

### Research Analysts

Tuesday, December 04, 2007

Martin Foot, Jerry Ho, Adam Clarke, Hino Lam Bear Stearns Asia Ltd.

### Sector Ratings:

Asia-Pacific E&P: Market Underweight  
Asia-Pacific Refining: Market Weight

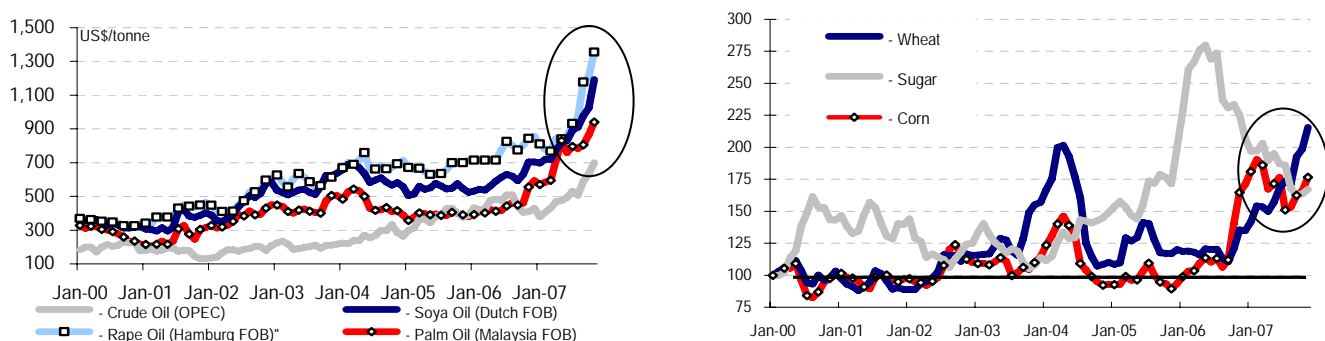
Asia-Pacific Integrated Oil & Gas: Market Underweight  
Asia-Pacific Thermal Coal: Market Overweight

**Alternative Fuel Capacity – No Changes.** We continue to expect alternative fuel capacity to total 959 Mbbl/d by year-end 2010. We calculate that the forecast is equivalent to 3.3% of our 29,582 Mbbl/d gross oil demand forecast for 2010 and 5.2% of our forecast for gasoline, diesel, and naphtha demand.

**Surging Feedstock Prices Force Closures of Food-Based Biofuel Producers.** Food-based feedstock prices have continued their dramatic ascent, wreaking havoc on the economic viability of several biofuel plants and companies. The year-to-date rise in the OPEC basket crude oil price of 52.8% has been eclipsed by a variety of year-to-date biofuel feedstock price increases, such as palm oil (up 64.9%), soya oil (up 70.9%), rapeseed oil (up 67.3%), and wheat (up 55.2%). This has caused many biofuel producers to either reduce operating rates, close plants or even file for bankruptcy, with some examples listed below. Food-based biofuels producers remain exposed to the risk of higher feedstock prices, in our opinion. We prefer integration to a non-food-based feedstock, such as jatropha.

- Continental BioEnergy of Singapore closed its 200k tonne pa biodiesel plant several months ago to undergo maintenance after less than a year of operating, citing high palm oil prices. The company plans to restart its plant at only 20%-30% operating rates. *Platts (December 3, 2007).*
- E3 Biofuels of the U.S. filed for bankruptcy protection on November 30, 2007. Its Nebraska plant makes ethanol from corn and then feeds the byproduct to cattle, according to the company. *Bloomberg (December 3, 2007).*
- China Agri-Industries Holdings Ltd. has shelved plans to build three of its proposed five bioethanol plants in China as Beijing may not approve the projects in light of rising crop prices. *Dow Jones (September 19, 2007).*
- Natural Fuel Australia Ltd. has shut its 120k tonne pa Darwin biodiesel plant, Australia's biggest and among the world's largest, because of poor production economics, just a year after startup. The company's 600k tonne pa plant in Singapore is nearing startup, but is unlikely to run at full capacity. *Platts (November 13, 2007).*
- Australian Renewable Fuels has halted production at its two biodiesel plants in Western Australia and South Australia on high feedstock costs. *Platts (November 13, 2007).*

Figure 1. Commodity Prices: Palm Oil and Rape Oil (LHS) and Sugar, Corn, and Wheat – Indexed: Jan 2000 = 100



Source: Bear Stearns Asia Ltd., CBOT, Oil World, Bloomberg.

Bear Stearns Asia Ltd., regulated by the Securities and Futures Commission of Hong Kong  
U.S. investors contact your Bear, Stearns & Co. Inc. registered representative at 1-800-999-2000

Bear Stearns does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the Firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision.

Please read the important disclosure and analyst certification information in the Addendum section of this report.

**Asia-Pacific Biofuel Developments**

**Figure 2. Asia-Pacific: Biodiesel (LHS) and Ethanol (RHS), Mix Targets and Estimates**

Biodiesel											Ethanol													
2004	2005	2006P	2007E	2008E	2009E	2010E	2011E	2012E	2013E	2014E	2015E	2004	2005	2006P	2007E	2008E	2009E	2010E	2011E	2012E	2013E	2014E	2015E	
- Australia		increasing to B5			> B5 expected						- Australia		increasing to E10			> E10 expected								
- China		increasing to B5			> B5 expected						- China		increasing to E5			> E5 expected								
- India		increasing to B5			> B5 expected						- India		- E5 -			E10 expected								
- Indonesia		B5 increasing to B10			> B10 expected						- Indonesia		E5 increasing to E10			> E10 expected								
- Japan		increasing from nil to B10			> B10 expected						- Japan		increasing from nil to E10			> E10 expected								
- South Korea		- B0.5 -			increasing to B3			- B3 -					- South Korea		increasing to E5			E5 increasing to E10						
- Malaysia		- B5 -			> B10 expected						- New Zealand		- E1 -			- E3.4 -								
- New Zealand		increasing to B2.25			> B2.25						- Philippines		- E1 -			- E5 -			- E10 -			> E10 expected		
- Philippines		- B1 -			- B2 -			increasing to B5					- Taiwan		- E3 -			> E10 expected						
- Taiwan		- B1 -			- B2 -						- Thailand		E5 increasing to E10			- E10 -			> E10 expected					
- Thailand		- B2 -			increasing to B5			> B10 expected																

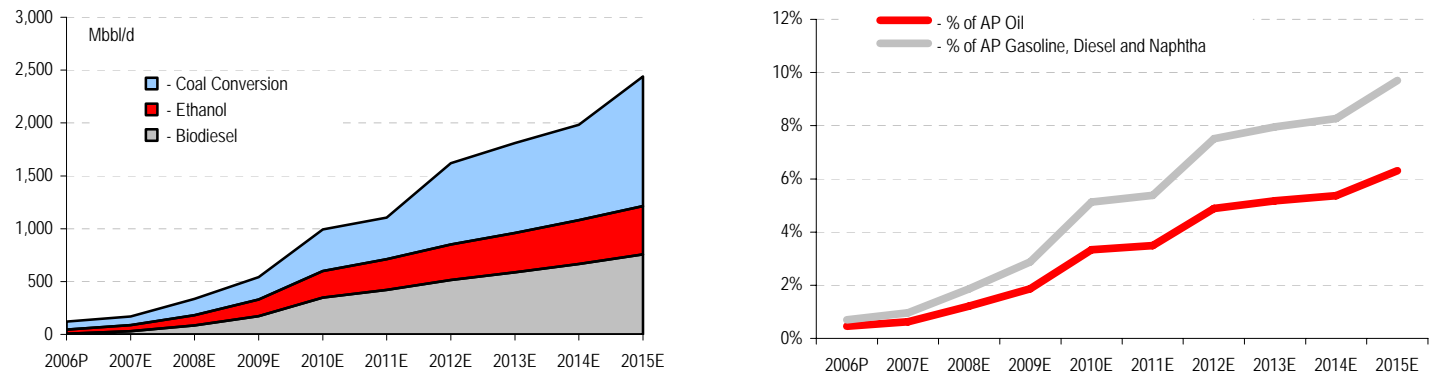
Source: Bear Stearns Asia Ltd. estimates and various news reports.

