyo

ECONOMIC OVERVIEW

Currency: 100 Chon = 1 Won

Official Exchange Rate (1/04): US\$1 = 2.20 Won

Gross Domestic Product (2002E): \$11.1 billion

Real GDP Growth Rate (2002E): 1.2% (Central Bank of South Korea estimate)

Merchandise Exports (2002E): \$1.0 billion

Merchandise Imports (2002E): \$1.9 billion

Major Import Products: Petroleum, grain, coking coal, machinery and equipment, and consumer goods

Major Export Products: Minerals, metallurgical products, agricultural and fishery products, manufactured goods (including armaments)

Trading Partners: China, Japan, Russia, Germany, Singapore, South Korea, Hong Kong

ENERGY OVERVIEW

Minister of the Power Industry: Yi Chi-chan

Minister of the Atomic Energy: Choe Hak-Kun

Minister of the Coal Industry: Kim Ki Kyong

Oil and Natural Gas Production/Proven Reserves: None

Oil Consumption (2001E): 86,000 barrels per day (bbl/d) - all imported

Crude Oil Refining Capacity (1/1/03E): 71,000 bbl/d

Recoverable Coal Reserves (12/31/99): 661 million short tons
Coal Production (2001E): 105.3 million short tons
Coal Consumption (2001E): 105.2 million short tons
Electric Generating Capacity (1/1/01E): 9.5 gigawatts (about 53% hydropower)
Electricity Generation (2001E): 30.8 billion kilowatthours
Major Ports: Chongjin, Hamhung, Nampo

ENVIRONMENTAL OVERVIEW

Minister of Land & Environment Protection: II-Son Chang
Total Energy Consumption (2001E): 2.8 quadrillion Btu* (0.7% of world total energy consumption)
Energy-Related Carbon Emissions (2001E): 67.2 million metric tons of carbon (1.0% of world total carbon emissions)
Per Capita Energy Consumption (2001E): 127.5 million Btu (vs U.S. value of 341.8 million Btu)
Per Capita Carbon Emissions (2001E): 3.0 metric tons of carbon (vs U.S. value of 5.5 metric tons of carbon)
Energy Intensity (2001E): 98,741 Btu/\$1995 (vs U.S. value of 10,736 Btu/\$1995)**
Carbon Intensity (2001E): 2.4 metric tons of carbon/thousand \$1995 (vs U.S. value of 0.17 metric tons/thousand \$1995)**
Fuel Share of Energy Consumption (2001E): Coal (86.0%), Oil (6.1%), Hydro (7.7%)
Fuel Share of Carbon Emissions (2001E): Coal (94.9%), Oil (5.1%)
Status in Climate Change Negotiations: Non-Annex I country under the United Nations Framework Convention on Climate Change (ratified December 5th, 1994). Not a signatory to the Kyoto Protocol.
Major Environmental Issues: Localized air pollution attributable to inadequate industrial controls; water pollution; inadequate supplies of potable water.
Major International Environmental Agreements: A party to the Antarctic Treaty, Biodiversity, Climate Change, Environmental Modification, Ozone Layer Protection and Ship Pollution. Has signed, but not ratified, the Antarctic-Environmental Protocol and Law of the Sea.

*The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.

**GDP based on OECD Purchasing Power Parity (PPP) figures published for non-OECD countries

Sources for this report include: The Bank of Korea (South Korea); Chosun Ilbo; CIA World Factbook 2003; Dow Jones News Wire service; DRI-WEFA Asia Economic Outlook; Economist Intelligence Unit ViewsWire; Energy Compass; Hart's Asian Petroleum News; Korea Herald; Korea Times; Lloyds List; Los Angeles Times; U.S. Energy Information Administration; U.S. Department of State; Reuters News Wire.

LINKS

For more information on North Korea, please see these other sources on the EIA web site:

[EIA - Country Information on North Korea](#)

Links to other U.S. government sites:

[CIA World Factbook - North Korea](#)
[U.S. Department of Energy - Office of Fossil Energy - North Korea](#)
[U.S. Treasury Department - Office of Foreign Assets Control](#)
[U.S. State Department - Background Notes - North Korea](#)
[U.S. State Department - Consular Information Sheet - North Korea](#)
[Library of Congress Country Study on North Korea](#)

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[Korean Peninsula Energy Development Organization \(KEDO\)](#)
[North Korea WWW Virtual Library](#)

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File last modified: January 9, 2004

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