USDA Foreign Agricultural Service
GAIN Report
Global Agricultural Information Network

Required Report - public distribution

Date: 7/1/2010
GAIN Report Number: CH 10037

China - Peoples Republic of

Biofuels Annual

Annual Report

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Report Highlights:
China's fuel ethanol production is forecast to rise to 2,357 million liters (1.86 million tons) in 2010, an increase of eight percent compared to 2009. The Government of China (GOC) continues to limit fuel ethanol production to five ethanol plants. This policy will continue to restrict fuel ethanol production based on grains, due to food security concerns in China. Over the long term, China will continue to develop renewable energy sources to address environmental and climate change concerns, and is looking to alternative feed stocks. These alternative feed stocks will not compete with grain production for land. Until a technological breakthrough paves the way for commercial production of cellulosic ethanol, China continues to focus on cassava, sweet sorghum, and sweet potato as feed stock sources for additional fuel ethanol production. However, these crops planted on marginal land are not sustainable

for large scale commercial ethanol production.

Post:
Beijing

Executive Summary:

China's fuel ethanol production is forecast to increase to 2,357 million liters (1.86 million tons) in 2010, an increase of eight percent compared to 2009. The GOC continues to limit fuel ethanol production to five ethanol plants. This policy is expected to remain in place and will continue to restrict fuel ethanol production based on grains, due to food security concerns concerns in China. Over the long term, China will continue to develop renewable energy using alternative feed stocks to address environmental and climate change concerns. These alternative feed stocks will not compete with grain production for land. Until a technological breakthrough paves the way for commercial production of cellulosic ethanol, China continues to focus on cassava, sweet sorghum, and sweet potato as feed stock sources for additional fuel ethanol production. However, these crops planted on marginal land are not sustainable for large scale commercial ethanol production.

The GOC has guided the biofuel sector's development since the 10th five year plan (2000-2005) by investing in new fuel ethanol plants, mandating fuel ethanol use in selected provinces and subsidizing fuel ethanol producers. However, because the GOC remains insistent on maintaining self sufficiency in grain production and avoiding the food versus fuel debate, no additional fuel ethanol plants has been approved during the 11th five year plan (2006-2010). The one exception was a new plant based on cassava as a feed stock, which became operational in 2008.

The official government guideline for the biofuel sector is that biofuel development (including fuel ethanol and bio-diesel) should not compete with crops intended for human consumption. During the 11th five year plan, government and the industry have been experimenting with alternative crops such as cassava, sweet potato, and sweet sorghum for new ethanol plants. However, there has been no industrial ethanol production based on sweet potato or sweet sorghum, indicating these crops cannot sustain large scale production.

Among the five plants currently in operation, four plants are located in Jilin, Heilongjiang, Henan, and Anhui Provinces which are key production regions for corn, wheat, and rice. Their production totaled 1,964 million liters (or 1.55 MMT) in 2009. Nearly 80 percent of production is corn based and the remaining 20 percent is wheat or rice based. The fifth plant, in Guangxi Province, became operational in 2008 and was designed to produce at an

annual capacity of 253.4 million liters (or 200,000 MT), using only cassava as its feedstock. Its fuel ethanol production reached 211.6 million liters (or 167,000 MT) in 2009. The government mandates that 10 provinces implement an E10 program (10 percent ethanol blended into fuel). Currently, E10 use is confined to these 10 provinces because the GOC has not approved new plants since 2008.

Due to scarcity of feed stock for bio-diesel production, the GOC does not mandate bio-diesel use for transportation fuel. Overall annual bio-diesel production capacity in 2009 is estimated at 3,408 million liters (3 MMT), unchanged from the previous year. According to industrial sources, actual biodiesel production in 2009 is estimated at 340.8 million liters (or 300,000 MT). Less than half is qualified as transportation fuel, and it is retailed by private gas stations in mostly rural areas. The rest is used as a chemical solvent for paint production or as a fuel used in factories or thermal power plants. Currently, the main feed stock is spent kitchen oil or residue from vegetable oil crushers. However, these feed stocks are difficult to collect on a commercial scale, and in some circumstances there is competition with substandard restaurants or the catering sector who purchase the oil to recycle and use as "new" cooking oil. China is a net importer of vegetable oils such as soy and palm oil for food consumption. This competition is mainly the result of the relatively higher prices of edible oils.

To develop bio-diesel feed stock, several government agencies and state companies are engaged in developing energy trees that bear oil nuts for bio-diesel production. However, progress has been slow and it will take years before these energy trees reach a growth stage suitable for any industrialization of bio-diesel production.

Policy and Programs:

The GOC views biofuels as an essential and strategic component of a secure economy and diversified energy policy while it addresses environmental and climate change concerns. According to the GOC's mid-and long term plan for China's renewable energy sector (2007-2020), by the end of 2020 China aims to account for 15 percent of energy consumption with non-fossil fuels. To accomplish this goal the GOC is looking to hydropower, solar energy, wind power, and biomass energy.

The GOC has guided the biofuel sector's development since the 10th five year plan (2000-2005) by investing in new fuel ethanol plants, mandating the fuel ethanol use in selected provinces, and subsidizing ethanol producers. However, because the GOC remains insistent on maintaining self sufficiency in grain production and avoiding the food versus fuel debate, no additional fuel ethanol plants have been approved during the 11th five year plan (2006-2010). The one exception was a new plant based on cassava as a feed stock, which became

operational in 2008.

China's oil consumption growth from 2000-2009 was rapid (near eight percent annually). The country is increasingly facing a reliance on foreign oil imports. China's biofuels development outlook faces constraints such as limited arable land and the availability of non-food feed stocks. While fuel ethanol within China originated from grains, the GOC is attempting to direct future ethanol production in a non-food direction.

