

An Overview of China's Energy/Oil Market Developments and Security Strategies

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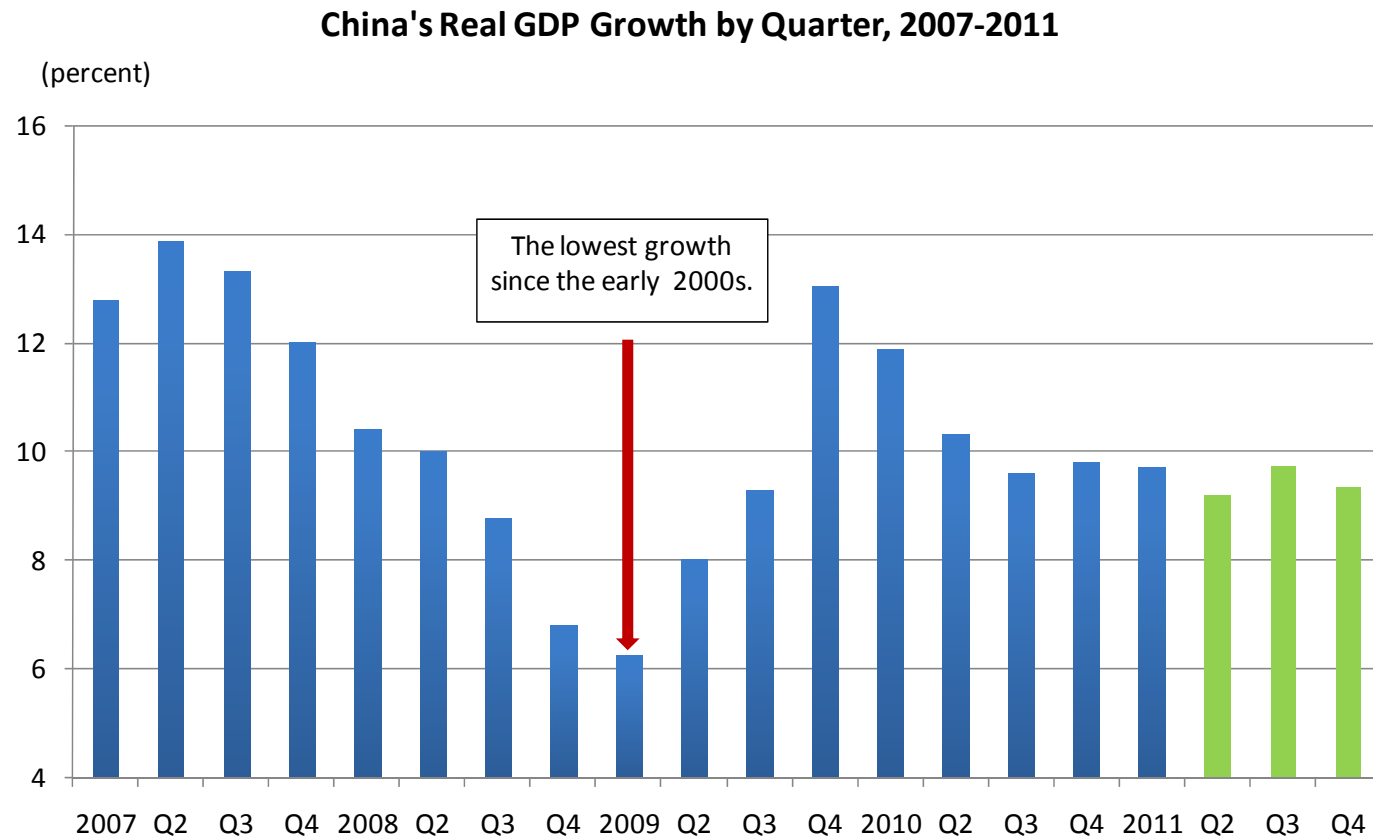
EAST-WEST CENTER

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Energy and the Economy

State of the Economy

- A closer look reveals a clear V shape surrounding the recent crisis.



Note: Data for Q2 to Q4 of 2011 are projections.

State of the Economy (cont'd)

- The Chinese economy took a hit during the global financial crisis, but it has been recovering since mid-2009.

