USDA Foreign Agricultural Service
GAIN Report
Global Agriculture Information Network
Template Version 2.07

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Date: 2006/5/30

GAIN Report Number: TW6017

Taiwan

Bio-Fuel Ethanol

Bio-Fuels Annual

2006

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Report Highlights:
Agriculture production costs are relatively high in Taiwan, which will make it difficult to produce a significant quantity of bio-fuels at a reasonable price in Taiwan. Taiwan's bio-fuels policy is under development, and is focused on better utilization of fallowed rice land and reducing energy dependency. Production is limited to small quantities of bio-diesel from recycled cooking oil. Taiwan has encouraged production of feedstocks on fallowed rice land, but the area involved is small and it may be relatively expensive to scale up the program. Currently, there are no impacts on feed, food or trade from bio-fuel production. Imports of bio-fuels are not subject to current import regulations on petroleum products, but manufacturers and sellers are subject to the same rules as marketers of petroleum products.

Includes PSD Changes: No
Includes Trade Matrix: No
Annual Report
Taipei [TW1]
[TW]

Bio-Fuels Policy

1. Domestic Policy Environment

Taiwan's bio-fuels policy is under development. However, the government has initially set a goal to use one million Kilolitre (1,000 liter = 1 Kl) of bio-fuel ethanol and 100,000 Kl of bio-diesel by 2010 and three million Kl of ethanol and 150,000 Kl of bio-diesel by 2015. This would amount to about 10 percent of gasoline and one percent of diesel consumption by 2010 and 30 percent of gasoline and 2 percent of diesel consumption by 2015. Taiwan's total motor vehicles demand in 2005 for gasoline is 11 million Kl and 4 million Kl for diesel.

According to Taiwan's current bio-fuels policy, the above-mentioned bio-fuels demand will be met by domestic production and is aimed at reducing petroleum dependency and increasing energy self-sufficiency. Approximately, 98 percent of the island's energy supplies are imported. Although Taiwan is not a signatory member to Kyoto Protocol, Taiwan has held two conferences on energy to address greenhouse emissions. Taiwan may import bio-diesel and/or ethanol in the future to reduce greenhouse emission.

Government supports bio-diesel production with technology transfers and NT$100 million of environmental subsidies. Three bio-diesel factories have been built in last two years and combine to produce approximately 1,000 Kl of bio-diesel on an annual basis from recycled cooking oil, sunflower, soybean and rapeseed oil. The bio-diesel is used to fuel city trash trucks in a trial program that uses bio-diesel ratios from 100 percent to B20.

While there is no domestic ethanol produced from feedstock, Taiwan authorities support several bio-fuels research projects. They are considering ethanol produced from sugarcane, sweet potato and other biomass from agricultural wastes. A Biomass Energy Committee convened by former Minister of Economic Affairs Ho Mei-yueh is conducting a study to form Taiwan's biomass energy policy and draft incentive programs for bio-fuels. These would include a tax exemption on bio-fuels and an energy tax on petroleum products. Without the use of energy tariffs and taxes to encourage production and usage of bio-fuels, bio-fuels are not competitive with petroleum fuels and imported products. Domestic ethanol production cost from sugarcane and sweet potatoes are estimated to be NT$29.70/liter or $0.92/liter, compared to NT$6.27/liter in Brazil, NT$10.90/liter in the United States and NT$18.20/liter in EU. It will take three to six years of preparation to establish an ethanol distribution system, including developing infrastructure and manufacturing gasohol fuel vehicles.

The Council of Agriculture (COA) initiated a program that sets aside fallowed rice land for production of bio-fuel feed stocks such as sweet potatoes, sunflowers, soybeans and rapeseeds on 2,000 hectares in 2006. A total of 220,000 hectares of production area is available. A significant problem with this approach is that local land holdings are small and fragmented, increasing feedstock collection costs. The purposes of the trial plantation-production are to help rice farmers manage their fallowed land, reduce greenhouse emissions with bio-fuels, and to reduce dependency on imported petroleum.

(Current exchange rate is $1 = NT$32, quoted May 26, 2006).

2. Import Regime for Bio-fuel.

Taiwan has not yet adopted an import regime for bio-fuels. Imports of bio-fuels are not subject to the current import regulations on petroleum and products under the Petroleum Act. However, manufacturers and sellers of bio-fuels are required to follow the same rules as

those marketing petroleum products. These require approval, registration, and manufacturing and business licenses.

Statistics and Analysis

3. Ethanol Trade, Bio-diesel Trade, Corn Sweetener Trade

There is no domestic production or import of bio-fuel ethanol. There are small amounts of bio-diesel imports under HS3824.90.99.90-2 for the Taiwan Environmental Protection Administration (EPA) trial project using bio-diesel in city trash trucks. It is estimated that 300 Kl or metric tons of bio-diesel were imported in 2005 for EPA's trial program. Taiwan imposes 5 percent tariff on bio-diesel imports. Corn sweetener trade is insignificant.