The fuel ethanol sector (based on grains) occasionally comes under criticism when fossil fuel prices are low or when food prices increase. Therefore, in absence of a shift in GOC policy, industrial development in China will require a focus on non-food grains such as cassava, sweet sorghum and sweet potato in the short term, while shifting eventually to second generation (cellulosic) feed stocks including agriculture and forestry residue over the longer term.

Support programs for fuel ethanol production

Fuel is considered a strategic commodity in China, and the GOC uses price controls to stabilize fluctuation. To maintain low energy costs for all sectors, the central government provides subsidies to state refineries for gasoline and diesel production. As a result, domestic gasoline and diesel prices sometimes do not follow the international market price. The domestic fuel price swing is less volatile than international prices. The government evaluates international oil prices periodically to determine a benchmark price for gasoline and diesel for domestic distribution.

Government subsidy on fuel ethanol

The fuel ethanol price is linked to set government fuel prices and then marketed by state designated retailers. The fuel ethanol price is set at a fixed ratio of 0.911 to the national benchmark gasoline price. Due to relatively high prices of corn, wheat, rice and cassava feed stocks, the five fuel ethanol producers still receive government subsidies to cover losses under the current pricing regime. This pricing regime and the designated retailing system also function to discourage the private sector's investment in fuel ethanol production.

Government Subsidy for Fuel Ethanol Production
(in U.S cent /Liter)

2005	2006	2007	2008*	2009*
21.3	18.9	15.9	20.4	19.2

* Post estimate on the average amount for the five plants in 2008 and 2009 (U.S.$ 1 = RMB 6.8)

In 2009, the average subsidy for fuel ethanol production set by the central government was 19.2 cents/liter (or $243/MT), while it was approximately 20.4 cents/liter (or $258/MT) in 2008 and 15.9 cents/liter (or $202/MT) in 2007. These subsidy adjustments reflect the production cost variation due to changes in feed stock and gasoline prices. Since 2008, the government has implemented a flexible subsidy program for all five of the fuel ethanol

producers. According to the program, the final subsidy level is based on the actual evaluation of each individual plant's performance. The evaluation is scheduled in November of each year. The program is designed to make more efficient use of government funding to the sector.

The government mandates that 10 provinces implement an E10 program (10 percent ethanol blended into fuel). Currently, E10 use is confined to these 10 provinces as the GOC has approved no new plants since 2008. These ten provinces will remain the priority for use of an E10 gasoline (with a fuel/ethanol mix rate of 10 percent). Six of these provinces use E10 within their entire provinces, while four provinces have only partly adopted the product. Close to full adoption by these four provinces remains a priority for the government.

Given the current production capacity, there are no plans for expanding the E10 program to a higher blending level in the ten provinces. This ruled out the market potential for flexible fuel vehicles (for fuel ethanol and other fuels) in the provinces in the near future.

Consumption tax exemption and VAT rebate

In addition to the government subsidy on fuel ethanol production, the five fuel ethanol producers are also granted a five-percent consumption tax exemption and a 17 percent VAT rebate.

Market participation is limited to state owned companies

Under the current policy, all types of enterprises in the biofuels industry will have equal investment opportunity, although the regulators request that investors have strong social responsibility and therefore more security against risk. As a matter of course, only the largest of state owned enterprises are approved for construction and operation of the current five fuel ethanol plants.

For possible foreign investment in future biofuel plants, the current regulatory policy is that the Chinese partner must have a dominant stake in the joint venture.

Policy and support programs are needed for current bio-diesel production

Policy and support programs remain unclear for bio-diesel production in China. Due to scarcity of feed stocks, the GOC does not mandate bio-diesel use for transportation fuel at either the central or provincial level, and therefore there is no incentive program for bio-diesel production for fuel use. Currently, the main feed stock is spent kitchen oil and residue from vegetable oil crushers. However, these feed stocks are difficult to collect on a commercial scale. China is a net importer of vegetable oils such as soy and palm oil for food consumption. Due to relatively higher prices for edible oils, industry insiders have told FAS/Beijing that some spent kitchen oil is recycled and re-used for cooking in substandard restaurants or the catering sector. When

competing against a need for human consumption in China, the renewable energy sector often loses.

For private bio-diesel producers to be competitive, prices have to be lower than the NDRC benchmark price on diesel. However, the price for feed stock is market driven. Due to government control over fuel prices (which virtually functions as price ceiling for bio-diesels), profit margins for private bio-diesel producers are not guaranteed.

As stated in the previous annual report, current government policy dictates support for the development of renewable energy, however, detailed supplementary rules on encouraging bio-diesel production are still absent. In contrast to fuel ethanol producers, the current bio-diesel processors are privately owned and small in scale. Moreover, bio-diesel production does not receive the tax incentives fuel ethanol producers do.

Comparison of Tax Incentives for Fuel Ethanol and Bio-diesel Production		
	Consumption Tax	**Value Added Tax (VAT)**
Fuel Ethanol	0	0
Bio-diesel	5% (or 12 cents /LTR since January 2009.)	*17%
*Interpretation by local taxation authority varies.		

Major Bio-diesel Plants Production Capacity		
Company Name	**Location**	**Annual Production Capacity**
China Biodiesel International Holding Co., LTD	Fujian Province	113.6 million liters (or 100,000 MT)
Wuxi Huahong Biofuel Company	Jiangsu Province	113.6 million liters (or 100,000 MT)
Hainan Zhenghe Biofuel Energy Company	Hebei Province	340.8 million liters (or 300,000 MT)
Gushan Environmental Energy Limited	Sichuan, Hebei, Fuzhou, Beijing	386.2 million liters (or 340,000 MT)
Source: China New Energy and Renewable Energy Industry Report 2008 and FAS/Beijing Estimates		

Support programs for forestry feed stock for future bio-diesel production

To develop alternative bio-diesel feed stocks, several government agencies and state companies are engaged in developing energy trees that bear oil nuts for bio-diesel production. However, progress has been slow and it will take years before these energy trees reach a growth stage suitable for any industrialization of bio-diesel production.