**Figure 3. Asia-Pacific: Biofuel and Coal Conversion Capacity Estimates**

Mbbl/d	2006P	2007E	2008E	2009E	2010E	2015E
- Biodiesel	7	33	92	189	384	833
- Ethanol	29	41	72	116	181	331
- Coal To Liquids	0	0	30	52	178	905
- Coal To Methanol	73	73	80	80	74	85
- Coal to DME	2	5	12	33	79	142
- Coal to Olefins	0	4	33	44	63	94
<b>Total</b>	<b>111</b>	<b>156</b>	<b>318</b>	<b>514</b>	<b>959</b>	<b>2,390</b>
- Change	55	45	162	196	445	1,431
- % Change	97%	40%	104%	62%	87%	74%

Source: Factiva and Bear Stearns Asia Ltd. estimates.

**Figure 4. Asia-Pacific: Ethanol, Biodiesel and Coal Conversion Capacity (LHS) and Oil, Gasoline, Diesel and Naphtha Displaced (RHS)**



Source: Bear Stearns Asia Ltd. estimates.

**Figure 5. Asia Pacific: Biodiesel Capacity (LHS) and Ethanol Capacity (RHS)**

BIODIESEL - k tonnes							ETHANOL - k tonnes						
	2005	2006P	2007E	2008E	2009E	2010E		2005	2006P	2007E	2008E	2009E	2010E
- Australia	-	312	715	869	869	869	- Australia	55	55	55	84	142	142
- China	-	-	163	643	853	1,173	- China	1,460	1,660	1,920	2,460	3,220	5,870
- India	-	-	13	13	33	33	- India	-	69	69	69	69	69
- Indonesia	-	180	800	1,800	1,800	1,800	- Indonesia	-	190	285	420	499	499
- Japan	-	-	-	-	64	64	- Japan	-	-	0.40	1.28	13.16	25.05
- South Korea	40	40	40	370	370	370	- South Korea	-	-	-	-	-	-
- Malaysia	125	215	2,445	3,555	3,655	3,755	- Malaysia	-	-	-	420	420	420
- New Zealand	-	-	20	40	60	62	- New Zealand	-	-	-	-	-	-
- Pakistan	-	-	-	-	-	-	- Pakistan	-	-	-	-	-	-
- Philippines	53	167	167	717	1,267	1,967	- Philippines	-	16	40	40	390	508
- Singapore	-	50	1,116	1,466	1,466	1,466	- Singapore	-	-	600	600	600	600
- Taiwan	-	-	-	-	-	-	- Taiwan	-	-	-	-	-	-
- Thailand	-	190	582	805	1,245	2,009	- Thailand	146	403	1,410	1,468	1,468	1,468
- Vietnam	-	-	-	-	-	-	- Vietnam	-	-	-	50	50	79
- Other	-	-	-	-	-	-	- Other	-	-	-	-	-	-
<b>Total</b>	<b>218</b>	<b>1,153</b>	<b>6,062</b>	<b>10,278</b>	<b>11,682</b>	<b>13,568</b>	<b>Total</b>	<b>1,661</b>	<b>2,394</b>	<b>4,379</b>	<b>5,612</b>	<b>6,871</b>	<b>9,680</b>

Source: Bear Stearns Asia Ltd. estimates, Factiva, Reuters, Bloomberg.

### Australia:

- **Natural Fuel Shuts Australia's Biggest Biodiesel Plant.** Natural Fuel Australia Ltd. has shut its Darwin biodiesel plant because of poor production economics, just a year after startup and barely months after making its first exports of biodiesel to Asian and U.S. customers. The biodiesel plant, which at 120k tonnes pa (2,400 bbl/d) of biodiesel production is Australia's biggest biodiesel refinery and one of the world's largest, is unlikely to restart any time soon. The plant was shut in September or October. The plant opened in November 2006 and hit its nameplate capacity in March. In August, it announced its first export of 7,700 tonnes of biodiesel to Asia and the U.S. Sources said that the Darwin plant was struggling to remain profitable, with feedstock costs soaring this year and the value of biodiesel itself not always keeping up. The plant has also struggled with quality issues since ramping up production to capacity levels earlier this year. It could not be immediately confirmed whether the plant was still struggling with problems over production quality. The news is another blow to Asia's biodiesel industry, which in recent weeks has seen rival producer Australian Renewable Fuels call a halt to production at its two plants in Western Australia and South Australia on high feedstock costs. Other biodiesel plants around Asia are also shutting down, relocating, or converting production to alternative specialty chemical products, like dioctyl phthalate, a plasticizer that can be used to make PVC. *Platts Commodity News (November 13, 2007).*
- **Biofuels Under Capacity.** APAC Biofuel Consultants reports total Australian biofuel production could reach 1bn liters in 2009. APAC forecasts ethanol production to reach 300mn liters by 2009 and 1bn liters by 2011. Biodiesel production is being constrained by commissioning problems and high feedstock prices; with new plant construction underway, we expect capacity to reach 620mn liters by 2009. The replacement of feedstocks such as canola and palm oil with yet-undeveloped algal resources will free biodiesel from competition with food markets. *Media Monitors Australia Pty (September 13, 2007).*

### China:

- **China Fuel Shortage Spurring Corn Ethanol Production.** China's serious shortage of oil products is prompting the country's ethanol makers to step up biofuel production, helping drive up corn prices despite an expected record harvest this year, traders said on Thursday. Many small ethanol plants have resumed operations and new ones also came on stream, industry officials said, which has added more than 800k tonnes of ethanol to supply in the northeast corn producing provinces, particularly in Heilongjiang and Jilin. Domestic corn prices jumped more than 10% this month to a fresh high, with prices in the southern province of Guangdong up 20% to CNY2,100 (US\$ 284.3) a tonne.

Beijing will release more than 2mn tonnes of corn to ease the shortage-led price rise and help feed mills, particularly in the south, industry sources said. Traders said petrol stations were now blending more ethanol into gasoline to make up for the shortage, though officially only four government-sponsored ethanol plants are allowed to supply fuel ethanol. *Reuters News (November 29, 2007)*.

- Feedstock Bottleneck to Hinder China's Biodiesel Industry. China's biodiesel feedstock supplies will be unstable and inadequate for another three to four years, and will serve as a bottleneck to the industry's development, industry insiders said at a recent forum held in Beijing. According to government plans, jatropha curcas are to serve as the major source of raw material for the country's biodiesel industry, and a buildup of jatropha-based biodiesel plants in the provinces of Sichuan, Guizhou, Yunnan, and Hainan is already underway. However, the country only started planting jatropha trees a year ago and lacks experience in dealing with issues such as insect pests. As a result, it is hard to make predictions about future production volumes, the official said. *China Business Newswire (October 30, 2007)*.
- China Restricts Foreign Investment in Biofuel Plants. China has announced restrictions on foreign investment in fuel ethanol and biodiesel plants as the government seeks to strike a balance between securing the country's fuel needs through development of alternative energy and ensuring general food supply and security. Foreign investors will only be able to hold minority stakes in projects such as fuel ethanol and biodiesel plants, according to a revised directory for foreign investment in China, released November 7, 2007 by top economic planning agency the National Development Reform Commission and the Ministry of Commerce. *Platts Oilgram News (November 12, 2007)*.
- China to Subsidize Biofuel Feedstock Producers. China's Ministry of Finance has finalized a subsidy plan for farmers and firms involved in planting feedstock for the domestic biofuel industry, which will be implemented early next year, a senior official with the ministry's tax department said today at the Next Biofuels Technologies forum. Firms who plant crops for biofuel on land not intended for food will be subsidized CNY200 (US\$26.9) per mu (US\$403.5 per hectare) a year, while such crops grown in forested areas will receive CNY180 (US\$24) per mu (US\$360 per hectare), said Liu Yonglu, deputy director of the Ministry of Finance's Tax Department. According to China's Renewable Energy Mid- and Long-Term Plan released last month, China aims to eventually replace 10mn tonnes of fossil fuel with biomass, and produce 10mn tonnes of non-grain ethanol fuel annually. The country plans to have biofuel account for 15% of the country's total transportation fuel consumption by 2020. *China Business Newswire (October 25, 2007)*.
- Study Says China's, India's Biofuels Plans Could Cause Water Shortages. China's and India's plans to produce more biofuels could cause water shortages, which is needed for crops to feed their growing populations. The International Water Management Institute or IWMI study said both countries are counting on maize and sugarcane, which need large amounts of water, for much of their biofuels. "Crop production for biofuels in China and India would likely jeopardize sustainable water use and thus affect irrigated production of food crops, including cereals and vegetables, which would then need to be imported in larger quantities," Charlotte de Fraiture, the study's lead author, said in a statement. "Are these countries, particularly India, which has devoted so much effort to achieving food security, adequately considering the trade-offs involved, especially the prospect of importing food to free up sufficient water and land for production of biofuel crops?" The study follows one released earlier this week by the National Research Council, which warned that increased production of these crops for ethanol could threaten water supplies in the U.S. To meet their biofuels targets, China would need to produce 26% more maize and India 16% more sugarcane, the study found. It said doing so would require an extra 75 liters (20 gallons) of irrigation water per person per day in China, and an additional 70 liters (18.5 gallons) per day in India, beyond what is needed for food. The study suggested that the two countries could focus on crops that need less water, such as sweet sorghum for ethanol, and species including the jatropha bush and pongamia trees for biodiesel. India has already announced plans to plant about 3.1mn hectares (7.7mn acres) of jatropha plantations by 2009, and to have identified a further 40mn hectares (98.8mn acres) of wasteland by then to grow the plant. *Associated Press Newswires (October 11, 2007)*.
- China Agri-Industries Shelves Some Bioethanol Plant Plan. China Agri-Industries Holdings Ltd. has shelved plans to build three of its proposed five bioethanol plants in China because Beijing may not give the go-ahead due to rising crop prices. The Chinese government is trying to limit the use of corn in industrial applications such as ethanol

