USDA Foreign Agricultural Service
GAIN Report
Global Agricultural Information Network

Required Report - public distribution

Date: 7/9/2012
GAIN Report Number: 12044

China - Peoples Republic of

Biofuels Annual

Annual

Approved By:
Melinda Meador
Prepared By:
Ryan Scott and Jiang Junyang

Report Highlights:
China's fuel ethanol production is forecast to reach 2,433 million liters (1.92 million metric tons) in 2012, an eight percent increase from 2011, despite the fact that there are no new ethanol plants or mandatory-use programs for fuel ethanol or biodiesel. Without government subsidies or mandatory-use programs for biodiesel production, producers and processing plants must operate under inconsistent profit margins and price fluctuations for feed stocks.

Production:
The official government guideline for the bio-fuel sector remains unchanged; bio-fuel development (including fuel ethanol and bio-diesel) should not compete with crops intended for human consumption and land used for (food or feed) crop production. China's government and industry have been researching alternative crops like sweet sorghum, but these crops have yet to reach large scale industrial production, largely due to limited land and competition with other crops.

Ethanol: China has five ethanol plants: four plants use grain (corn and wheat) and one uses tuber (cassava). In 2011, the four grain plants produced a total of 2,103 million liters (or 1.66 million metric tons); corn accounted for 82 percent, and wheat was 18 percent. The cassava plant produced about 152 million liters (120,000 MT). Reportedly, China's ethanol plants (except the cassava plant) are almost at full capacity. Sources indicate that the government will not approve additional land use for expansion. According to industry sources, market prices for petroleum determine the blending rate for fuel ethanol, which typically ranges between 8-12 percent.

Biodiesel: In 2012, China's capacity for bio-diesel production is estimated at 3,408 million liters (3 MMT), unchanged from the previous years; actual biodiesel production is estimated at 568 million liters (500,000 MT). Currently, the main input for biodiesel is used/waste kitchen oil or residue from vegetable oil crushers. Prices for these inputs are too expensive for biodiesel production as the animal feed and chemical processing (paints and solvents) sectors consumes the majority of resources.

There continues to be two long-standing uncertainties regarding biodiesel production: the availability of sustainable feedstock (waste cooking oil or oil-bearing tree nuts (jatropha) for bio diesel production; and the level of subsidies provided by the central or provincial governments. In 2011, the Chinese government enforced regulations against the illegal use of recycled waste cooking oil for human consumption, and, as a result, more recycled waste cooking oil was available for biodiesel production. However, without government subsidies or mandatory-use programs for biodiesel production, producers and processing plants must operate under inconsistent profit margins and price fluctuations.

Several government agencies and state companies planted energy trees (jatropha seeds) for bio-diesel production. To date, the government has yet to announce a timetable on when these energy trees will reach large scale bio-diesel production. In 2011, in Hainan province, there was a pilot program in two counties where the blending rate for biodiesel was 2–4 percent in transportation fuel, but, the provincial government and petroleum companies are still discussing the timing and process for implementing a mandatory-use program of biodiesel in Hainan.

Policy and Programs
Ethanol: Since 2008, China's food/feed price inflation has forced the government to tighten its control on the grain processing sector (including ethanol) with the result that there is lower financial support for grain-based ethanol production. For instance, this year, government subsidies were cut for fuel ethanol production to all five designated plants and 10 mandated provinces. This year's average subsidy for grain-based ethanol

production is 6 cents/liter ($79.4/MT), which is a significant decrease from 16 cents per liter ($203/MT) in 2011 and 19 cents per liter ($241/MT) in 2009.

China's Ministry of Finance announced that by 2015, the government will also remove its support on the Value Added Tax (VAT) rebate and impose a five percent consumption tax for grain-based ethanol production.