In 2008, the National Development and Reform Commission (NDRC) approved three demonstration projects on bio-diesel. Three state-owned petroleum companies were designated to the three projects. The construction of the three demonstration bio-diesel projects will help support and regulate the bio-diesel sector's development and avoid duplications in construction and investment.

Three Bio-diesel Demonstration Projects approved by NDRC in 2008

Participants	Production Capacity (MT)	Location	Feedstock
Petro China	60,000	Sichuan Province	Jatropha
SinoPec	50,000	Guizhou Province	Jatropha
CNOOC	60,000	Hainan Province	Jatropha

In January 2010, local state media in Hainan province reported that CNOOC's demonstration project was complete and became the first among the three projects for trial operation. However, the completed demonstration project actually uses spent cooking oil as a feed stock, not jatropha. Industry sources estimate that it will take up to three years for the completion of the jatropha base.

According to the State Forestry Administration (SFA), China also plans to build demonstration bases for energy forestry. These bases will total 2 million acres by end of the 11th five year plan (2006-2010). Four tree varieties were selected and will be dedicated to bio-diesel production in the following provinces:

Energy Trees	Provinces	Acreage
Jatropha curcas	Yunnan, Sichuan, Guizhou, and Chongqing	1 million acres
Chinese pistache	Hebei, Shaanxi, Anhui, and Henan	625,000 acres
Cornus wilsoniana	Hunan, Hubei, and Jiangxi	125,000 acres
Xanthoceras sorbifolia Bunge	Inner Mongolia, Liaoning, and Xinjiang	333,000 acres

Source: State Forestry Administration

In January 2010, SFA and China National Petroleum Cooperation jointly announced their partnership to develop forestry biomass for future bio-diesel production. The first phase of cooperation is to build energy forestry bases in Yunnan and Sichuan provinces. The planned acreage is 100,000 acres, for an annual bio-diesel production capacity of 68.16 million liters (or 60,000 MT).

A separate estimate by the National Energy Administration (NEA) showed that total jatropha acreage planted by the end of 2009 reached 280,000 acres. However, these energy tree bases, located in different provinces, are still in the early stage of development and are not sufficient for any industrial bio-diesel production until at least 2013.

National development plan for forestry biomass energy being drafted

SFA is currently drafting the national development plan for forestry biomass energy (2011-2020). According to a notice by the administration, the plan will contribute to the national goal of restructuring the energy consumption mix, ecological protection, and enhance the forestry sector's capacity in addressing climate change while promoting the development of the forestry

biomass energy sector.

Current GOC administration on energy

The National Energy Administration, which was established in 2008, is responsible for drafting the 12th five year plan (2011-2015) for the energy sector. State media report that currently NEA is also drafting a development plan on the new energy sector. NEA divides new energy into two categories: the new energy such as wind, solar power, and biomass power; any new energy formed by the renovation of traditional energy such as clean coal technology, new vehicle fuels, and smart grid.

To strengthen policy making and coordination, the GOC set up a National Energy Committee in January 2010. The committee is headed by Premier Wen Jiabao as the director and a vice premier as deputy director. The main functions include research, strategic planning on national energy development, reviewing key issues on energy security and development, and coordinating key events on energy development and international energy cooperation. The committee members include 21 ministers from 21 state council agencies or ministries.

It is worth noting that the Ministry of Agriculture (MOA) is not included in the National Energy Committee, indicating MOA will only play a minor role in any national energy program development. While there are close linkages between agriculture and biofuels, MOA's absence from the National Energy Committee also reflects the fact that biofuels currently represents such a small share in China's overall energy mix.

Nevertheless, MOA compiled a national planning strategy on biomass energy development, (2007-2015). In this document, MOA focused heavily on the need for full utilization of agricultural waste, promoting biogas, crop stalk gasification, and solid pellet fuel for meeting Chain's rural energy needs. Separately, MOA evaluated natural resources of so-called marginal land for possible energy crop production, laying the ground work for research on sustainable feed stock production.

As NEA, SFA, and MOA are the ministries most involved in the biofuel sector either in feed stock production or industrial production, government officials and industry representatives have highlighted that better coordination between these government ministries is a must for advancements in the biofuel sector to occur.

Bioethanol and Biodiesel:

Fuel ethanol production

The GOC has only approved five ethanol plants for fuel ethanol production. These plants are located in Jilin, Heilongjiang, Henan, Anhui, and Guangxi Provinces which are key grain or cassava producing provinces. Among these five, there are four grain-based plants that began

operation in 2003 and one cassava-based, which became operational in 2008. The cassava plant has a designated annual capacity of 253.5 million liters (200,000 MT). Its fuel ethanol production reached 211.6 million liters (167,000 MT) in 2009, as required by a provincial E10 mandate.

Table 1 shows the expansion of China's fuel ethanol production during the eight year period 2002-2009. Production in 2010 is forecast to grow eight percent from the previous year, in tandem with fuel market expansion in these ten provinces.

Table 2 (unchanged from the previous report) provides a geographic breakdown of the production facilities within China in terms of production capacity. It also gives estimated production data for 2009. The Jilin Province ethanol plant has the largest processing capacity in China with an output of 633.5 million liters (or 500,000 MT/year).