production as high corn prices, backed by strong domestic demand, have accelerated the country's inflation. China Agri-Industries, a Chinese crop processor and biofuel producer, said in a statement that it has called off the plan to build a grain-fed bioethanol plant in northeastern Liaoning province, which will require an investment of HKD344.6mn. It also dropped another plan to build a HKD373.4mn bioethanol plant in northeastern Hebei province, which would use grains and other materials as feedstock. China Agri-Industries also scrapped its plan to build a HKD143.4mn non-grain-fed bioethanol plant in central Hubei province. *Dow Jones International News (September 19, 2007).*

**Figure 6. China: Ethanol Capacity (k tonnes) – (Highlights = New Entries)**

Producer	Status	2006P	2007E	2008E	2009E	2010E
- Jilin Fuel Alcohol Co.	Operating	300	300	300	300	300
- Heilongjiang China Resources Alcohol Co.	Operating	100	100	100	100	100
- Anhui Fengyuan Biochemical Co.	Operating	320	320	320	320	320
- Henan Tianguan Fuel Ethanol	Operating	300	300	300	300	300
- Henan Tianguan Fuel Ethanol - Phase 2	Operating	200	200	200	200	200
- COFCO - Anhui (Potential Purchase)	Operating	440	440	440	440	440
- COFCO - Nanning/Guangxi	Operating	-	200	200	200	200
- China Sun - Phase 1	Planned	-	60	60	60	60
- COFCO - Chifeng/Inner Mongolia	Feasibility	-	-	300	300	300
- China Sun - Phase 2	Planned	-	-	40	40	40
- COFCO - Guangxi Zhuang Auton. Region	Planned	-	-	-	400	400
- Tiger Ethanol - Xinjiang	Planned	-	-	-	20	20
- Ningxia Dibo New Energy Company	Planned	-	-	-	240	240
- China Agri-Industries	Planned	-	-	-	100	100
- COFCO - Hebei	Cancelled	-	-	-	-	-
- COFCO - Liaoning	Cancelled	-	-	-	-	-
- COFCO - Jinmen/Hubei	Cancelled	-	-	-	-	-
- COFCO - Heilongjiang/Guangxi	Planned	-	-	-	-	300
- PetroChina - 1	Planned	-	-	-	-	600
- Petro China - Others	Planned	-	-	-	-	1,400
- CNPC (Shandong)	Planned	-	-	-	-	200
- Shuaiyi Group Corporation - Heilongjiang - Straw	Planned	-	-	-	-	150
<b>Total</b>		<b>1,660</b>	<b>1,920</b>	<b>2,460</b>	<b>3,220</b>	<b>5,870</b>

Source: Factiva and Bear Stearns Asia Ltd. estimates.

### **India:**

- **Indian Government Set to Reduce Ethanol Tariffs.** The Indian government is considering a proposal to slash the 16% excise duty on ethanol and establish a uniform price. The measure is being considered by the group of ministers (GoM), according to the *Economic Times of India*, and is likely to be recommended. If the government declares ethanol-blended gasoline a declared good, all inter-state duties will be abolished. Significance: currently ethanol is subject to a wide range of duties that vary from state to state. By slashing the excise duty and rationalizing other forms of taxation, ethanol would be more competitive on price, supporting government initiatives to increase the use of biofuels. There has been substantial growth in biofuels production in India, but the range of taxes and charges means that nationwide transportation is difficult, and consequently prices do vary substantially from one state to the next. If

the regulations are changed, this will make domestically produced ethanol much more competitive with imports on price, and should help to boost overall consumption. *Global Insight Daily Analysis (November 26, 2007)*.

- Government of India to Issue Ambitious Biofuels Directive. Agriculture Minister, Sharad Pawar, says that the government will soon issue orders requiring its national oil companies to double the ethanol content in gasoline sold across the country from the current level of 5% to 10%. *Global Insight Daily Analysis (September 20, 2007)*.
- India to Replace 10% of Transportation Fuels with Biofuels in Ten Years. India will replace 10% of its transport fuels with environmentally friendly biofuels within the next ten years to cut carbon emissions, Petroleum Secretary M S Srinivasan said. The quantity of ethanol in gasoline would be raised to 10% upon adequate feedstock availability, while the viability of bio-diesel via non-edible oils is being tested on a pilot basis. *The Press Trust of India Limited (September 25, 2007)*.

### Japan:

- Japan Eyes Cellulose-Based Ethanol at JPY40/liter by 2015. Japan's government and various industries including oil, petrochemical, and automobile industries are aiming to produce cellulose-based ethanol by 2015 at JPY40/liter (US\$0.36/liter) and a roadmap on how to do this will be finalized by the end of the fiscal year ending March 2008. "Currently, it is estimated that cellulose-based ethanol could be produced at more than JPY300/liter," the government official said. "We still have obstacles not only to technological development, but also for procuring feedstocks to produce the fuel." So far 16 companies had agreed to be part of the council, including Nippon Oil, Idemitsu Kosan, Japan Energy, Toyota Motor, Mitsubishi Chemical, Mitsui Chemicals and JGC. *Platts Commodity News (November 19, 2007)*.
- Japan Starts New Ethanol-Blended Gasoline Trials. Japan is making the first test sales of gasoline mixed with ethanol to meet Kyoto emissions targets. Project manager, the Osaka municipal government, said it would start selling gasoline directly blended with up to 3% of ethanol (E3) on October 9, 2007 at two pump stations in suburban areas at a price similar to regular gasoline. Apart from the oil industry's lead in promoting another alternative fuel, the Osaka project is key for the Japanese government's target to replace 500mn liters a year, or 0.6% of annual crude oil consumption for auto use, with biofuels by 2010. *World Entertainment News Network (October 7, 2007)*.
- Japan Eyes Tax Cut for Ethanol-Blended Gasoline. The Japanese government has released a set of proposed fiscal reforms for the financial year ending March 2009, including a reduction in the tax on ethanol-blended gasoline. The proposal, released by the Ministry of Economy, Trade and Industry (METI) on August 24, 2007, is part of the government's push to reduce production costs for ethanol-blended gasoline in an attempt to promote the use of the biofuel. Japan wants to use more ethanol and ethyl tertiary butyl ether (ETBE) to help meet its Kyoto Protocol commitment to reduce greenhouse gas emissions by 6% from the 1990 level between 2008 and 2012. Under current regulations, which date from 2003, Japanese refiners are allowed to blend up to 3% ethanol in gasoline. But the nation's use of E3 gasoline has been low due to the limited availability of ethanol, and most consumption is from government-funded pilot projects. "If this proposal is approved, Japan's bio-gasoline producers can enjoy a JPY1.60/liter deduction from the JPY53.80/liter (US\$1.74/gallon) gasoline tax if they blend 3% ethanol in gasoline," a METI official said. The proposal is to be scrutinized by the Ministry of Finance before a decision is made in December. The Petroleum Association of Japan began selling 7% ETBE-blended gasoline at its 50 service stations in Tokyo and adjacent prefectures in April (ON 4/27). The move was part of a pilot project to blend a total of 12mn liters of ETBE with gasoline in the 2007-08 financial year, leading ultimately to the adoption of ETBE-blended gasoline in 2010-11. The PAJ decided last year to consider using ETBE as a blending component for gasoline from 2010. The association has called on refiners to adopt ETBE-blended gasoline by 2010-11, starting with 20% of total gasoline sales. Japan's gasoline demand was about 1.05mn bbl/d in 2006. "Refiners who blend 7% ETBE into gasoline can also enjoy about a JPY1.60/liter deduction in tax as the ratio in 7%-blended ETBE roughly equals 3% ethanol in direct blending," the METI official said. *Platts Oilgram News (August 27, 2007)*.

