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Links and References

Energy Supply in Japan http://en.wikipedia.org/wiki/Energy_in_Japan

Japan's Electricity Generation by Source, 1984-2004
<http://www.eia.doe.gov/cabs/Japan/Electricity.html>

HydroVision 2006 <http://www.small-hydro.com/view/library/cd/2006/technical/docs/HydroVision2006-Small%20Hydro%20Workshop-JI-Rev1-pp.pdf>

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RENEWABLE ENERGY
TECHNOLOGY MARKET

Market Overview

Japan, the world's fourth-largest energy consumer, remains dependent on oil imports despite the increased use of nuclear power and natural gas. Japan is working to reduce its dependence on energy imports by diversifying its energy mix, increasing the use of renewable sources of energy, promoting reduced energy consumption in the workplace, and by developing new domestic energy sources. The government views clean energies as the most important source of new energy and has made them the target of policy support.

The Japanese market for renewable energy, including energy conservation and management, estimated at CAD \$8.9 billion in 2000, is now expected to grow to CAD \$58.2 billion by 2010 and CAD \$88.2 billion by 2020. The clean energy market in Japan's populous Kansai region alone was valued at CAD \$3 billion (2004).

Japan is the second largest producer and user of solar photovoltaic energy but lags behind Europe and the United States in the use of wind power technologies. Other sources of renewable energy, such as geothermal and biomass, are growing but do not contribute significantly to Japan's energy supply.

Japan aims to quadruple its electricity generation from solar photovoltaic systems by 2010 to reach 4820 MW. This will require an increase in the application of solar photovoltaic cells to commercial and industrial buildings as well as technological improvements to continue to lower installation and generation costs. The market should grow by 30-40 per cent annually, reaching \$7 billion in 2008.

The Japan New Energy and Industrial Technology Development Organization funds the design, construction and operation of wind energy farms. Japanese biomass energy accounts for

only 0.8 per cent of the total energy production compared to 4.4 per cent in Canada. The annual potentially usable amount of waste biomass, unused biomass and energy crops in Japan totals to 1,300 PJ (equivalent to 35 million kilo litre of crude oil) which is 5.8 per cent of the total Japanese primary energy supply.

The government introduced the "Biomass Nippon Strategy" with a power generation objective of 330 MW and 200 "Biomass Towns" across Japan by 2010. The market for biomass energy-related plants was estimated at \$1 billion in 2007. The biofuels market, mainly bio-diesel and bio-ethanol, is a major component of the sector.

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Opportunities

Business opportunities for sales, licensing or partnering abound for B.C. companies in the new energy sector in Japan, with the greatest potential in the fuel cell market due to increasing demand in the automotive, housing and mobile device industries.

Major Japanese photovoltaic manufacturers have plant expansions or construction in the works, reflecting high growth forecasts, particularly for thin film solar cells. Demand growth for small wind power systems and hybrid lighting systems using wind power, solar power, or secondary batteries is also expected. Japan is seeking technologies for the gasification of biomass materials for power generation or liquid fuel production.

Technologies for pellet-fuelled boilers using pelletized wood and wood chips are available in Japan. However, B.C. companies that can provide this equipment at prices lower than European suppliers will find good prospects.

B.C. companies that can compete with current European suppliers of methane fermentation technologies will find opportunities worth pursuing in this area. Several municipalities wish to use fuel cells to further reduce CO2 emissions at biomass plants.

MARKET ENTRY STRATEGIES

An increasingly popular means of penetrating the Japanese market is by partnering with large Japanese companies that have been considering a foray into the renewable energy market. Through their many subsidiaries, large firms often have a wide-ranging interface with the environmental business community. It may be possible, therefore, to find new business opportunities by contacting large companies and utilities.

A potential avenue for market entry in Japan exists via public-sector end-users - i.e. the central and local governments. It is very difficult for foreign companies to win a bid for public contracts, and registering an equipment supplier or installer with the public sector can be costly and time consuming. Therefore, it may be easier to form a partnership with a registered Japanese manufacturer or trading company.

