USDA Foreign Agricultural Service
GAIN Report
Global Agriculture Information Network

Template Version 2.09

Voluntary Report - Public distribution

Date: 11/17/2008

GAIN Report Number: KS8063

Korea, Republic of

Bio-Fuels

Bio-Fuels Production Report

2008

Approved by:
Lloyd Harbert
U.S. Embassy

Prepared by:
Sun Young Choi / Michael Francom

Report Highlights:
Korea is moving to cutback on green house gas emissions through increased usage of biodiesel. In particular, the government has announced plans to gradually increase the biodiesel blend ratio from its current level of 1 percent to 3 percent by 2012. In an effort to meet these targets, the government has extended industry tax breaks and has taken steps to increase local feed stock production to minimize import dependency. Meanwhile, the biodiesel industry has begun efforts of its own and has secured feedstock plantations in Southeast Asia.

Includes PSD Changes: No
Includes Trade Matrix: No
Trade Report
Seoul [KS1]
[KS]

Korea's Policy on New & Renewable Energy

The number of vehicles in Korea recently surpassed 16 million, a jump of more than 60 percent over the past decade. More vehicles on already congested roads have lead to a doubling of annual carbon dioxide emissions, estimated at more than 590 million tons (2005).

Korea is now the sixth largest producer of greenhouse gas and is reportedly one of the fastest growing producers among members of the Organizations of Economic Cooperation and Development countries.[1] Recognizing this alarming trend and the growing evidence of global warming, the Korean government has undertaken measures to curb green house gas emissions, specifically carbon dioxide.

In September 2008, the Ministry of Knowledge and Economy (MKE)[2] announced new measures, similar to those in place in the European Union, designed to reduce domestic greenhouse gas emissions through the development of cleaner, more environmentally-friendly sources of energy. In particular, the government has set its sights on increasing the use of renewable fuels from the current level of 2 percent of total energy consumption to 4 percent by 2012, and 12 percent by 2030.

Increased biodiesel usage will play an increasingly important role in meeting these goals. In addition, the government recently declared that the domestic biofuel production will be one of 22 economic growth engines over the next 5-10 years.

Government's Biodiesel Production Plan

MKE has developed a biodiesel production plan in consultation with other government agencies. The plan is focused on increasing biodiesel usage and minimizing dependence on imported feed stocks for biofuel production.

As part of this plan, the current biodiesel blend ratio of 1 percent will be increased 0.5 percentage points annually until it reaches 3 percent in 2012. The long-term objective is to eventually raise the blend ratio to 5 percent. MKE has extended industry tax breaks until at least 2010 in order to spur the needed production to meet these targets.

In anticipation of increased biodiesel usage, the Ministry of Food, Agriculture, Forestry & Fisheries (MIFAFF) has made efforts to increase domestic production of biodiesel feed stocks. These activities are described later in the report.

In 2010, MKE will hold inter-ministerial consultations to review the government's biodiesel supply plan and the blend ratio targets. The planned review will look at a several key factors, including the international price of oil; the domestic and international supply and demand situation for biodiesel; and the domestic feedstock production levels.

Korea's Biodiesel Mid & Long Term Production Plan

Year	Biodiesel Blend Ratio (%)	Expected Production	
		Kiloliters	Metric Tons
2007	0.5 %	90,000	79,200
2008	1.0 %	180,000	158,400
2009	1.5 %	270,000	237,600
2010 a/	2.0 %	360,000	316,800
2011	2.5 %	450,000	396,000

[1] S. Korea to Reduce Gas Emission 12/17/2007 Korea Times By Yoon Won-sup
[2] Formerly known as the Ministry of Commerce Industry & Energy (MOCIE)

2012	3.0 %	540,000	475,200
>2012	5 %	N/A	N/A

a/: Government review of country's biodiesel plan
Source: The Ministry of Knowledge & Economy (MKE)

Production

Biodiesel blended with petroleum was first introduced in mid-2006 at a handful of locations. However, the use of biodiesel blend has since expanded and the product is currently available at most filling stations across the country. The most commonly produced biodiesel blend is BD-5, which despite its name only contains 1 percent biodiesel. Smaller amounts of BD-20 are also produced, but the distribution is limited to commercial vehicles such as busses and trucks.

In order to meet the target blend ratios, biodiesel will continue to increase over the coming years. 2008 production doubled from the previous year reaching 180,000 kiloliters (158,400 MT). Production is forecast to grow another 50 percent by 2009 climbing to 270,000 kiloliters (237,600 MT). Local biodiesel producers are more than ready to handle this increased business since there is plenty of excess production capacity. In fact, annual production capacity is 667,000 kiloliters, which is sufficient production to meet the 3 percent blend ratio in 2012.

Currently only eight of the twenty biodiesel operations have supply contracts with the four refineries authorized by the government to blend biodiesel. In order to turn a profit, the remaining twelve biodiesel companies have diversified their business operations and some are considering exporting biodiesel until a supply contract can be brokered.

Biodiesel producers anticipate that the recent economic slowdown will only pinch margins, but will not disrupt production since biodiesel use is mandated.