**Korea:**

- South Korean Biodiesel Mandate will Ratchet up to 3% by 2012. South Korea is aiming to raise biodiesel content in domestic diesel to 3% from the current 0.5% by 2012, Seoul's Ministry of Environment said. The government was initially set last year to impose a mandatory 5% blend, in line with the 2010 level targeted by the European Union (EU), but backtracked when the country's powerful refiners – including lobbying from SK Corp., GS Caltex Corp., and S-Oil Corp. – opposed a change in the mandate. However, Seoul is under pressure to have an alternative fuel strategy in place nevertheless. The country, which is entirely dependent on imports to meet its oil needs, is the world's fifth largest importer of it, according to the U.S. Energy Information Agency. Seoul is still targeting a 5% content ratio in the long run, and the energy ministry said last week it will review its path to that level once again in the latter-half of 2010. Earlier this year, the government allocated KRW2.6bn (US\$2.77mn) for plantation of rapeseed production as part of its effort to cut dependency on foreign raw materials. *Ethanol & Biodiesel News (September 11, 2007).*
- Tax Benefits for Biodiesel Fuel Extended to 2010. South Korea aims to raise the level of biomaterial content used in diesel fuel from the current 0.5% to 3% in 2012, while extending tax breaks for biodiesel fuel until 2010, according to the government. According to the Ministry of Commerce, Industry and Energy (MOCIE), the government plans to call for an annual 0.5-percentage point increase in the mixture level of biological content used in diesel fuel, over the next five years. MOCIE officials said that the government would also extend tax benefits offered to biodiesel for three more years until 2010 since the actual product cost exceeds that of regular fuel. South Korea began to supply biodiesel fuel in all of its gas stations starting from July last year. It has also provided BD20 fuel, which contains about 20% of biomaterial contents, to commercial vehicle operators specializing in maintenance facilities. South Korea is the first country in Asia to mass produce biodiesel, although critics have said that bio material content levels are not high enough to have any significant positive effect, compared with advanced countries such as those in the EU. *Korea Times (September 7, 2007).*

**Malaysia:**

- No Plans for Palm Oil Fuel. The State Government of Malaysia has decided not to start production of biofuel using crude palm oil (CPO) in the near future. This is due to the present high price of CPO that has made production of biofuel unfeasible. The state had garnered about MYR1.31bn from the export of oil palm products and about MYR65mn from sales tax on CPO and crude palm kernel oil (CPKO) in the first six months of 2007. *Chemical Business NewsBase (November 20, 2007).*
- Malaysia Struggles to Thrash Out Details of its Biofuels Policy. The Malaysian government is still struggling to thrash out details of the biofuels act passed earlier this year and to set a final date for implementing mandatory blending standards, a government official said. One of the key issues is whether to use palm methyl ester (PME) or palm olein (PMO) to produce biodiesel for local blending, Michael Dosim Lunjew, Secretary General at Malaysia's ministry of plantation industries and commodities, said "PMO is 40% cheaper than PME but the industry has reservations because of the adverse impact PMO could have on engines." Conversely, PME would require government subsidies. "One option is to go for PME but at a lower blending level of 2%, rather than the 5% the government appears to have decided on," Lunjew said. Separately, the official expressed concern about the impact of rising crude palm oil prices on biodiesel projects in Malaysia. "The average price of crude palm oil (CPO) has risen to MYR2,500/tonne in 2007 from MYR1,500/tonne in 2006, slashing margins and prompting some biodiesel producers to sell CPO directly instead of refining it," Lunjew said. Biodiesel prices are currently around US\$820/tonne, only slightly above CPO prices. According to his calculations, biodiesel is competitive if the price of CPO is below MYR1,422/tonne against a crude oil price of US\$ 80/bbl. "Margins are negative right now. Maybe at a crude oil price of US\$ 90/bbl, it might become economical to use PME to produce biodiesel... either crude oil prices have to go up, CPO prices have to come down, or biodiesel prices have to go up," he said. *Platts Commodity News (October 18, 2007).*

**New Zealand:**

- **Biofuels Bill Introduced.** The Government has introduced legislation to give effect to its plan for mandatory use of biofuels. The Biofuels Bill implements the biofuels sales obligation (BSO) policy. The BSO will mean suppliers of petrol and diesel will have to also supply a proportion of biofuels, beginning at 0.53% in 2008 and increasing to 3.40% by 2012. The Green Party said yesterday it had negotiated an amendment to ensure production of the fuel did not impact the food supply and the environment by way of a sustainability standard. *The Nelson Mail (October 10, 2007).*

**Philippines:**

- **Philippines Allots 725,300 Hectares of Land for Biofuel Crops.** The Philippines has allotted 725.3k hectares of farmland for the cultivation of biofuel feedstock crops, attracting at least 15 foreign and local investors, a senior agriculture official said Wednesday. These areas will be planted mainly to cassava, jatropha, coconut, and sugarcane, which are major feedstocks for the production of ethanol and biodiesel, said Marris Agbon, who heads the agriculture department's Biofuel Feedstock Group. The cultivation of biofuel crops on this land will require an investment of up to PHP19bn (US\$435mn) based on development costs of PHP15k-PHP100k/hectare, depending on the crop, Agbon said. "Investors are concentrating on feedstock production – this is the principal challenge that they need to address, the assurance of a steady supply of feedstock," he said. Agbon estimated that a biofuel refinery with a production capacity of 100k liters a day would require 5k-7k hectares of feedstock. The Philippines doesn't have any biofuel processing facilities yet, but Bronzeoak Ltd. of the U.K. is building a PHP2bn ethanol refinery in Negros Occidental, a major sugar producing province in the country. *Dow Jones Energy Service (November 7, 2007).*
- **San Miguel to Build Ethanol Plants.** Food and beverage giant San Miguel Corp. plans to invest between PHP16bn and PHP20bn in putting up ten ethanol plants around the Philippines, Senator Juan Miguel Zubiri said yesterday. Zubiri is the principal author of the Biofuels Law of 2006 which mandated 5% use of ethanol for gasoline-fed engines by 2009. He said the firm was quoted as saying it could build the ten ethanol plants over a period of 18 months. The Philippines needs 17 plants by 2011. It will need 300mn liters of ethanol to comply with the requirement of the law in 2009. He said only two ethanol plants were so far on track to meet the 2009 mandate, with an estimated 75mn liters production capacity equivalent to only about 3% of the ethanol blend. "We have put up a safety provision in the law that the Department of Energy can bring down the mandated blend to 3% or whatever the supply will be achieved at that time but it's going to be a bad precedent," Zubiri said. He said the delay in the construction of ethanol facilities was due to the "foot dragging of the investors" and the lack of clear biofuels program from the department. "The Department of Energy should get its act together. It's taking them so long to give the endorsements of the ethanol plants to the Board of Investments," Zubiri said. *Manila Standard (September 14, 2007).*

