

NATIONAL ENERGY POLICY AND ENERGY OVERVIEW

According to the Japanese government, the “underlying goal of Japan’s energy policy is to attain the 3Es, energy security, economic growth and environmental protection simultaneously.”

Japan’s most recent comprehensive national energy policy goes on to say,

Japan stands at a major crossroads in terms of energy. The hurdles we must surmount are by no means low, and, unless we change our lifestyles and the socio-economic system, we will not be able to overcome them. Japan may be required to make some painful energy choices in the future.ⁱ

An assessment of the underlying policy measures that bolster these intertwined “3E” energy goals is therefore warranted. Figure 5 and Table 2 provide a quantitative overview of the Japanese energy situation in 1996.

Figure 5: Total Primary Energy Use by Fuel Type 1996ⁱⁱ

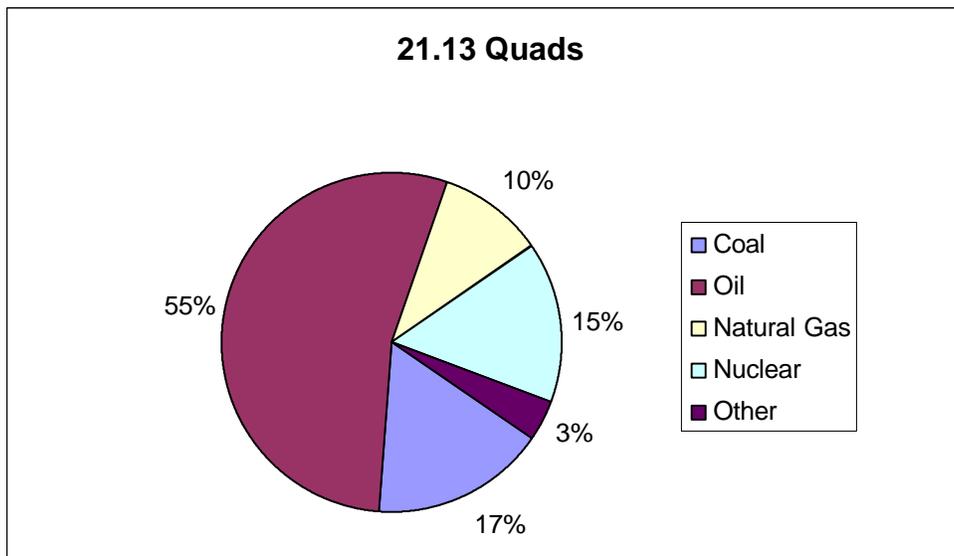


Table 2: 1996 Energy Snapshotⁱⁱⁱ

Dependence on Energy Imports: 81%	Energy Related Carbon Emissions: 290.7 million metric tons (4.8% of world carbon emissions)
Energy Consumption per Capita: 169.9 million Btu	Carbon Emissions per \$1000 of GDP: 0.09 metric tons
Energy Consumption per \$1000 of GDP: 6800 Btu	Carbon Emissions per Capita: 2.3 metric tons
“Kyoto Commitment”: 6% reduction below the 1990 level in GHG emissions by 2008-2012	

Energy Security: Since Japan is dependent upon imports for more than 80% of its primary energy supply and 99.7% of its petroleum, energy security is the preeminent energy policy goal for Japan. Measures taken to enhance Japan’s energy security will include:

- Diversifying sources of petroleum away from heavy reliance on Middle East oil (in 1995 78.6% of Japan's crude oil came from the Middle East)
- Expanding the use of nuclear power and other "oil alternative" energy supply sources (i.e., coal, natural gas, renewables) to reduce oil imports. As a result of the policy goal of shifting Japan's energy mix away from imported oil, Japan's nuclear power output nearly doubled between 1985 and 1996, and the portion of Japan's total energy supply accounted for by oil has fallen from over 80% after the first "oil crisis" to 55% today.^{iv} Several accidents at nuclear facilities in Japan since late 1995 have sparked considerable public debate and in certain locales successful grassroots campaigns have been able to block the siting of new nuclear facilities.^v Given that the government's energy security and climate change policies are so heavily dependent upon continued expansion of Japan's nuclear energy system, the government has restated its commitment to expanding nuclear power and has initiated a program to help the public better understand the role nuclear power must play in Japan's future.^{vi, vii} The government has also started to offer "grants" (subsidies) to local communities that are willing to host nuclear facilities (e.g., the new nuclear power plants and the numerous "interim" spent fuel storage facilities need because storage pools at many reactors will be full in the next 2-4 years.)^{viii}
- Implementing strict new energy efficiency measures for the industrial, buildings and transportation sectors (see Environmental Protection section below).