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

Year	Production Quantity	% Increase from Previous Year
2002 and before	Official fuel ethanol production began in 2004. There is little recorded fuel ethanol production before 2002.	N/A
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%

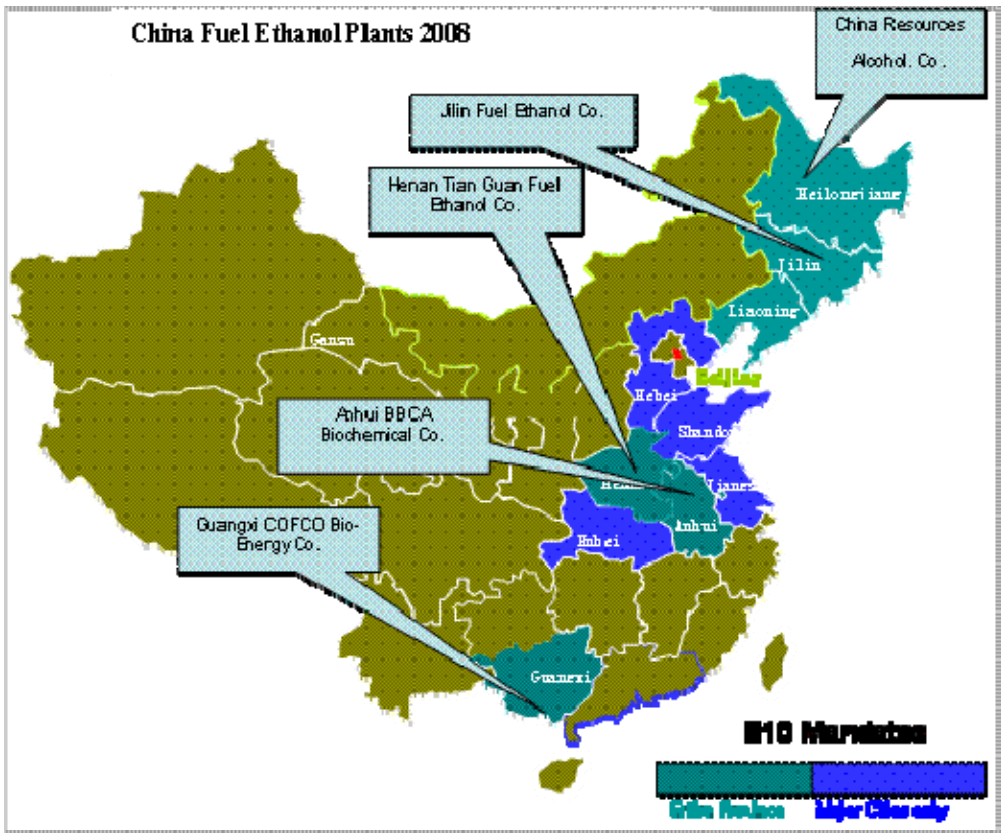
Source: Industry Sources

Table 2. Current Fuel Ethanol Production

Location *(Province, City)*	**Company Name**	**Principal Feedstock**	**2008 Production** *(1000 liters /year)*	**2009 Production** *(1000 liters /year)*	**2010 Production Capacity** *(1000 liters /year)*	**Supply Location**
Heilongjiang, Zhaodong	China Resources Alcohol Co.	Corn/Rice	228,060	240,730	316,750	Heilongjiang

Jilin, Jilin	Jilin Fuel Ethanol Co.	Corn	595,490	633,500	633,500	Jilin Liaoning
Henan, Nanyang	Henan Tian Guan Fuel-Ethanol Co.	Wheat	519,470	561,281	570,150	Henan Hubei (9 cities) Hebei (4 cities)
Anhui, Bengbu	Anhui BBCA Biochemical Co.	Corn	506,800	532,140	557,480	Anhui Shandong (7 cities) Jiangsu (5 cities) Hebei (2 cities)
Guangxi	Guangxi COFCO Bio-Energy Co.	Cassava	152,040	211,589	253,400	Guangxi
Total:			2,001,860	2,179,240	2,331,280	

Source: Industry Sources



Sweet potato and sweet sorghum for ethanol not commercialized

State policy continues to mandate that feed stocks for biofuel development (including fuel ethanol and bio-diesel) should not compete for arable land designated for food crops. Therefore, with the exception of the approve five state run ethanol plants using grain as a feed stock, the future development of feed stock for biofuels must come from marginal, less arable land. For this reason, local industry and government officials advocate for the planting of tuber crops and sweet sorghum (first generation feed stocks) that are suitable for marginal land production, until a technical breakthrough is reached for second generation,

cellulosic, ethanol production.

Industry sources report that some provincial governments have begun lobbying the central government to approve sweet potato as feedstock for new ethanol plants. To date, no approval has been granted. If approved, these plants' individual annual capacity will likely be below 126.7 million liters (100,000 MT), given the limited feedstock supplies. State media report that Hubei, Hebei, Jiangsu, Jiangxi, and Chongqing are the potential provinces/municipalities to receive approval for these new plants.

Research and industrial experiments also focus on sweet sorghum for biofuel production, as it can be grown on marginal lands and has a high drought tolerance. Sweet sorghum has both solid and liquid fermentation methods for ethanol production in trial. Currently, Chinese researchers are scaling up trial production for possible commercialization. However, given its seasonal supply and transportation logistics, production capacity of a biofuel plant based entirely on sweet sorghum will not exceed 126.7 million liters (100,000 MT) annually, according to industry estimates. Heilongjiang, Inner Mongolia, Xinjiang, Liaoning, and Shandong provinces are the potential candidates for approval for these new plants, according to state media reports.