**Singapore:**

- **Natural Fuel Singapore Plant Unlikely to Run at "Full Steam."** Natural Fuel is likely to have its flagship Singapore biodiesel plant ready to start operations in December, on schedule with an aggressive timetable that was announced almost exactly a year ago, a top executive with the company said in Singapore. But the Australia-based biofuels giant is unlikely to start it up at full rates, as the company contends with the very hostile operating environment that is being created by high feedstock prices. "We will have the first train ready by mid-December this year," said Larry Tan, CEO of Natural Fuel Pte. Ltd., the Singapore-based subsidiary of the Sydney-listed company. "But if the feedstocks continue the way they are we would have to think seriously if we want to bring all three trains on," added Tan. "If the price for palm continues the way it is then we would probably not go full steam on the front end." Natural Fuel is building a 600k tonnes pa biodiesel plant on Jurong Island in Singapore. The first unit, which will have three trains, is expected to run primarily on palm oil sources from Malaysia, Indonesia, and elsewhere. The company is diversifying its feedstocks away from palm oil, which has become expensive as food prices in general have risen strongly around the world this year. *Platts Commodity News (November 13, 2007).*



**Thailand:**

- Thai Government May Make E20 Fuel Usage in Vehicles Mandatory. New laws in Thailand may require all new cars to be able to run on E20, which is a mix of 20% bioethanol and 80% gasoline (petrol), according to the *Bangkok Post*, which quotes Thai Energy Minister Piyasvasti Amranand. E20 fuel is expected to be introduced in Thailand in January 2008. Currently, the weaker blend of E10 (10% ethanol and 90% gasoline) is on sale in Thailand. This move would require all of Thailand's car manufacturers to modify the engines in their vehicles to ensure compatibility with E20 "gasohol." To encourage usage of the fuel, the Thai government plans several measures, including a reduction in the amount of tax on E20, which would make the fuel cheaper at the pump, and a cut in excise tariffs for E20-compatible vehicles, thereby providing automakers with an incentive to comply with the new legislation. Many vehicle manufacturers favor increased ethanol usage because modifying engines to make them compatible with gasoline-ethanol blends is far more simple than the changes required to allow cars to run on many other alternative fuels. *Global Insight Daily Analyses (November 26, 2007).*
- Thailand to Double Ethanol Content in Petrol. Thailand plans to double the ethanol content in petroleum by 2008 to lower import bills and domestic fuel prices. Most gas stations in Thailand would start selling petrol with 20% ethanol (E20), by early 2008. PTT Pcl, Royal Dutch Shell Plc and other oil companies at present are selling petrol with 10% ethanol. The imports of crude and fuel of Thailand for first nine months of 2007 decreased 3.7% to US\$18.5bn as consumption of gasohol increased, according to the commerce ministry data. *Chemical Business NewsBase (November 6, 2007).*

**Figure 7. Thailand: Ethanol Capacity**

	Capacity (liters/d)	Raw Materials	Province	Target Date	Start Up Date	Delay (months)
<b>Currently Operational</b>						
- Pornwilai International Group	25,000	Molasses	Ayutthaya	Oct-03	Oct-03	
- Thai Alcohol*	200,000	Molasses	Nakorn Pathom	Aug-04	Aug-04	
- Thai Agro-Energy	150,000	Molasses	Suphanburi	Feb-05	Feb-05	
- Thai Nguan Ethanol	130,000	Cassava	Khon Khen	Jun-05	Nov-05	5
- Khon Khen Alcohol	60,000	Molasses	Rayong	Aug-05	Jan-06	5
- International Gasohol Corp.	150,000	Cassava		Jun-05	Aug-06	11
<b>Total</b>	<b>715,000</b>					
* 100,000 l/d of capacity for export						
<b>Open By Year End 2006</b>						
- Fah KwanThip	120,000	Cassava	Udon Thanee	Dec-06	na	
- Akekarat Patana	200,000	Molasses	Nakhonsawan	Dec-06	na	
- Petrogreen	200,000	Molasses	Chalyabhum	Dec-06	na	
<b>Total</b>	<b>520,000</b>					
Plants						
- International Gasohol Corp.	200,000	Cassava		By 2006	+2007	
- Rierm Udon White Sugar	200,000	Cane/Molasses	Khon Khen	By 2006	+2007	
- Thai Kanchanaburi Sugar	200,000	Cane/Molasses	Nhong Bua Lampoo	By 2006	+2007	
- Mitr Pol Sugar	200,000	Cane/Molasses	Kanchanaburi	By 2006	+2007	
- Ruam Kaset Industry	200,000	Cane/Molasses	Suphanburi	By 2006	+2007	
- Thai Rung Rueng Energy	120,000	Cane/Molasses	Saraburi	By 2006	+2007	
- East Sugar and Cane	100,000	Cane/Molasses	Petchaboon	By 2006	+2007	
- N. Y. Ethanol	150,000	Cane/Molasses	Sakeaw	By 2006	+2007	
- Rachaburi Ethanol	100,000	Cane/Molasses	Nakorn Ratchasima	By 2006	+2007	
- Korat Industry	100,000	Cane/Molasses	Ratchaburi	By 2006	+2007	
- Auang Wien Industry	160,000	Cane/Molasses	Nakorn Ratchasima	By 2006	+2007	
- Mr. Nopporn Wongwatanaseen	100,000	Cane/Molasses	Nakorn Ratchasima	By 2006	+2007	
- Somdej (1981)	100,000	Cane/Molasses	Ratchaburi	By 2006	+2007	
- Siam Ethanol Industry	100,000	Cassava	Pajeenburi	By 2006	+2007	
- Picnic Gas and Engineering	500,000	Cassava	Chalyaphum	By 2006	+2007	
- Boon A-Nek	500,000	Cassava	Nakorn Ratchasima	By 2006	+2007	
- Burirum Ethanol	100,000	Cane/Molasses	Burirum	na	+2007	
<b>Total</b>	<b>3,130,000</b>					
<b>Total</b>	<b>4,365,000</b>					

Source: Ministry of Energy and Bear Stearns Asia Ltd. estimates.

**Vietnam:**

- **Vietnam Mulls Biofuel Development by 2015.** The Ministry of Trade and Industry of Vietnam said that it has recently submitted to the government for approval a biofuel development plan through 2015 and vision toward 2025, which is aimed to produce and put in use E5 gasoline and B5 biodiesel nationwide by 2025. Between 2007 and 2010, Vietnam targets to build and develop trial models of producing biofuel with scales of 100k tonnes of E5 and 50k tonnes of B5 annually, to feed 8% of the national demand. In the 2011-15 period, the country aims to build and develop biofuel production and application units nationwide to feed 20% of the national demand by E5 and B5. By 2025, Vietnam will endeavor to produce ethanol and vegetable oil at large-scale to fulfill all the country's fuel demand with E5 and B5. *Vietnam News Brief Service (November 14, 2007).*

**Coal-to-Liquids (CTL), Coal-to-Methanol (CTM), Coal-to-Olefins (CTO), and Gas-to-Liquids (GTL) Developments**

Figure 8. Asia-Pacific: Coal-to-Liquids Capacity (mn tonnes)