Key Economic Indicators for China, 2001-2011^{/1}

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Yearend Population (million)	1,276	1,285	1,292	1,300	1,308	1,314	1,321	1,328	1,335	1,341	1,347
Real GDP Growth	8.3%	9.1%	10.0%	10.1%	10.4%	11.6%	13.0%	9.6%	9.2%	10.3%	9.5%
Real GDP (constant 2010 US\$)	2,420	2,640	2,904	3,197	3,531	3,941	4,453	4,880	5,329	5,878	6,437
Per Capita GDP (2010 US\$)	1,763	1,896	2,055	2,248	2,460	2,700	2,998	3,675	3,993	4,383	4,778
Inflation Rate ^{/2}	0.7%	(0.8%)	1.2%	3.9%	1.8%	1.5%	4.8%	5.9%	(0.7%)	3.3%	4.3%
Urban Unemployment Rate ^{/3}	3.6%	4.0%	4.3%	4.2%	4.2%	4.1%	4.0%	4.2%	4.5%	4.7%	5.0%
Trade Surplus/Deficit (US\$ bn)	23	30	26	32	102	178	262	295	196	183	145
Foreign Trade Total (US\$ bn)	510	621	851	1,155	1,422	1,761	2,174	2,562	2,207	2,973	3,563
Growth of Total Trade	7.5%	21.8%	37.1%	35.7%	23.2%	23.8%	23.5%	17.8%	(13.8%)	34.7%	19.8%
Exports (US\$ bn)	266	326	438	593	762	969	1,218	1,429	1,202	1,578	1,854
Imports (US\$ bn)	244	295	413	561	660	792	956	1,133	1,006	1,395	1,709
Actual Foreign Direct Investment (US\$ bn)	46.9	52.7	53.5	60.6	60.3	63.0	74.8	92.4	90.0	105.7	121.6
Foreign Exchange Reserves (US\$ bn, end of the year)	212	286	403	610	819	1,066	1,530	1,947	2,399	2,847	3,497

1. 2001-2010: final; 2011: projections.

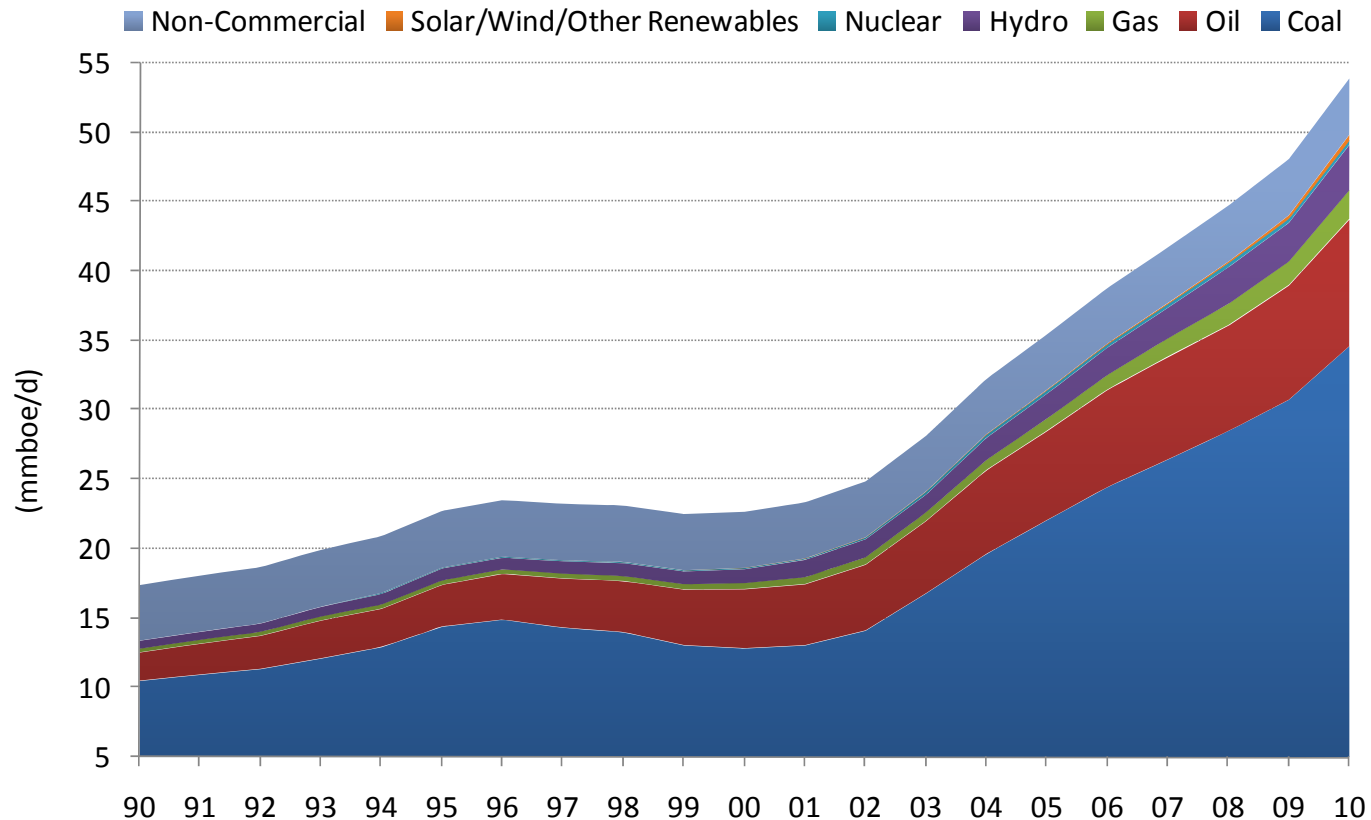
2. Defined as annual percentage change of overall retail price index.