Economic Growth: Japan has some of the highest energy costs of any industrialized nation, i.e., it has the highest electricity prices and the second highest gasoline prices in the OECD.^{ix} These high energy costs were easier to bear during previous periods of high economic growth. With concern mounting over the current economic malaise, the Japanese government seems intent on deregulating major aspects of its energy economy as a way to increase economic efficiency, lower energy prices, stimulate economic growth, and improve the competitiveness of energy-intensive export industries.^x Over the past three years, Japan has taken steps to deregulate all aspects of its energy sector:

- Deregulation of the Petroleum Sector – Japan has enacted a series of laws and administrative measures within the past few years designed to spur competition and lower prices in the petroleum and gasoline markets. In March of 1996, the Japanese government repealed laws that virtually prohibited the importation of refined petroleum products. The Japanese government also relaxed restrictions on the establishment of new gasoline retail businesses and has even approved the introduction of the first-ever Japanese "self serve" gasoline stations. These actions are designed to spur competition in the retailing of gasoline.^{xi}
- Deregulation of the Natural Gas Sector – In March 1995, the revised Gas Utility Industry Law went into effect. This law is designed to spur competition in the natural gas sector. The principal change has been to allow natural gas distribution companies to supply large industrial customers outside of their service areas. The government has also relaxed other restrictions, enabling industrial firms to purchase natural gas from firms other than designated natural gas distributors.^{xii}
- Deregulation of the Electric Utility Sector – Japan has the highest electricity costs of any OECD nation.^{xiii} The Government of Japan and in particular the Ministry of Industry and International Trade has decided that the only way to reduce electricity prices in Japan is to deregulate the industry and expose the nation's 11 regional integrated utility monopolies to more competition. To implement this decision, the Japanese government amended the Electricity Utilities Law in April 1995. These amendments created the stimulus for the wholesale wheeling market that is now starting in Japan, removed some restrictions on the entrance of Independent Power Producers into the generation market and laid the foundation for the eventual emergence of a competitive retail market in Japan.^{xiv} The Japanese

government believes that a more competitive electricity market has the potential to reduce Japanese electricity rates by 20%, thereby bringing these rates more in line with the average for the OECD.^{xv} A government-chartered advisory body, the Electric Utility Council, has suggested that the market for large customers should be partially liberalized by the end of 2000. The government's efforts to liberalize the utility sector are somewhat at odds with its concerns over energy security and carbon dioxide emissions reductions, both of which have the building of new nuclear power plants as a significant factor. This contradiction between these policy goals is believed to be playing a significant role in the government's inability to forcefully communicate its position and timetable for utility restructuring and deregulation.^{xvi}

Environmental Protection: Japan's principal environmental concern deriving from energy use is climate change and carbon dioxide (CO₂) emissions. As the recent host of Conference of the Parties (COP) III climate negotiations, the Japanese government believes that it must undertake serious measures designed to reduce the country's emissions of carbon dioxide. Specific measures include:

- At the Kyoto climate change conference in December 1997, Japan committed itself to a 6% reduction of greenhouse gas emissions from 1990 levels by a five-year period from 2008 to 2012. The Japanese government believes that fuel switching from coal to natural gas, increased nuclear power generation and higher end use energy efficiencies will be the key to meeting these emission reduction goals between now and 2012.^{xvii} For example, the government believes that it will need to increase electric power generation from nuclear plants by more than 50% over 1997 levels by 2010.^{xviii} The government is also counting on afforestation, Joint Implementation and emission trading measures to play a significant part in helping Japan meet its Kyoto Protocol obligations.^{xix} In the mid-term (2010-2030), the government believes that the wide scale deployment of fuel cell powered automobiles and the more effective use of waste heat (see *Waste Heat Recovery* below) will be important technologies for greenhouse gas reductions. In the longer term (post 2030), the government believes that space-based solar power systems, biomass energy, and CO₂ sequestration and utilization will be key technologies for combating climate change.^{xx}
- In September 1998, the Japanese electric power industry released a report which claimed higher energy consumption in Japan over the course of the next decade will make "it impossible for the government to achieve its [CO₂ emission reduction] goals." According to the Central Research Institute of the Electric Power Institute (CRIEPI), an electric utility funded research institute, Japan's CO₂ emissions will be 14% over 1990 levels by 2010 and not the 6% under 1990 levels required by the Kyoto Protocol. CRIEPI says that international emissions trading system will be needed for Japan to make progress towards its Kyoto Protocol obligations.^{xxi} The electric power industry also believes that increasing use of nuclear power and further introduction of solar and wind power energy sources will be needed to reduce emissions. The industry believes that CO₂ capture and sequestration technologies will be keys to reducing Japan's greenhouse gas emissions over the long term.^{xxii}
- A set of detailed and specific measures designed to reduce Japan's growth in energy usage to a real rate of 0% by the year 2000 was adopted at the April 1, 1997, Ministerial Council for Comprehensive Energy Measures. These measures spell out specific actions to be taken in the industrial, residential and commercial, and transport sectors to increase energy efficiency.
- Industrial Sector Energy Efficiency Measures include the introduction of "quantitative targets" to reduce energy consumption at all Japanese factories. The target calls for an average annual reduction in energy intensity of more than 1%. At present, these targets are to be met through voluntary actions. Firms that are unable to meet these more stringent energy conservation standards can conceivably face punishments, including fines and having the government publicly label them as being in non-compliance (i.e., black-listing the firm). The

government will offer “energy audits” for these factories to help them identify energy saving opportunities.^{xxiii} In 1997, the government performed energy audits in 239 factories, 79 smaller sized firms and 99 office buildings. There are some 70,000 government-certified energy auditors in Japan.^{xxiv}

- Residential and Commercial Sector. The government is advancing a broad energy codes and standards program for buildings and appliances to increase energy efficiency requirements. This program will, among other things, establish new home insulation standards, introduce “energy conservation labels” for homes and buildings, establish stricter energy conservation standards for refrigerators and other appliances, encourage the adoption of high efficiency heating and cooling equipment by subsidizing the purchase of these units.^{xxv} The “Top Runner” methodology (see below) will also be used to establish appliance energy efficiency standards. The government is also actively discussing the introduction of daylight saving time in Japan.^{xxvi}
- Transportation Sector. Specific measures include establishing a new methodology, the so-called “Top Runner” program, to compute fuel efficiency standards for automobiles. The methodology will require all cars in the future to be at least as fuel efficient as today’s most fuel-efficient car. The government intends to tighten the standard every few years to ensure continued gains in efficiency. If implemented, the current Top Runner standard will mandate significant improvements in automobile efficiency (on average a 22.8% improvement by 2010 over 1995 levels).^{xxvii} The government will also establish and implement various traffic demand management measures in urban areas (e.g., car pools, congestion pricing for tolls).^{xxviii}
- On September 8, 1998, the Diet (the Japanese Parliament) passed a law that required the national government, prefectural governments and local governments to draw up “action plans” for reducing greenhouse gases in line with Japan’s Kyoto Protocol obligations. A significant aspect of these plans will be improvements in the efficiency of government-owned buildings and the purchase of low emission vehicles for government-owned fleets.^{xxix, xxx}

ⁱ “Energy in Japan (Summary): Facts and Figures.” Ministry of International Trade and Industry. August 1997. <http://www.miti.go.jp/intro-e/a231200e.html>

ⁱⁱ *Energy Policies of IEA Countries: 1997 Review*. International Energy Agency. Paris, France. 1997.

ⁱⁱⁱ US Department of Energy, Energy Information Agency. “Japan: Country Analysis Brief.” Report. April 1998. <http://www.eia.doe.gov/emeu/cabs/japan.html>

^{iv} US Department of Energy, Energy Information Agency. “Japan: Country Analysis Brief.” Report. April 1998. <http://www.eia.doe.gov/emeu/cabs/japan.html>

^v Choy, Jon. *Japan’s Energy Market Getting Shocked*. JEI Report No. 6B. February 14, 1997. Japan Economic Institute. Washington, DC. and US Department of Energy, Energy Information Agency. “Japan: Country Analysis Brief.” Report. April 1998. <http://www.eia.doe.gov/emeu/cabs/japan.html>

^{vi} Ministry of International Trade and Industry. Agency of Natural Resources and Energy. *Energy in Japan: Facts and Figures*. February 1998. Tokyo

^{vii} “Nuclear Power, the Key to CO2 Reduction.” *Tokyo Nihon Kogyo Shimbun*. February 5, 1998. Page 2.