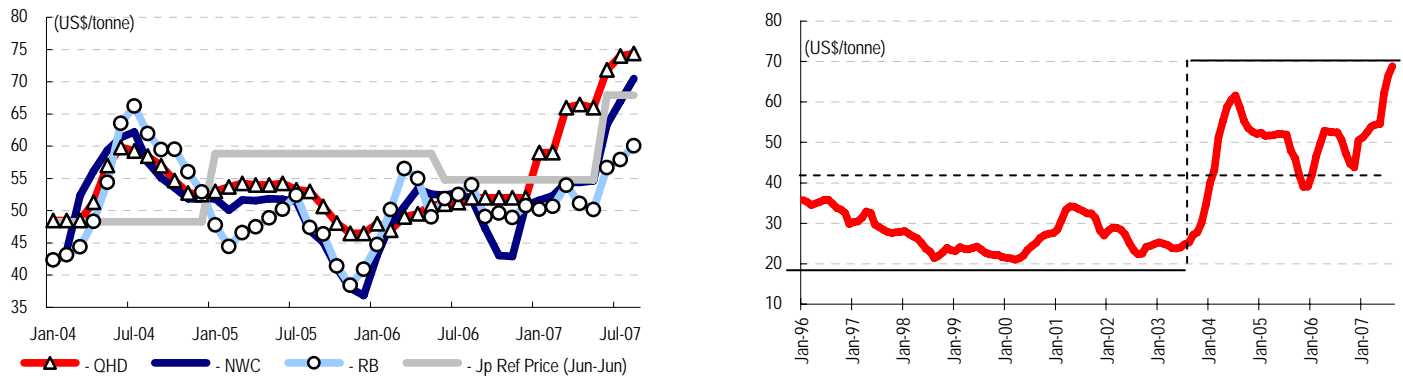
(mn tpa)	2008E	2009E	2010E	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E
- Australia	0.0	0.0	1.0	1.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
- China	1.6	2.7	8.3	8.3	17.3	20.5	22.5	32.5	37.5	42.5	47.5	51.5	52.5
- India	0.0	0.0	0.0	0.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
- Indonesia	0.0	0.0	0.0	0.0	0.0	0.7	1.3	1.3	1.3	2.7	4.0	5.4	6.7
- New Zealand	0.0	0.0	0.0	0.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
- Philippines	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
<b>Total Asia</b>	<b>1.6</b>	<b>2.7</b>	<b>9.3</b>	<b>9.3</b>	<b>27.8</b>	<b>31.6</b>	<b>34.3</b>	<b>47.3</b>	<b>52.3</b>	<b>58.7</b>	<b>65.0</b>	<b>70.4</b>	<b>72.7</b>

(% of total)	2008E	2009E	2010E	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E
- Australia			10.7%	10.7%	14.4%	12.6%	11.6%	8.4%	7.6%	6.8%	6.1%	5.7%	5.5%
- China	100%	100%	89.3%	89.3%	62.3%	64.8%	65.5%	68.7%	71.7%	72.5%	73.1%	73.2%	72.2%
- India					14.4%	12.6%	11.7%	8.4%	7.6%	6.8%	6.2%	5.7%	5.5%
- Indonesia						2.1%	3.9%	2.8%	2.6%	4.6%	6.2%	7.6%	9.2%
- New Zealand					9.0%	7.9%	7.3%	5.3%	4.8%	4.2%	3.8%	3.5%	3.4%
- Philippines								6.3%	5.7%	5.1%	4.6%	4.3%	4.1%
<b>Total Asia</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Source: Linc Energy, China Shenhua CTL Division, Bloomberg, Headwaters Innovation Group, Bear Stearns Asia Ltd. estimates.

Figure 9. Commodity Prices: Regional Coal Prices (LHS) & Barlow Jonker Coal Index (RHS)



Source: Bear Stearns Asia Ltd., Reuters, Bloomberg, McCloskey/Argus, Barlow Jonker.

**China:**

- **Shenhua Group's CTL Plant to Start Operating in 2008.** China Shenhua Group Co. Ltd., the country's largest coal producer, will officially start operations next year at its coal-to-liquids (CTL) plant in Ordos in the Inner Mongolia Autonomous Region, with an expected annual production of 1mn tonnes of oil products. Ren Xiangkun, vice president of Shenhua Coal Liquefaction Co. Ltd., one of the group's subsidiaries, said that skyrocketing crude oil prices have been a positive factor for Shenhua Group. The higher oil prices go, the more opportunity there is for the CTL industry as an alternative fuel, *Caijing Magazine* reported. Shenhua Group aims to reach an annual production capacity of 5mn tonnes of oil in 2009, which will be used as raw material for over 30mn tonnes of oil products. It is highly likely that the assets of the group's coal liquefaction subsidy will be acquired by China Shenhua Energy Co. Ltd. (1088.HK-HK\$46.50-Underperform/Market Overweight), the listed arm of Shenhua Group, according to the report. Although the development of CTL projects can reduce China's dependency on petroleum, the high cost, in terms of coal and water, makes the technology controversial. According to the report, a CTL plant with annual

capacity of 1mn tonnes per year costs CNY10bn (US\$1.35bn), and consumes 5mn tonnes of coal and 10mn tonnes of water, which would put strain on China's limited water resources. According to government statistics, China's per capita water resources are only one-third of the international level, as Interfax previously reported. In July last year, the National Development and Reform Commission announced that it would not approve any new CTL projects with annual capacity below 3mn tonnes in an attempt to cool investment in the industry. Shenhua Group's CTL plant started construction in 2004. In addition to Shenhua's project, two other CTL plants, each with an annual production of 160k tonnes of oil run by Yitai Group in Inner Mongolia and Lu'an Group in Shanxi province, will also start operation next year. *China Energy Newswire (November 12, 2007)*.

- **BP Eyes Coal Liquefaction Business in China.** John Morgan, senior vice president of British Petroleum (BP) said the company is seeking opportunities to invest in China's coal liquefaction sector. Morgan commented that the company is in close talks with some leading Chinese coal producers, including the nation's largest coal miner Shenhua Group, over the matter of coal liquefaction. Considering the continuously increasing demand for petrochemical products and transportation fuels of China, the company hopes to invest in the petrochemical industry and oil-refining sector in China. Morgan added that the decision whether to expand the production capacity of the ethylene cracking project in Shanghai may be finally made at the beginning of 2008. *SinoCast China Business Daily News (November 8, 2007)*.

### **India:**

- **Sasol Gets Serious About Orissa State Coal-to-Liquid Project.** Sasol (SOL.SJ-34,975-Peer Perform-Market Weight), the South African pioneer of coal-to-liquid (CLT) technology appears to have got over its on-off relationship with India when a delegation met senior officials of Mahanadi Coalfields Ltd. (MCL) earlier this month with a view towards developing a project in Orissa state. Orissa is located on India's east coast, next to Jharkhand state, and – like its neighbor – has rich coal reserves. Sasol said it was interested in conducting a preliminary feasibility study and was also seeking assurances of the availability of captive blocks that can produce at least 20mn tonnes of coal a year over a 25 year lifetime. A project of such a size would produce about 80k bbl/d of oil. Sasol previously met representatives of private sector companies, notably Tata Group and also Coal India Ltd officials. In July 2006 Sasol spoke of making US\$6bn investment in CTL projects in India but there was little follow-through. The project was first mooted when Sasol and an Indian delegation met in 2000. However, India's interest in CTL has grown due to the escalating costs of importing up to 75% of its crude oil requirements. As the Sasol project stalled, an American company, Headwaters Inc., moved in and entered into an agreement with Oil India Ltd. to conduct a preliminary study on coal liquefaction with Meghalaya coal. Initially Sasol indicated that the high-sulfur Meghalaya coal in India's northeast best suited for its purpose. However, it is now pitching for MCL coal in the famed Ib valley or in the Talcher region in Orissa. The Orissa project, it is understood, would constitute an investment of about US\$780mn. In the past Sasol spoke of a total investment package in the region of US\$6bn for India. *Platts International Coal Report (November 19, 2007)*.
- **Indian Coal Liquefaction Enters Next Phase.** U.S.-based energy and coal combustion company, Headwaters, has secured the contract for the second stage of the feasibility study for Oil India's direct coal liquefaction facility in Assam, India. Headwaters' task is to verify the reactivity and liquid production from low-ash Assam coals under proper conditions for its own coal liquefaction technology. The company will also assess the technological and economic viability of developing a 44 k bbl/d syncrude facility in north-east India. About 3.5mn tonnes of coal sourced locally will be used by the mine over 30 years. *Elsevier Engineering Information (November 2, 2007)*.