Fuel ethanol consumption, trade, and stocks

The GOC regulates fuel ethanol production and its usage. The market is wholly controlled by the government under a unified pricing mechanism and a state retailing distribution network owned by state run petroleum companies. The production plan at each plant is based on the actual needs of the gas stations in the 10 provinces. As a result, fuel ethanol production runs in tandem with the mandated use (or planned consumption) prescribed by the government. This management system bars the private sector from market access for imports even when there is a favorable price for imported fuel ethanol. As production and usage are well managed by the government, any change in fuel ethanol stocks bears no impact on the market. In this report fuel ethanol stock are estimated to be zero.

Denatured ethanol

For ethanol trade, China temporarily lowered the import tariff on denatured ethanol (HS code:220720) to 5 percent in 2010, down from 30 percent in 2009. This cut, along with similar cuts for 618 other commodities will be in effect for one year, according to an announcement by the Customs Tariff Commission of the State Council in December 2009. The other 619 commodities include: resource products such as coal, granite, phosphorus minerals, electronic parts, home appliances, and equipment. State media reports that the move will help encourage economic restructuring, promote resource/energy saving and environmental protection, and contribute to economic development.

Trade sources estimate that the cut will not lead to immediate denatured ethanol imports.

Domestic distribution of denatured ethanol is under strict control by the government. Its use (or demand) has been confined to several provinces or cities designated by the government. Only licensed plants can supply the market and their production is closely tied to actual market demand. Unless there is a new mandate for expanded use of denatured ethanol, there is no market potential for imported products. Trade sources also report that some large state companies are working with relevant government agencies on the feasibility of expanded use of denatured ethanol for transport fuel, however, the process will take some time given the limitations in infrastructure for fuel transportation and marketing.

Undenatured ethanol

For undenatured ethanol, the import tariff is unchanged at 40 percent. In addition to the tariff, a 17 percent VAT and 5 percent consumption tax are levied on both denatured and undenatured ethanol.

Elimination of VAT rebates for exports of ethanol and corn starch

Beginning in July 2010, the GOC announced the elimination of VAT tax rebates on ethanol and corn starch exports. In June 2009, the GOC initiated a 5 percent VAT rebate on ethanol exports to aid domestic processors in expanding their overseas markets. However, the market witnessed a more than 20 percent rise in corn prices in MY09/10 due to a substantial drop in domestic corn production. Though China's ethanol and starch exports account for a minor portion of its overall production, the removal of the VAT rebate demonstrates the government's intention to stabilize the domestic price for agricultural commodities.

The elimination of the VAT rebate applies to other commodities including: steel products, non-ferrous metal products, aluminum powder, pharmaceutical and other chemicals, plastic, rubber, and glass products. These products, along 406 ten-digit tariff lines, are viewed as highly polluting and energy-intensive in production. The VAT rebate is targeting an overall reduction in production.

China Ethanol Exports in 2005-2010 in 1,000 LTR							
HTS#	**Description**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
	Total Ethanol	162,204	1,017,779	129,973	108,110	107,895	124,533
220710	Undenatured	158,654	970,721	110,718	100,064	91,787	117,160
220720	Denatured	3,550	47,058	19,256	8,047	16,108	7,374
China Ethanol Imports 2005-2010 in 1,000 LTR							
HTS#	**Description**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
	Total Ethanol	19,590	7,972	678	402	159	252
220710	Undenatured	15,936	5,930	154	293	28	164
220720	Denatured	3,654	2,042	524	109	130	89
2010 data to date (Jan-May)							

Source: World Trade Atlas

China Ethanol Exports by Destination in 2006-2010 in 1,000 LTR						
Country	2006	2007	2008	2009	Country	2010 Jan-May
--World--	1,017,779	129,973	108,110	107,895	--World--	124,534
Korea, South	191,642	50,304	34,933	58,534	Korea, South	81,386
Taiwan	41,811	15,592	14,556	13,708	Philippines	16,029
Japan	113,665	35,420	12,560	11,362	Taiwan	11,533
Singapore	59,923	21,659	14,532	6,747	Japan	7,423
Philippines	230	0	4,297	6,288	Australia	3,699
Australia	0	0	17,685	3,705	Singapore	2,350
Korea, North	9,433	5,588	8,467	3,282	Korea, North	1,350
Other Asia, N.E.S.	0	0	0	2,591	India	340
Other	601,074	1,411	1,081	1,680	Others	423

China Ethanol Imports by Origins in 2006-2010 in 1,000 LTR						
Country	2006	2007	2008	2009	Country	2010 Jan - May
--World--	7,972	678	402	159	--World--	252
Japan	1,802	179	131	109	Myanmar	146
United States	149	119	13	25	Japan	73
Germany	91	68	19	9	United States	23
Malaysia	3	16	10	6	United Kingdom	3
Netherlands	10	15	7	6	Netherlands	3
United Kingdom	15	4	1	2	Germany	3
Ireland	0	0	0	1	Taiwan	1
Korea, South	29	12	8	1	Spain	0
Spain	0	0	0	0	Korea, South	0
France	7	0	0	0	France	0
Others	5,868	265	215	0	Others	0
Source: WTA						

Tariff and Taxes on Ethanol Trade						
HS#		Import Tariff Rate	VAT on Import	Consumption Tax on import	VAT Rebate on Export/1	VAT Rebate on Export/2
220710	Undenatured	40%	17%	5%	5%	0%
220720	Denatured	*5%	17%	5%	5%	0%
1/ Before July 15, 2010; 2/ After July 15, 2010						
* The 5% import tariff rate is a temporary rate since January 2010, while it was 30% prior to 2010.						