Korea's Biodiesel Producers (As of July 9, 2007)

Company Name	Annual Capacity (Kl)	Feedstock
KAYA Energy Co., Ltd.	100,000	Soybean Oil & recycled cooking oil
Ecoenertech	33,000	Recycled cooking oil
Dansuk Industrial Co., Ltd.	60,000	Soybean oil
BND Energy	50,000	Soybean Oil & recycled cooking oil
3M Safety	48,000	Soybean oil
BDK	33,000	Soybean Oil & recycled cooking oil
Mudeung Bioenergy	6,000	Recycled cooking oil
Biodiesel Energy	9,000	Soybean oil
CNG	9,000	Recycled cooking oil
Samwoo Oil Chemical Co., Ltd.	12,000	Recycled cooking oil
Next Oil	99,000	Soybean oil
Enertech Inc.	80,000	Palm oil & Soybean oil
Bio Doil Korea	12,000	Soybean Oil & recycled cooking oil
SKChemicals	34,000	Palm oil
Aekyung Petrochecmical Co., Ltd.	32,000	Soybean oil
BND Kunsan	50,000	Soybean Oil & recycled cooking oil
Total	667,000	

Source: The Ministry of Knowledge and Economy (MKE)

Diesel & Biodiesel Consumption and Biodiesel Blend Ratio (2002 – 2009)

	2002	2003	2004	2005	2006	2007	2008	2009
Diesel (Kiloliters)	16.4 million	17.5 million	17.6 million	17.8 million	18 million	18 million	18 million	18 million
Biodiesel (Kiloliters)	1,588	3,775	6,835	15,533	45,804	90,000	180,000	270,000
Blend ratio (%)	0.0	0.02	0.04	0.09	0.25	0.5	1	1.5

Source: Korea Institute of Petroleum Quality (KIPEQ)

Biodiesel Feedstock

Currently there are no official statistics on feedstock use. However, the local industry estimates that nearly 80 percent of feedstock is soybean oil, which is primarily sourced from Argentina and to a lesser extent the United States. The remaining 20 percent is derived from imported palm oil and recycled cooking oil.

However, the local industry is expected to gradually shift towards other less expensive feedstocks, including cassava, jathropa and domestically grown rapeseed. BND Energy recently announced that it would import 10,000 metric tons of jathropa, which will be the first shipment of its kind to be used for biodiesel production in Korea. Jathropa seed is subject to an import duty of 3 percent, while the duty on Jathropa oil is 8 percent.

The use of palm oil remains limited since local producers want to avoid freezing problems during colder months. However, two producers have started using Malaysian palm oil during warmer months (Apr-Sep) since the import duty at the beginning of this year was reduced to zero under the ASEAN FTA.

In response to rising feedstock prices, a handful of Korean companies have made investments in plantations and biodiesel factories located in South East Asia. Samsung C&T purchased a 24,000 hectare palm plantation and palm oil factory in Indonesia earlier this year.

Meanwhile, several other companies are also in the process of negotiating purchases of more than 650,000 hectares of cassava, rapeseed and Jathropa plantations in Southeast Asia. Cassava and tapioca will be used for ethanol production. However, the government has not yet approved the commercial use of ethanol. According to some industry experts, it will take at least 2-3 years before these newly acquired plantations are up and running at full capacity.

Overseas Investment in Biofuel Production & Feedstock Resources

Year	Company Name	Country Name	Area (Hectare)	Crop	Purpose
1996	CJ	Cambodia	1,400	Cassava	Ethanol
2005	Enisium D&C	Indonesia	20 a/	Jathropa	Biodiesel
2006	Changhae Ethanol	Papua New Guinea	20,000	Cassava	Ethanol
	LBL Corp.	Indonesia	100,000	Cassava	Ethanol
2008	Samsung C&T	Indonesia	24,000	Palm oil	Biodiesel
Contract MOU	Odicorp	Indonesia	210,000 (f)	Tapioca	Ethanol
	EN3	Indonesia	200,000 (f)	Tapioca	Ethanol
	KORTH	Thailand	50,000 (f)	Rapeseed, Cassava	Biodiesel, Ethanol
	SK Networks	Vietnam	200,000 (f)	Jathropa	Biodiesel

a/: Pilot cultivation
Source: Industry Data

Domestic Biodiesel Feedstock Production

The Ministry of Food, Agriculture, Forestry and Fisheries (MIFAFF) announced a pilot project last year to begin producing rapeseed in several provinces on an estimated 1,500 hectares. More recently, in August 2008, the program was revised to gradually increase acreage planted from 1,500 hectares to 45,000 hectares by 2012.

With this added acreage, MIFAFF projects that rapeseed production will reach 90,000-100,000 metric tons. Assuming a 40 percent oil yield ratio, about 45,000 kilolitres (40,000 MT) of oil could be produced from the harvested rapeseed. This, however, represents only 8 percent of annual biodiesel consumption suggesting that demand for imported feedstock will remain strong.

Jeju-do, a small island off the southern coast of Korea, is one of the more proactive regions in the country where rapeseed is currently being produced. This year the biodiesel industry purchased 2,750 tons of Jeju-do rapeseed and extracted 1,300 kiloliters (1,100 MT) of oil.

Bio Ethanol

Bio-ethanol has not yet been commercialized for gasoline-powered vehicles. However, the Korea Institute of Petroleum Quality (KIPEQ) and the five local oil refiners have been conducting a joint feasibility study since 2006 and are expected to announce the results before the end of 2008. As the final phase of the study, four filling stations for government vehicles in Gyounggi and North Chungcheong provinces have started using E3 and E5. The government will consider expanding the use of ethanol at public gas stations.