### **Vietnam:**

- **Shell Licenses Coal Gasifying Technology.** Shell yesterday signed an agreement to license its clean coal gasification technology to the Vietnam National Chemical Group (Vinachem), to be applied at the Ninh Binh Fertiliser Plant about 100km south of Hanoi. This is the 20th license Shell has issued for its clean coal gasification technology worldwide, and is the Netherlands-based firm's first license in Vietnam, as well as in the greater Asia-Pacific region outside of China. Vinachem last Thursday signed a contract with the China Huanqiu Contracting and Engineering Corp. (HQCEC) in which HQCEC will be the Engineering, Procurement and Construction (EPC) contractor for the Ninh Binh fertilizer plant. The plant will have the capacity to gasify more than 1,300 tonnes of coal per day, producing

synthesis gas which will be used as feedstock for a new ammonia and urea production plant that will be also built on the same site. *Thai News Service (November 22, 2007).*

**Figure 10. China DME Capacity (mn tonnes)**

(mn tpa)	2005	2006P	2007E	2008E	2009E	2010E	2011E	2012E	2013E	2014E	2015E
<b>Integrated DME Producers</b>											
- China Energy Ltd. - Phase I	0.05	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
- Shaanxi Weihe Coal Chemical Co.	-	-	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
- Kingboard Lubao	-	-	-	-	0.20	0.20	0.20	0.20	0.20	0.20	0.20
- Xinao Group	-	-	-	-	0.40	0.40	0.40	0.40	0.40	0.40	0.40
- Tiancheng Dayang Co	-	-	-	-	0.20	0.20	0.20	0.20	0.20	0.20	0.20
- Ningxia Baota Petrochem	-	-	-	-	0.21	0.21	0.21	0.21	0.21	0.21	0.21
- China Energy Ltd. - Phase II	-	-	-	-	-	0.45	0.45	0.45	0.45	0.45	0.45
- Sinopec / China National Coal / Shenergy / China Yintai / Manshi Coal	-	-	-	-	-	3.00	3.00	3.00	3.00	3.00	3.00
<b>Sub-total</b>	<b>0.05</b>	<b>0.15</b>	<b>0.15</b>	<b>0.16</b>	<b>1.17</b>	<b>4.62</b>	<b>4.62</b>	<b>4.62</b>	<b>4.62</b>	<b>4.62</b>	<b>4.62</b>
<b>Other DME Producers (Coal-based)</b>											
- Shenhua Ningxia Group - Ningmei Phase I	-	-	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
- Golden Concord - Phase I	-	-	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
- Shenhua Ningxia Group - Ningmei Phase II	-	-	-	-	0.62	0.62	0.62	0.62	0.62	0.62	0.62
- Other Speculative Capacity - 1	-	-	-	-	-	-	-	-	-	-	4.79
- Other Speculative Capacity - 2	-	-	-	-	-	-	-	-	-	-	-
<b>Sub-total</b>	<b>-</b>	<b>-</b>	<b>0.21</b>	<b>0.71</b>	<b>1.33</b>	<b>1.33</b>	<b>1.33</b>	<b>1.33</b>	<b>1.33</b>	<b>1.33</b>	<b>6.12</b>
<b>Other DME Producers (Gas-based)</b>											
- Lutianhua Group (Sichuan)	-	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
- Xinjiang Tunhe Industry and Trading Co. Ltd. - Phase I	-	-	-	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
- Lutianhua Group (Inner Mongolia)	-	-	-	-	-	1.00	1.00	1.00	1.00	1.00	1.00
- Xinjiang Tunhe Industry and Trading Co. Ltd. - Phase II	-	-	-	-	-	0.10	0.10	0.10	0.10	0.10	0.10
<b>Sub-total</b>	<b>-</b>	<b>0.11</b>	<b>0.11</b>	<b>0.16</b>	<b>0.16</b>	<b>1.26</b>	<b>1.26</b>	<b>1.26</b>	<b>1.26</b>	<b>1.26</b>	<b>1.26</b>
<b>Total DME Capacity</b>	<b>0.05</b>	<b>0.26</b>	<b>0.47</b>	<b>1.03</b>	<b>2.66</b>	<b>7.21</b>	<b>7.21</b>	<b>7.21</b>	<b>7.21</b>	<b>7.21</b>	<b>12.00</b>

Source: Factiva and Bear Stearns Asia Ltd. estimates.

**Figure 11. China Methanol Capacity (mn tonnes)**

(mn tpa)	2005	2006P	2007E	2008E	2009E	2010E	2011E	2012E	2013E	2014E	2015E
<b>Integrated Methanol (to Olefins) Capacity</b>											
- Sino Biopharmaceutical	-	-	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
- Shenhua / Kerry Group	-	-	-	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
- Henan Rongxing	-	-	-	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44
- Shenhua Ningxia Ningdong	-	-	-	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56
- ChinaCoal (Harbin) - Phase II	-	-	-	-	1.86	1.86	1.86	1.86	1.86	1.86	1.86
- Shenhua / Dow Chemicals	-	-	-	-	-	3.00	3.00	3.00	3.00	3.00	3.00
- Zhongyi Group - Phase I	-	-	-	-	-	-	-	-	-	0.20	0.20
- Zhongyi Group - Phase II	-	-	-	-	-	-	-	-	-	-	1.60
- Ningxia Baota Petrochemical - Phase II	-	-	-	-	-	-	-	-	-	-	-
- Huating Coal Group - Phase I	-	-	-	-	-	-	-	-	-	-	-
- Huating Coal Group - Phase II	-	-	-	-	-	-	-	-	-	-	-
<b>Sub-total</b>	-	-	<b>0.60</b>	<b>5.40</b>	<b>7.26</b>	<b>10.26</b>	<b>10.26</b>	<b>10.26</b>	<b>10.26</b>	<b>10.46</b>	<b>12.06</b>
<b>Integrated Methanol (to DME) Capacity</b>											
- China Energy Ltd.	0.07	0.21	0.21	0.21	0.21	0.84	0.84	0.84	0.84	0.84	0.84
- Shaanxi Weihe Coal Chemical Co.	-	-	-	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
- Xinao Group	-	-	-	-	0.60	0.60	0.60	0.60	0.60	0.60	0.60
- Tiancheng Dayang Co	-	-	-	-	0.40	0.40	0.40	0.40	0.40	0.40	0.40
- Kingboard Lubao	-	-	-	-	0.30	0.30	0.30	0.30	0.30	0.30	0.30
- Ningxia Baota Petrochemical - Phase I	-	-	-	-	0.30	0.30	0.30	0.30	0.30	0.30	0.30
- Sinopec / ChinaCoal / Shenergy / China Yintai / Manshi Coal	-	-	-	-	-	4.20	4.20	4.20	4.20	4.20	4.20
<b>Sub-total</b>	<b>0.07</b>	<b>0.21</b>	<b>0.21</b>	<b>0.23</b>	<b>1.83</b>	<b>6.66</b>	<b>6.66</b>	<b>6.66</b>	<b>6.66</b>	<b>6.66</b>	<b>6.66</b>
<b>Standalone Methanol Capacity</b>											
- China Energy Ltd. - Standalone	2.43	2.29	2.29	2.29	2.29	1.66	1.66	1.66	1.66	1.66	1.66
- ChinaCoal (Harbin) - Phase I	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
- Unidentified Capacity - 1	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36
- Unidentified Capacity - 2	-	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
- Henan Rongxing - Standalone	-	-	-	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
- Shenhua Ningxia Ningdong - Standalone	-	-	-	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
- Shaanxi Weihe Coal Chemical Co. - Standalone	-	-	-	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
- 139 Holdings - 13%, right to buy 50%	-	-	-	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
- Yankuang Shandong	-	-	-	-	-	-	-	0.50	0.50	0.50	0.50
- Yankuang Shaanxi	-	-	-	-	-	-	-	-	0.60	0.60	0.60
- Yankuang Shanxi	-	-	-	-	-	-	-	-	-	0.10	0.10
- Unidentified Capacity - 3	-	-	-	-	-	-	-	-	-	-	-
<b>Sub-total</b>	<b>4.93</b>	<b>7.79</b>	<b>7.79</b>	<b>8.50</b>	<b>8.50</b>	<b>7.87</b>	<b>7.87</b>	<b>8.37</b>	<b>8.97</b>	<b>9.07</b>	<b>9.07</b>
<b>Total Methanol Capacity</b>	<b>5.00</b>	<b>8.00</b>	<b>8.60</b>	<b>14.12</b>	<b>17.58</b>	<b>24.78</b>	<b>24.78</b>	<b>25.28</b>	<b>25.88</b>	<b>26.18</b>	<b>27.78</b>

Source: Factiva and, Bear Stearns Asia Ltd. estimates.