B.C. companies could consider working with the GLOBE Foundation

office in Tokyo - an important point of contact for focused market research and developed partnerships with key Japanese companies and organizations. The GLOBE foundation office is also able to help B.C. and Canadian firms protect their intellectual property in Japan and Asia (an increasingly important issue) and maximize their business potential.

The Foundation will also soon have a presence in Kobe city as part of a new Canada Information Centre.

Worth noting is the massive investments Japanese firms have made in China, Korea, and the rest of Asia. One important strategy B.C. companies should consider is to partner with these firms in Japan in order to penetrate the Asian markets with value-added products and services.

Estimated Changes in Scale of Renewable Energy Market in Japan

	FY 2004	FY 2010
Photovoltaic Power Generation	\$3.4 billion	\$8.7 billion
Wind-force Power Generation	\$251 million	\$752 million
Biomass Power Generation	\$145 million	\$3.5 billion
Waste Power Generation	\$965 million	\$955 million
Fuel Cells	-	\$1.9 billion
Total	\$4.8 billion	\$15.8 billion

Source: Teikoku Data Bank, March 2006.

COMPETITIVE ENVIRONMENT

The major Japanese manufacturers of solar photovoltaic cells (Sharp, Kyocera, Mitsubishi Electric and Sanyo Electric) account for more than 50 per cent of global production and dominate the domestic market. Other key local players include Kaneka, Canon, Matsushita Battery, Honda, Showa Shell Sekiyu, MSK, Kobe Steel and Kawasaki Heavy Industries. There is a growing center of innovation concentrated on solar related technologies in the Kobe region. Sharp, Kyocera and Sanyo have their headquarters in the Kansai area.

The situation is different in wind power technologies, where foreign companies such as Vestas (Denmark), Emergya Wind Technologies (Holland) and NEG-Micon (U.S.) have the largest share of the market. Mitsubishi Heavy Industries and

Fuji Heavy Industries, through its Subaru division, are the only Japanese wind turbine manufacturers.

European and U.S. firms offer strong competition in the biomass technologies market and many of them have partnered with Japanese companies. Examples include Babcock & Wilcox Volund ApS (Denmark) and JFE Engineering Corp., and AHT Group AG (Germany) and Ube Techno Engineering Corp. Domestically, Core Japan Inc. is a pioneer in biofuels.

Domestic utility companies (Kyushu Electric Power Co., Tohoku Electric Power Co., and Hokkaido Electric Power Co.) operate geothermal electricity plants. Major Japanese companies in this sector are Japan Metals & Chemicals, Mitsubishi

Materials Co. and Donan Geothermal Energy Co. In 2004, Sunpot Co. became the first Japanese manufacturer to start mass-production of residential geothermal heating units.

Japan's biggest generator of hydro power, J-POWER, is interested in the micro-hydro power market. Japan Natural Energy Co., a subsidiary of Tokyo Electric Power Co., already operates a micro-hydro power unit in the underground water system in Yokohama. In 2007, Shinko Electric Co. introduced a micro-hydro power system that can generate electricity with a flow of only several litres of water per second.

REGULATORY ENVIRONMENT

In the past few decades, Japan has significantly improved energy conservation and environmental protection. Japan has become a world leader in the development and implementation of pollution control technologies and energy efficiency innovations. While opportunities exist in many renewable energy sub-sectors, overall energy policy in Japan is tightly controlled by the central government working through major corporate players distributed regionally.

While a program for energy market restructuring began in Japan in the late 1990s, so far the de-facto regional and functional monopoly of the electricity supply market remains. The political will and initiative for renewable energy are not strong compared to the major domestic energy industries in Japan, who have both the market and political power to shape energy policies.

The Basic Policy for the Promotion of Procurement of Eco-Friendly Goods and Services (<http://www.env.go.jp/en/>

<http://www.env.go.jp/en/laws/policy/green/index.html>) provides guidance to all government agencies on procurement items ranging from office supplies to materials for capital works. The Policy is revised from time to time to further shift the demand to items contributing to environmental impact reduction.