^{viii} “MITI to Offer Grants for Spent Nuclear Fuel Storage.” *Tokyo Kyodo*. August 13, 1998.

^{ix} US Department of Energy, Energy Information Administration. “Japan: Environmental Review.” June 1998. <http://www.eia.doe.gov/emeu/env/japan.html>

^x Choy, Jon. “Japan’s Energy Market Getting Shocked” JEI Report No. 6B. February 14, 1997. Japan Economic Institute. Washington, DC.

^{xi} Ministry of International Trade and Industry. Agency of Natural Resources and Energy. *Energy in Japan: Facts and Figures*. February 1998. Tokyo.

^{xii} Ministry of International Trade and Industry. Agency of Natural Resources and Energy. *Energy in Japan: Facts and Figures*. February 1998. Tokyo.

^{xiii} US Department of Energy, Energy Information Agency. “Japan: Country Analysis Brief.” Report. April 1998. <http://www.eia.doe.gov/emeu/cabs/japan.html>

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- ^{xiv} Ministry of International Trade and Industry. Agency of Natural Resources and Energy. *Energy in Japan: Facts and Figures*. February 1998. Tokyo.
- ^{xv} US Department of Energy, Energy Information Agency. "Japan: Country Analysis Brief." Report. April 1998. <http://www.eia.doe.gov/emeu/cabs/japan.html>
- ^{xvi} *Nihon Keizai Shimbun*. "Editorial: Power Market Deregulation to Trigger Price War." December 13, 1998.
- ^{xvii} "Tokyo Sets Energy Supply Goal for FY2010." *Tokyo Kagak Kogyo Nippo*. September 21, 1998. Page 12.
- ^{xviii} "Guideline of Measures to Prevent Global Warming: Measures Towards 2010 to Prevent Global Warming." Decision of the Global Warming Prevention Headquarters. Cabinet of the Government of Japan. June 19, 1998.
- ^{xix} Katusmata, Hiroshi. New Energy & Industrial Technology Development Organization. Policy and Planning Department. "Energy Policy in Japan: New Energy and Renewable Energy." Paper presented at US, Japan, Germany Energy Experts Network Meeting held at Maryland University. February 22-23, 1999.
- ^{xx} "MITI, EA Plans on Greenhouse Gas Emissions." *Nihon Keizai Shimbun*. August 8, 1998. Page 10.
- ^{xxi} "Power Industry Says CO2 Reduction Target Unlikely by 2010." *Nikkei Sangyo Shimbun*. September 17, 1998. Page 13.
- ^{xxii} "Electric Industry to Cut CO2 Emissions." *Tokyo Denki Shimbun*. June 25, 1998. p. 1.
- ^{xxiii} Ministry of International Trade and Industry. Agency of Natural Resources and Energy. *Energy in Japan: Facts and Figures*. February 1998. Tokyo.
- ^{xxiv} "ECCJ Profile: Toward Efficient Use of Energy and Global Environmental Protection." The Energy Conservation Center, Japan. 1998. Tokyo.
- ^{xxv} Ministry of International Trade and Industry. Agency of Natural Resources and Energy. *Energy in Japan: Facts and Figures*. February 1998. Tokyo.
- ^{xxvi} "Guideline of Measures to Prevent Global Warming: Measures Towards 2010 to Prevent Global Warming." Decision of the Global Warming Prevention Headquarters. Cabinet of the Government of Japan. June 19, 1998.
- ^{xxvii} "US Raps Japan on Car Fuel Efficiency Rules." *Japan Economic Newswire*. March 8, 1999. Tokyo.
- ^{xxviii} Ministry of International Trade and Industry. Agency of Natural Resources and Energy. *Energy in Japan: Facts and Figures*. February 1998. Tokyo.
- ^{xxix} Public Law Number 117 of 1998. Law Concerning the Promotion of the Measures to Cope with Global Warming. Tentative Translation provided by the Environment Agency of Japan. October 1998.
- ^{xxx} "Diet Enacts Bill on Cutting Greenhouse Gas Emissions." *Tokyo Kyodo*. October 2, 1998.