Conventional & Advanced Bio ethanol (million liters)						
CY	2006	2007	2008	2009	2010	2011
Production	1,647	1,736	2,002	2,179	2,357	2,534
Imports	0	0	0	0	0	0
Exports	0	0	0	0	0	0

Consumption	1,647	1,736	2,002	2,179	2,357	2,534
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	2,179	2,357	2,534
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	800	928	1,000	1,100	1,200
Corn Oil	56	56	65	70	77	84
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	3,200	3,700	4,000	4,400	4,750
Wheat	1,050	1,050	1,050	1,050	1,050	1,050
Cassava	0	0	340	470	500	540
Rice	NA	NA	NA	NA	NA	NA

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

Conventional & Advanced Biodiesel (million liters)						
CY	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Production	NA	NA	NA	341	341	341
Imports	0	0	0	0	0	0
Exports	0	0	0	0	0	
Consumption	0	0	0	less than 170	less than 170	less than 170
Ending Stocks	0	0	0	0	0	0
Production Capacity (Conventional Fuel)						
No. of Biorefineries	NA	NA	NA	10	10	10
Capacity	0	0	0		0	
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

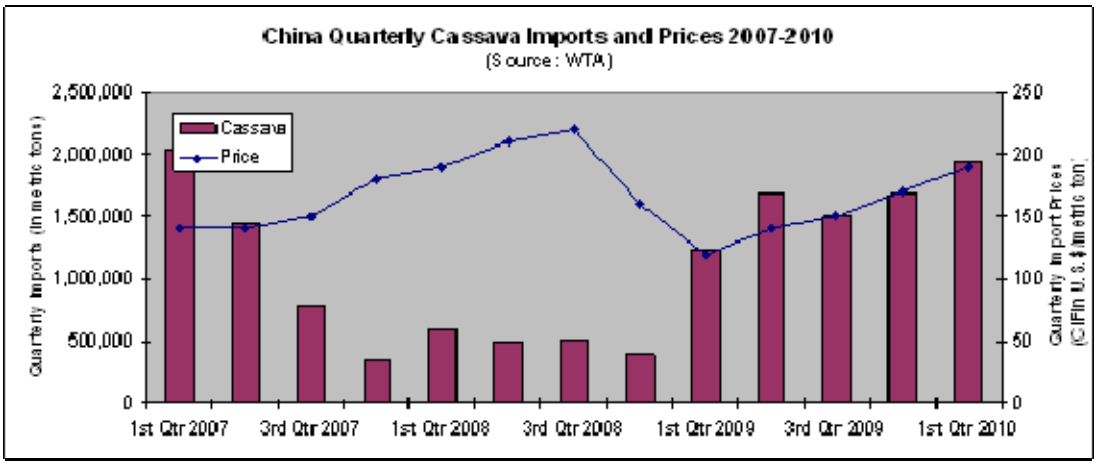
Overall Ethanol Production

Total ethanol production in 2009 is estimated at 6,588 million liters (5.2 MMT), down three percent from the previous year, due to a slow-down in domestic consumption growth, according to a survey by the China Fermentation Association on its member companies. Of this total, 2,153 million liters (1.7 MMT) is intended for fuel ethanol use and the rest for food, industrial, and medical use. About 50 percent of total ethanol production is based on grains (mostly corn, but also including sorghum, wheat, and rice) with the remainder based on

tubers, including cassava and sweet potatoes (Note: China considers tubers as grain). Overall, total ethanol production in 2009 accounted for 46 percent of total capacity, estimated at more than 13,937 million liters (11 MMT). Industrial sources estimate that overall ethanol production in 2010 will rise five percent to reach 6,969 million liters (5.5 MMT), as China's economy recovers steadily from the global financial crisis that hit in 2008.

The top five ethanol producing provinces are Jilin, Henan, Guangxi, Heilongjiang, and Anhui, which are also major grain (and tuber) production regions. These five provinces also host the current five licensed fuel ethanol plants. (For grain production data, refer to GAIN CH10008)

Imported cassava is also used for ethanol production in coastal regions. Due to a zero tariff on cassava from Southeast Asian (ASEAN) countries, imported cassava sometimes is more price competitive when compared with domestically produced grains or tubers. As shown by the following table, China's imported cassava volume fluctuates with price movements. In 2009, despite a 40 percent rise in the import price, cassava imports tripled the 2008 volume, reaching 6.1 MMT. These imports substituted corn for ethanol production.



Imported cassava averaged about $190/MT in the first quarter of 2010, while it was $120/MT in the first quarter 2009.

China's Cassava (071410) Imports from the World by Metric Ton 2003-2010						
	2005	2006	2007	2008	2009	2010*
Total Imports	3,335,415	4,950,435	4,625,427	1,976,418	6,107,157	3,350,072
Thailand	2,695,576	3,864,203	3,202,647	1,247,513	3,862,663	2,634,950
Vietnam	411,573	941,274	1,279,470	610,679	2,091,791	668,586
Indonesia	228,265	144,784	139,124	110,820	143,074	43,022

**Note: 2010 data is for January-May only*

Bio-diesel production and consumption

Due to scarcity of feed stocks for bio-diesel production, the GOC does not mandate any bio-

diesel use for transportation fuel. There is no government agency that oversees bio-diesel production or its usage. As a result, estimates on bio-diesel production vary among different sources.

Annual biodiesel production capacity in 2009 is estimated at 3,408 million liters (three MMT), unchanged from the previous year. According to industrial sources, actual bio-diesel production in 2009 is estimated at 340.8 million liters (300,000 MT), but less than half is qualified as transport fuel and is retailed by private gas stations, mostly in the countryside. The rest is used as a chemical solvent for paint production or as a fuel used in factories or thermal power plants. Currently, the main feed stock is spent kitchen oil or waste residue from vegetable oil crushers. However, these feed stocks are difficult to collect on a commercial scale for bio-diesel production, and compete with some low-end restaurants and catering enterprises that re-use the spent cooking oil.