Table 1: A Historical Look at China's Fuel Ethanol Production

Year	Production Quantity	% Increase from Previous Year
2003	25.3 million liters (or 20,000 MT/year)	
2004	380.1 million liters (or 300,000 MT/year)	1,400%
2005	1,165.6 million liters (or 920,000 MT/year)	206%
2006	1,647.1 million liters (or 1,300,000 MT/year)	41%
2007	1,736 million liters (or 1,370,000 MT/year)	5%
2008	2,002 million liters or (1,580,000 MT/year)	13%
2009	2,179 million liters (or 1,720,000 MT/year)	8%
2010	2,128 million liters (or 1,680,000 MT/year)	-2%
2011	2,255 million liters (or 1,780,000 MT/year)	6%
2012	2,433 million liters (or 1,920,000 MT/year)	8%

Source: Industry Sources

Biodiesel: Over the past few years, China has exempted the five percent consumption tax on biodiesel production as using waste cooking oil for biodiesel production contributes to China's efforts on renewable energy. The industry is lobbying the government to make this a permanent policy to encourage industry development.

Consumption, Trade, and Stocks:

Since 2008, China made ethanol use mandatory in six provinces (Heilongjiang, Jilin, Liaoning, Henan, Anhui and Guangxi) and 27 cities in Hubei, Hebei, Shandong and Jiangsu. These locations were selected due to their close proximity to grain production. Within each province, Petro China or Sinopec must blend ten percent ethanol into their petroleum. Fuel ethanol production runs in tandem with the mandated use (or planned consumption) prescribed by the government. This is a state-run management system which prohibits the private sector from importing fuel ethanol even when market prices are high.

Denatured/Undenatured ethanol: China continues to implement a temporary import tariff of five percent on denatured ethanol (HS code: 220720). This tariff has drastically decreased from 30 percent in 2009 to encourage additional imports of by-products and raw materials. Imports of denatured ethanol are only used in the chemical processing sector, and the government controls domestic distribution of these imports to selected provinces and cities. For undenatured ethanol, the import tariff remains unchanged at 40 percent. The 17 percent on VAT imports and five percent consumption tax are applied to both denatured and undenatured

ethanol.

NOTE: According to China Customs and Ministry of Finance, China implemented a zero percent import tariff this year on ethanol (both Undenatured and Denatured) from ten ASEAN countries, Chile, Singapore and Pakistan, due to China's free trade agreements with these countries. Post will continue to monitor this situation. Reportedly, the import prices of these products are well above current domestic prices in China, so, to date, there have been few imports.

Tariff and Taxes on Ethanol Trade					
HS#		Import Tariff Rate	VAT on Import	Consumption Import Tax	VAT Rebate on Export
220710	Undenatured	40%	17%	5%	0%
220720	Denatured	5%*	17%	5%	0%
* Temporary rate					

Source: Ministry of Finance

Advanced Bio-Fuels:

Sustainable Aviation Fuel Cooperation between China and United States:

Sustainable Aviation Fuel Cooperation became part of the US-China Energy Cooperation program (ECP) in 2011. This cooperation targets biofuel commercialization for the aviation sector in both countries. Jatropha was selected to as the resource to produce biodiesel for the first non-commercial demonstration flight, which took place in November 2011 in Beijing, China. The Chinese government designated China's National Petroleum Cooperation (Petrochina) to develop Jatropha production in Southwest China. After the demonstration flight, there have been no indicators when production would meet commercial demand.

Sweet Sorghum:

China views sweet sorghum as a non-grain feedstock suitable for marginal land and that does not compete with crops for human production. China's industry is working to complete the construction of the first commercial scale ethanol plant in Inner Mongolia. The capacity is estimated to reach 113.6 million liter (100,000 MT) by 2015. It's still unclear how the government will subsidize this feedstock, and when provincial governments will mandate the use of fuel ethanol.

To help develop sustainable ethanol production from sweet sorghum in the United States and China, USDA's Agricultural Research Service (ARS) is working with China's ethanol plant in Inner Mongolia and government research agencies on genetic improvement, sustainability assessment, life cycle and technology-economic analysis and processing technology. In February 2012, the Foreign Agricultural Service facilitated the cooperation on joint research for biomass ethanol sweet sorghum between USDA's ARS and its Chinese partners during the visit of Vice President Xi Jinping of the People's Republic of China to the United States.