**Figure 12. China: Coal to Olefins and Methanol to Olefins Capacity (mn tonnes)**

(mn tpa)	2005	2006P	2007E	2008E	2009E	2010E	2011E	2012E	2013E	2014E	2015E
<b><u>Integrated Olefins Producers</u></b>											
- Sino Biopharmaceutical	-	-	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
- Shenhua Ningxia Coal Group	-	-	-	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
- Henan Rongxing Industrial	-	-	-	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48
- ChinaCoal Group	-	-	-	-	0.60	0.60	0.60	0.60	0.60	0.60	0.60
- Shenhua / Dow Chemicals	-	-	-	-	-	1.00	1.00	1.00	1.00	1.00	1.00
- Shenhua / Kerry Group / Shanghai Huayi Group	-	-	-	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
- Zhongyi Group - Phase II	-	-	-	-	-	-	-	-	-	-	0.60
- Huating Coal Group - Phase I	-	-	-	-	-	-	-	-	-	-	-
- Huating Coal Group - Phase II	-	-	-	-	-	-	-	-	-	-	-
- Ningxia Baota Petrochem - Phase II	-	-	-	-	-	-	-	-	-	-	-
<b>Sub-total</b>	-	-	0.20	1.80	2.40	3.40	3.40	3.40	3.40	3.40	4.00
<b><u>Independent Olefins Producers</u></b>											
- Datang Power International	-	-	-	-	-	-	-	0.46	0.46	0.46	0.46
- Daqing PetroChemical	-	-	-	-	-	-	-	0.60	0.60	0.60	0.60
- Unidentified Capacity	-	-	-	-	-	-	-	-	-	-	-
<b>Sub-total</b>	-	-	-	-	-	-	-	1.06	1.06	1.06	1.06
<b>Total Olefins Capacity</b>	-	-	0.20	1.80	2.40	3.40	3.40	4.46	4.46	4.46	5.06

Source: Factiva and Bear Stearns Asia Ltd. estimates.

**Addendum**  
**Important Disclosures**ANALYST CERTIFICATION

The Research Analyst(s) who prepared the research report hereby certify that the views expressed in this research report accurately reflect the analyst(s) personal views about the subject companies and their securities. The Research Analyst(s) also certify that the Analyst(s) have not been, are not, and will not be receiving direct or indirect compensation for expressing the specific recommendation(s) or view(s) in this report.

Martin Foot

*Lead Analyst Name*

The costs and expenses of Equity Research, including the compensation of the analyst(s) that prepared this report, are paid out of the Firm's total revenues, a portion of which is generated through investment banking activities.

This report has been prepared in accordance with the Firm's conflict management policies. Bear Stearns is unconditionally committed to the integrity, objectivity, and independence of its research. Bear Stearns research analysts and personnel report to the Director of Research and are not subject to the direct or indirect supervision or control of any other Firm department (or members of such department).

This publication and any recommendation contained herein speak only as of the date hereof and are subject to change without notice. Bear Stearns and its affiliated companies and employees shall have no obligation to update or amend any information or opinion contained herein, and the frequency of subsequent publications, if any, remain in the discretion of the author and the Firm.

Bear, Stearns & Co. Inc. Equity Research Rating System:Ratings for Stocks (vs. analyst coverage universe):

Outperform (O) - Stock is projected to outperform analyst's industry coverage universe over the next 12 months.

Peer Perform (P) - Stock is projected to perform approximately in line with analyst's industry coverage universe over the next 12 months.

Underperform (U) - Stock is projected to underperform analyst's industry coverage universe over the next 12 months.

Ratings for Sectors (vs. regional broader market index):

Market Overweight (MO) - Expect the industry to perform better than the primary market index for the region (S&P 500 in the US) over the next 12 months.

Market Weight (MW) - Expect the industry to perform approximately in line with the primary market index for the region (S&P 500 in the US) over the next 12 months.

Market Underweight (MU) - Expect the industry to underperform the primary market index for the region (S&P 500 in the US) over the next 12 months.

Bear, Stearns & Co. Inc. Ratings Distribution as of September 30, 2007:

Percentage of BSC universe with this rating / Percentage of these companies which were BSC investment banking clients in the last 12 months.

Outperform (Buy): 44.5 / 15.6

Peer Perform (Neutral): 48.4 / 9.3

Underperform (Sell): 7.1 / 6.5

FOR INDUSTRY COVERAGE DATA, PLEASE CONTACT YOUR ACCOUNT EXECUTIVE OR VISIT  
<[www.bearstearns.com](http://www.bearstearns.com)>



***Other Disclaimers***

This report has been prepared by Bear, Stearns & Co. Inc., Bear, Stearns International Limited or Bear Stearns Asia Limited (together with their affiliates, "Bear Stearns"), as indicated on the cover page hereof. This report has been adopted and approved for distribution in the United States by Bear, Stearns & Co. Inc. for its and its affiliates' customers. If you are a recipient of this publication in the United States, orders in any securities referred to herein should be placed with Bear, Stearns & Co. Inc. This report has been approved for publication in the United Kingdom by Bear, Stearns International Limited, which is authorized and regulated by the United Kingdom Financial Services Authority. Private Customers in the U.K. should contact their Bear, Stearns International Limited representatives about the investments concerned. This report is distributed in Hong Kong by Bear Stearns Asia Limited, which is regulated by the Securities and Futures Commission of Hong Kong. Additional information is available upon request.

Bear Stearns and its employees, officers, and directors deal as principal in transactions involving the securities referred to herein (or options or other instruments related thereto), including in transactions which may be contrary to any recommendations contained herein. Bear Stearns and its employees may also have engaged in transactions with issuers identified herein. Bear Stearns is affiliated with a specialist that may make a market in the securities of the issuers referred to in this document, and such specialist may have a position (long or short) and may be on the opposite side of public orders in such securities.

This publication does not constitute an offer or solicitation of any transaction in any securities referred to herein. Any recommendation contained herein may not be suitable for all investors. Although the information contained in the subject report (not including disclosures contained herein) has been obtained from sources we believe to be reliable, the accuracy and completeness of such information and the opinions expressed herein cannot be guaranteed. This publication and any recommendation contained herein speak only as of the date hereof and are subject to change without notice. Bear Stearns and its affiliated companies and employees shall have no obligation to update or amend any information or opinion contained herein.

This publication is being furnished to you for informational purposes only and on the condition that it will not form the sole basis for any investment decision. Each investor must make their own determination of the appropriateness of an investment in any securities referred to herein based on the tax, or other considerations applicable to such investor and its own investment strategy. By virtue of this publication, neither Bear Stearns nor any of its employees, nor any data provider or any of its employees shall be responsible for any investment decision. This report may not be reproduced, distributed, or published without the prior consent of Bear Stearns. ©2007. All rights reserved by Bear Stearns. Bear Stearns and its logo are registered trademarks of The Bear Stearns Companies Inc.

This report may discuss numerous securities, some of which may not be qualified for sale in certain states and may therefore not be offered to investors in such states. This document should not be construed as providing investment services. Investing in non-U.S. securities including ADRs involves significant risks such as fluctuation of exchange rates that may have adverse effects on the value or price of income derived from the security. Securities of some foreign companies may be less liquid and prices more volatile than securities of U.S. companies. Securities of non-U.S. issuers may not be registered with or subject to Securities and Exchange Commission reporting requirements; therefore, information regarding such issuers may be limited.

**NOTE TO ACCOUNT EXECUTIVES:** For securities that are not listed on the NYSE, AMEX, or Nasdaq National Market System, check the Compliance page of the Bear Stearns Intranet site for State Blue Sky data prior to soliciting or accepting orders from clients.

**CIR 230 Disclaimer**

Bear Stearns does not provide tax, legal or accounting advice. You should consult your own tax, legal and accounting advisors before engaging in any transaction.

In order for Bear Stearns to comply with Internal Revenue Service Circular 230 (if applicable), you are notified that any discussion of U.S. federal tax issues contained or referred to herein is not intended or written to be used, and cannot be used, for the purpose of: (A) avoiding penalties that may be imposed under the Internal Revenue Code; nor (B) promoting, marketing or recommending to another party any transaction or matter discussed herein.