Bio-diesel feed stock competes with reused cooking oil

In recent years, the GOC has begun encouraging recycling. This is true in some larger cities for garbage, newspapers, Styrofoam, and plastic bottles. However, the GOC now encourages recycling of kitchen waste and has designated a handful of processing plants to collect and process kitchen waste into chemical material for paint or bio-diesel production. However, these plants cannot compete with processors that use spent kitchen oil to produce "new" cooking oil. The bio-diesel price is always lower than the price of cooking oil in China. In addition, the bio-diesel sector competes with other sectors when purchasing feed stock because used cooking oil can also be used in animal feed.

The collection and recycling of spent kitchen oil is a very profitable business. In March 2010 the State Food and Drug Administration (SFDA) issued an urgent notice entitled "preventing waste kitchen oil entering restaurants and the catering service sector." In the notice, SFDA requested that relevant local authorities conduct supervisory inspection of the edible oil used by restaurants and the catering sector and fine or close those establishments found to be using recycled spent kitchen oil. Industry sources report that this recycled oil is normally blended with other edible oils, and mostly used in private restaurants, bakery shops, cafeterias for migrant laborers, or by small food peddlers on the street.

There is no standard method for collection of used cooking oil. Moreover, spotty domestic supply of used cooking oil cannot meet desired capacity for bio-diesel. Currently, bio-diesel plants are small-scale, ranging from 113,600 liters (100 MT) to 22.7 million liters (20,000 MT) of production. These plants usually only operate a few months out of the year due to lack of sufficient supply of feed stock.

Industry sources report that when fuel prices are high, there is potential for expanded use of biofuels. However, as fuel prices fall all profit margins are narrowed, and producers can barely

turn a profit without government subsidies or tax incentives. If market conditions become unfavorable, most bio-diesel plants will cease operations.

Given the current production scale and the constraints outlined above, FAS/Beijing does not believe the GOC will promote large-scale fuel bio-diesel use in the near future.

Advanced Biofuels:

For the long term, China has placed itself on the path toward making cellulosic biofuels commercially viable and is dedicating funds and research to cellulosic biomass conversion. Agricultural residues such as crop straw/stalk and forestry residues are the two main feed stocks for cellulosic ethanol.

MOA has already released relevant standards for surveying the resources of crop stalk and evaluated the potential availability of crop straw for future ethanol production. According to MOA's evaluation, based on projected crop production from 2010 through 2020, stalk reserves will total 7-9 MMT on average annually. However, there is also rural demand for stalks used for electricity generation and animal husbandry. Taking this demand into account, MOA estimates approximately 1.65 MMT is available for cellulosic ethanol production. That said, using crop stalks for ethanol would require establishing a highly efficient system of collection, storage, and transport, in addition to a sizable up-front investment, and more farmer awareness of the economic value of stalks.

China's cellulosic ethanol research

All five ethanol producers and key state petroleum companies are developing experimental demonstration projects on cellulosic technology for ethanol production. However, the per unit cost of producing cellulosic ethanol is higher than that of refining oil due to challenges in logistics infrastructure, cellulose separation (e.g. hexose and pentose), and production facilities and technique (profitability). Future advances in China's cellulosic production will require strong financial support such as subsidies, tax cuts, or loan guarantees from the government and strong public/private partnerships to advance R&D.

Algae as a long term biomass prospect

The third generation of biofuel feed stocks could be found in algal biomass. Both the United States and China are researching ways to eventually use algae as a viable, sustainable feed stock.

Biofuels research cooperation between China and the United States

Both China and the United States are large energy consumers and reliant on foreign oil imports. In addition to creating a secure economy and energy mix, biofuel development addresses environmental concerns, supports agricultural development, and increases rural incomes.

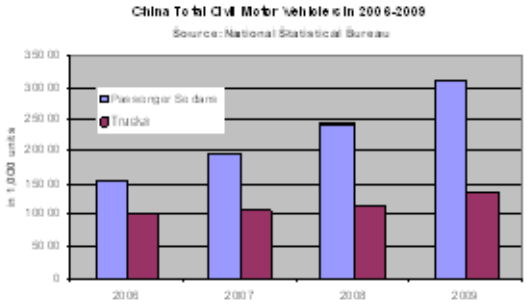
In 2007, the U.S. and China signed an MOU to establish a partnership on biofuel research and development. In May of 2009, NEA developed a series of seminars to help shape mutual biofuels R&D projects. In May of 2010, the first ever "Sino-U.S. Advanced Biofuels Forum" was held in Beijing on the margins of the Strategic and Economic Dialogue. This important forum brought together government officials, researchers, private companies, and NGOs to discuss current technology and share research results. Following the success of the first forum, both governments agreed to hold this forum annually.

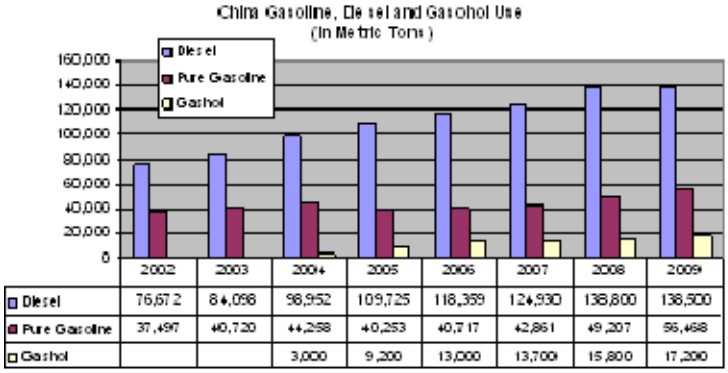
During the forum, the two sides signed several MOUs on biofuel cooperation:

- Developing sustainable biofuels for aviation, which targets a demonstration flight in late 2010/early 2011 in China using biodiesel based on Jatropha.
- Building a cellulosic ethanol demonstration project of 12.67 million liters (10,000 MT) per year in 2011.
- Patent and technology license agreement for a yeast-based cellulosic ethanol project.
- Collaborative research on sustainable algae biodiesel for aviation.