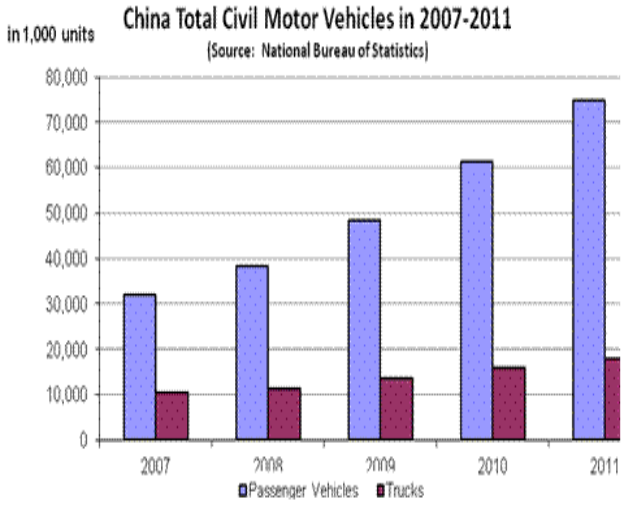
Site Visits/Forum on Advanced Bio-Fuels in the United States

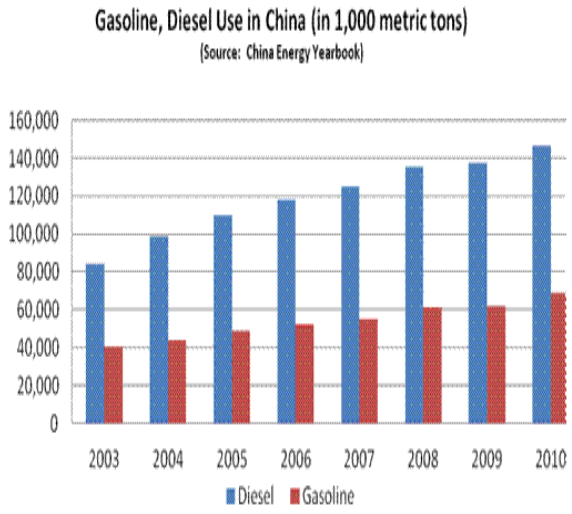
In September 2011, the United States Departments of Agriculture (USDA) and Energy (DOE) hosted 35 Chinese officials at several laboratories and research centers in Idaho and Georgia to compare their respective supply chain systems for second and third generation bio-fuels (non-grain feed stocks, perennial grasses, and algae). USDA and DOE also held a Forum in Washington D.C. where U.S.-China officials announced new public/private partnerships to address mutual interests and challenges.

Research Center on Non--Grain Feed Stock for Biofuel

In 2011, the National Energy Administration (NEA) established a biofuel research center for non-grain feedstocks at China Agricultural University, China's lead on agricultural research. This Center has two research priorities: (1) standardize procedures on collection, transportation and storage of non-grain feedstocks; and (2) standardize marginal land for non-grain feedstock production. NEA also acknowledges a need for policy research on non-grain feedstocks. For the second generation (cellulosic) ethanol development, NEA is encouraging Chinese companies and research agencies to cooperate with foreign countries on cellulosic ethanol. NEA also established a high priority on feedstock development. Potential cooperation areas include: development of feedstock varieties, harvesting, transportation and handling of biomass feedstocks, and machinery and equipment.

Fuel use in China





China's automobile and truck sales in 2012 are estimated to grow over 10 percent. FAS/Beijing estimates that demand for transportation fuel (diesel and gasoline) will increase by eight percent. Diesel is the primary truck fuel in China. In 2010, diesel consumption reached close to 166,240 million liters (or 146 MMT), while gasoline consumption was approximately 87,245 million liters (69 MMT). Both diesel and gasoline consumption in China have increased substantially as China's economy expands. According to China Energy Yearbook, gasoline and

diesel used for transportation sector grew 11.2 percent and eight percent respectively from 2009 to 2010. Please see the graphs in the Appendix below.