4. Ethanol and sweetener produced from corn.

Taiwan consumes approximately 200,000 metric tons of corn for wet milling to produce starch and corn syrup for domestic consumption, but no ethanol is produced from this process.

5. Ethanol produced from sugarcane and sweet potatoes and other biomass.

There is no ethanol produced from feedstock at the current time.

Ethanol production from sugarcane: Currently, Taiwan has one ethanol plant, which uses sugarcane, with a production capacity of 100,000 Kl/year. As a result of oil price increases, Taiwan's sole cane sugar manufacturer, Taiwan Sugar Corporation (TSC), plans to expand sugar cane production by 8,000 hectares to produce ethanol starting with the 2006/07 crop year. TSC is planning to further expand ethanol production from sugarcane and sweet potatoes to 1.5 million Kl in three years if Taiwan government implements a bio-fuels incentive program. Because of the very high domestic production cost, TSC's bio-fuel ethanol production plan will not survive if there is no incentive program in place. Domestic ethanol production is considered environmentally friendly as it supports farmers managing fallowed rice paddy fields, and increases energy self-sufficiency.

6. Bio-diesel Produced from Collected Recycled Cooking Oil, Soybean, Sunflower and Rapeseed oil.

Taiwan has three small-scale batch type bio-diesel production facilities with a combined production capacity of 13,000 Kl of bio-diesel. The plants are running at less than 10% of capacity as only 1,300 Kl of bio-diesel is consumed in EPA's trial program and this Includes 300 Kl of imports. The underutilization of capacity is largely explained by the payment of NT$100 million of environmental subsidies (3.13 million USD) and the desire to achieve first mover advantages.

Taiwan's demand for crude oil is met by imports and it imports 1.2 million barrels of crude oil a year.

7. Other Bio-fuels Produced from Biomass.

Ethanol produced from biomass is under development. Many research projects supported by government are focusing on developing ethanol production technology. Examples include, cellulose ethanol produced from crop wastes like rice stalks and discussions on problems of catalyst that breakdown biomass. Bio-fuels produced from fuel cells are also one of government supported research projects.

8. Bio-fuels Impact on Traditional Uses such Feed, Food, Trade.

At the current stage, there are no impacts on feed, food and trade resulted from bio-fuels. This is because Taiwan promotes bio-fuels produced from recycled cooking oil and vegetable oils crushed from oil seeds grown on fallowed paddy fields and there is no ethanol production from feedstock. Taiwan's import demand on bio-fuel ethanol is zero and bio-diesel is in the trail period.

9. Statistical Tables

Table 1 – Production and Distribution of Feedstock Commodity Incorporating Use for Bio-fuels Production in 1,000 metric tons

Year Begin	Corn Production	Corn Imports	Corn Total Supply (including carryover stocks)	Corn for Export	Corn for Feed	Corn for Biofuel	Corn for Sweetener	Corn Total use
2001	60	5000	6573	0	4993	0	250	5243
2002	50	5055	6435	0	5000	0	250	5250
2003	53	5075	6313	0	4903	0	200	5113
2004	46	4860	6106	0	4875	0	200	5085
2005	48	4980	6049	0	4818	0	200	5028

Table 2 – Production and Distribution of Biofuels in 1,000 liter or Sweetener in 1,000 metric tons

Year Begin	Biodiesel production	Biodiesel imports	Biodiesel exports	Biodiesel Total Use	Sweetener Production	Sweetener imports	Sweetener Exports	Sweetener Total Use
2001	0	0	0	0	240	1	0	241
2002	0	0	0	0	240	2	0	242
2003	0	0	0	0	240	3	0	243
2004	1000	0	0	1000	200	2	0	202
2005	1000	300 (estimate)	0	1300	200	2	0	202

Table 3 -- Taiwan Imports from Global in kilogram

Year Begin	Corn Sweetener, solid HS 170250	Corn Sweetener, Liquid HS 170260	Ethanol, denatured (regardless of feedstock) HS 220720	Ethanol, undenatured (regardless of feedstock) HS 220710	Industrial fatty alcohols HS 382490
2001	415,398	976,327	20,209	13,419,913	195,704,842
2002	847,244	1,307,292	1,433,565	15,305,644	215,077,219
2003	1,260,486	1,524,988	2,516,290	29,349,526	221,947,547
2004	1,034,048	1,678,598	4,554,544	26,520,322	256,252,984
2005	940,663	1,901,083	6,935,586	28,938,655	251,765,933