The May forum cemented the great potential for both the United States and China on biofuel collaboration and research. Chinese industries suggested that future collaboration opportunities also exist regarding crop variety breeding and cultivation, harvesting, transportation, and storage logistics. The variation in feed stocks and biofuel products between the U.S. and China makes cooperation even more necessary and valuable for both public and private sectors in the two countries.

Fuel use in China



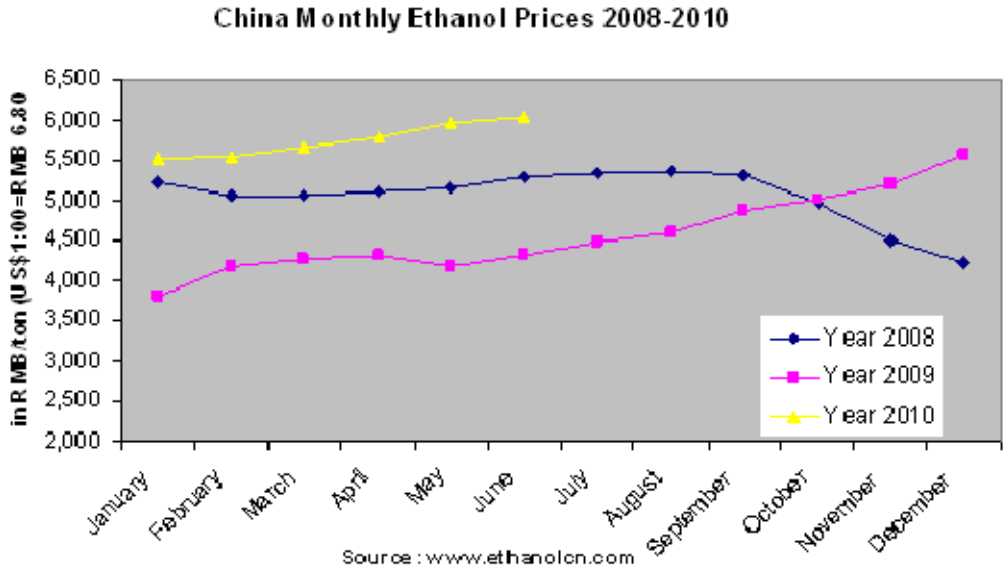


	2002	2003	2004	2005	2006	2007	2008	2009
Diesel	76,672	84,098	98,952	109,725	118,359	124,930	138,800	138,500
Pure Gasoline	37,497	40,720	44,258	40,253	40,717	42,861	49,207	56,468
Gashol			3,000	9,200	13,000	13,700	15,800	17,200

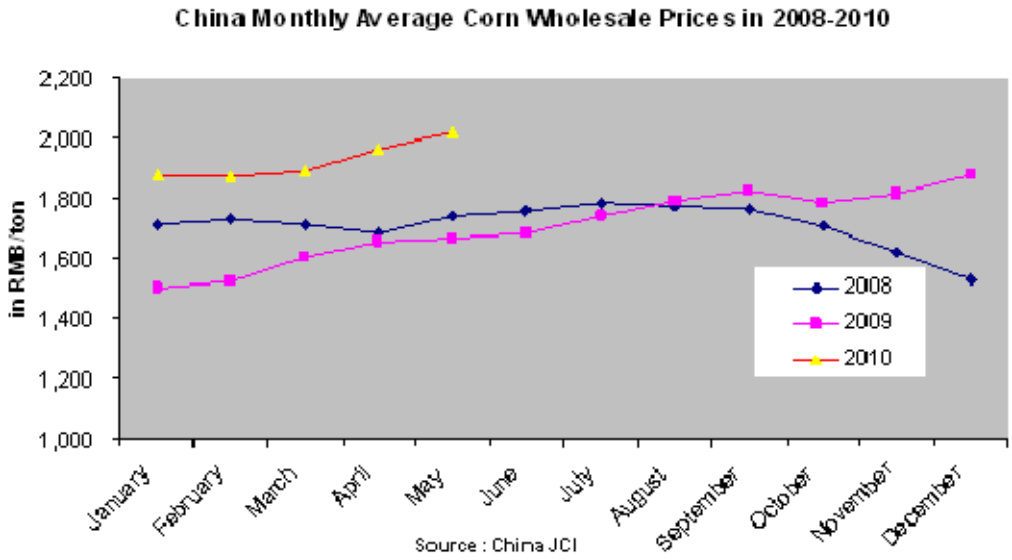
Auto sales in China in 2010 are estimated to grow 15 percent. As the government offers incentives for new purchases and consumers are more aware of energy efficiency and favor cars with lower energy use, the growth rate in the actual gasoline use is lower than the pace of car sales. FAS/Beijing estimates that transport fuel (diesel and gasoline) demand will grow grow eight percent in 2010. Diesel is the primary fuel consumed in China with close to 156,768 million liters (or 138 MMT) consumed in 2009. Pure gasoline consumption was approximately 70,952 million liters (56 MMT in 2009). Both diesel and gasoline consumption in China have increased substantially as China's economy expands.

(Source: China Energy Statistical Yearbook 2008)

China Monthly Ethanol and Corn Prices 2008-2010



China Monthly Average Corn Wholesale Prices in 2008-2010


China Monthly Average Corn Wholesale Prices in 2008-2010
in RMB/ton
2,200
2,000
1,800
1,600
1,400
1,200
1,000
January
February
March
April
May
June
July
August
September
October
November
December
2008
2009
2010
Source : China JCI