APPENDIX:

Table on China's Exports:

HTS#	Description	2007	2008	2009	2010	2011
	Total Ethanol	129,973	108,110	107,895	156,020	43,333
220710	Undenatured	110,718	100,064	91,787	143,740	35,532
220720	Denatured	19,256	8,047	16,108	12,280	7,801

Source: World Trade Atlas	220710, Undenatured (in 1,000 Liters)				220720 Denatured (in 1,000 Liters)		
Partner Country	Quantity			Partner	Quantity		
	2009	2010	2011		2009	2010	2011
World	91,787	143,740	35,532	World	16,108	12,280	7,801
Japan	11,174	14,743	15,276	Korea North	10	3,207	5,775
Taiwan	10,230	17,422	12,237	Taiwan	3,478	3,890	1,541
Korea North	3,272	4,340	4,073	Macau	176	196	235
Philippines	2,464	19,064	2,394	Singapore	0	56	170
India	885	906	872	Cote d Ivoire	0	0	64
Ghana	0	16	195	Canada	48	41	16

Tables on China's Imports:

HTS#	Description	2007	2008	2009	2010	2011
	Total Ethanol	678	402	159	3611	5305
220710	Undenatured	154	293	28	392	160
220720	Denatured	524	109	130	3220	5145

Source: World Trade Atlas	220710, Undenatured				220720 Denatured		
Partner	Quantity			Partner	Quantity		
	2009	2010	2011		2009	2010	2011
World	28	392	160	World	130	3,220	5,145
Netherlands	0	46	91	Indonesia	0	3,004	2,943
Thailand	0	0	24	Pakistan	0	0	1,973
Japan	10	13	17	Japan	99	140	167
Germany	9	12	17	United States	23	32	27
United States	1	12	4	United Kingdom	2	6	13
Korea South	0	1	3	Netherlands	6	9	10
Spain	0	1	2	Taiwan	0	3	7
France	0	0	1	Korea South	0	2	4
Israel	0	0	1	France	0	0	1
United Kingdom	0	160	0	Israel	0	0	1

Advanced Biofuels

Conventional & Advanced Bio ethanol (million liters)						
CY	2007	2008	2009	2010	2011	2012
Production	1,736	2,002	2,179	2,128	2,255	2,433
Imports	0	0	0	0	0	0
Exports	0	0	0	0	0	0
Consumption	1,736	2,002	2,179	2,128	2,255	2,433
Ending Stocks	0	0	0	0	0	0
Production Capacity (Conventional Fuel)						
No. of Bio refineries	4	4	5	5	5	5
Capacity	1,824	2,065	2,243	2,178	2,255	2,433
Production Capacity (Advanced Fuel)						
No. of Biorefineries	0	0	0	0	0	0
Capacity	0	0	0	0	0	0
Co-product Production (1,000 MT)						
DDGS	800	928	1,000	1,020	1,160	1,260
Corn Oil	56	65	70	71	81	88
Wheat Gluten	45	45	45	45	45	45
Wheat Bran	150	150	150	150	150	150
Feed stock Use (1,000 MT)						
Corn	3,200	3,700	4,000	3,900	4,284	4,599
Wheat	1,050	1,050	1,050	1,050	1,050	1,050
Cassava	0	340	470	392	336	448
Rice	NA	NA	NA	NA	NA	NA

Corn to ethanol ratio 3.15, dried cassava's ratio 2.8, and wheat ratio 3.5

Conventional & Advanced Biodiesel (million liters)						
CY	2007	2008	2009	2010	2011	2012
Production	NA	NA	341	341	454	568
Imports	0	0	0	0	0	0
Exports	0	0	0	0		0
Consumption **(Note: > means less than)**	0	0	>170	>150	>200	>250
Ending Stocks	0	0	0	0	0	0
Production Capacity (Conventional Fuel)						
No. of Biorefineries	NA	NA	NA	20	20	20
Capacity	0	0	0	NA	3,408	3,408

Production Capacity (Advanced Fuel)						
No. of Biorefineries	0	0	0	0	0	0
Capacity						
Feed stock Use (1,000 MT)						
Spent Kitchen Oil	NA	NA	NA	NA	NA	NA
Waste Residue from Oil Crushing Plants	NA	NA	NA	NA	NA	NA