3. Officially registered. Actual unemployment rates are larger.

The Energy Scene

- The direction of China's PCEC growth is largely set by coal.

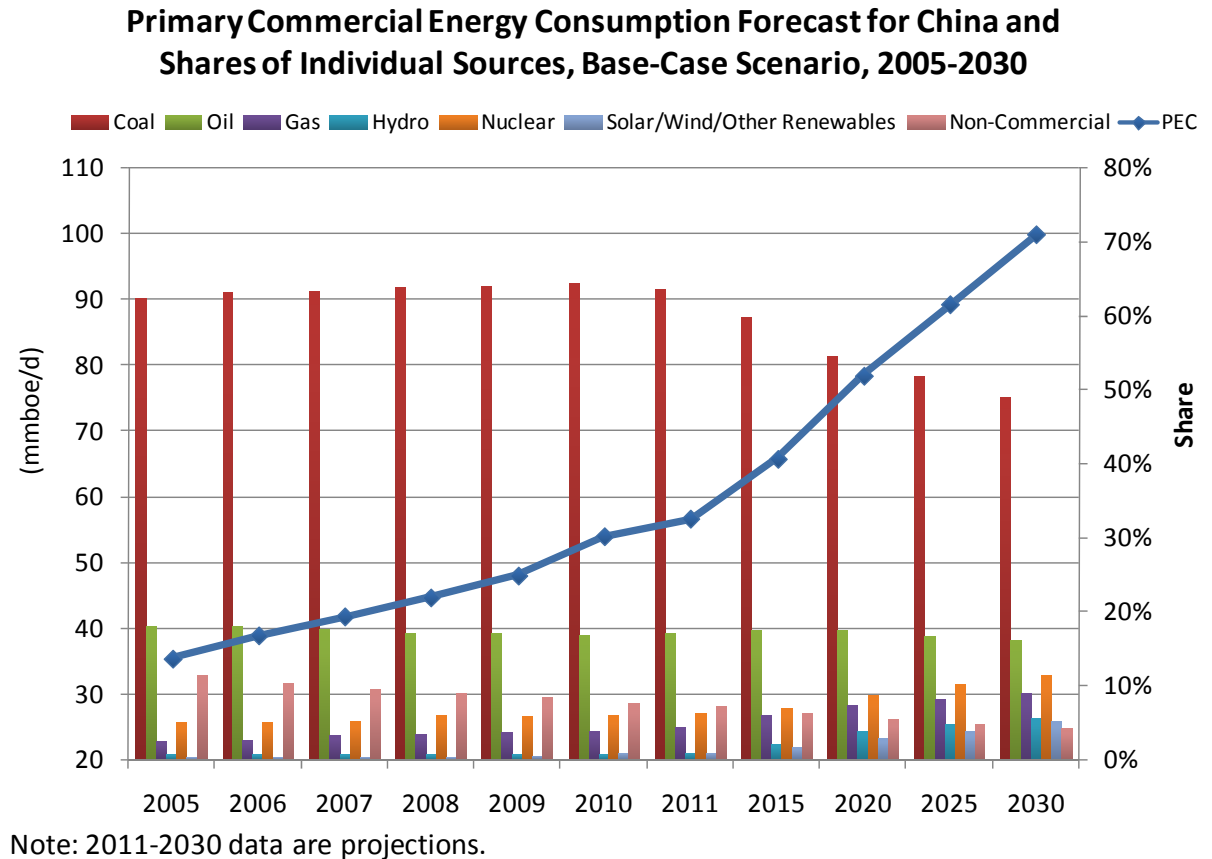
Primary Energy Consumption in China, 1990-2010



Note: 2010 data are preliminary.

The Energy Scene (cont'd)

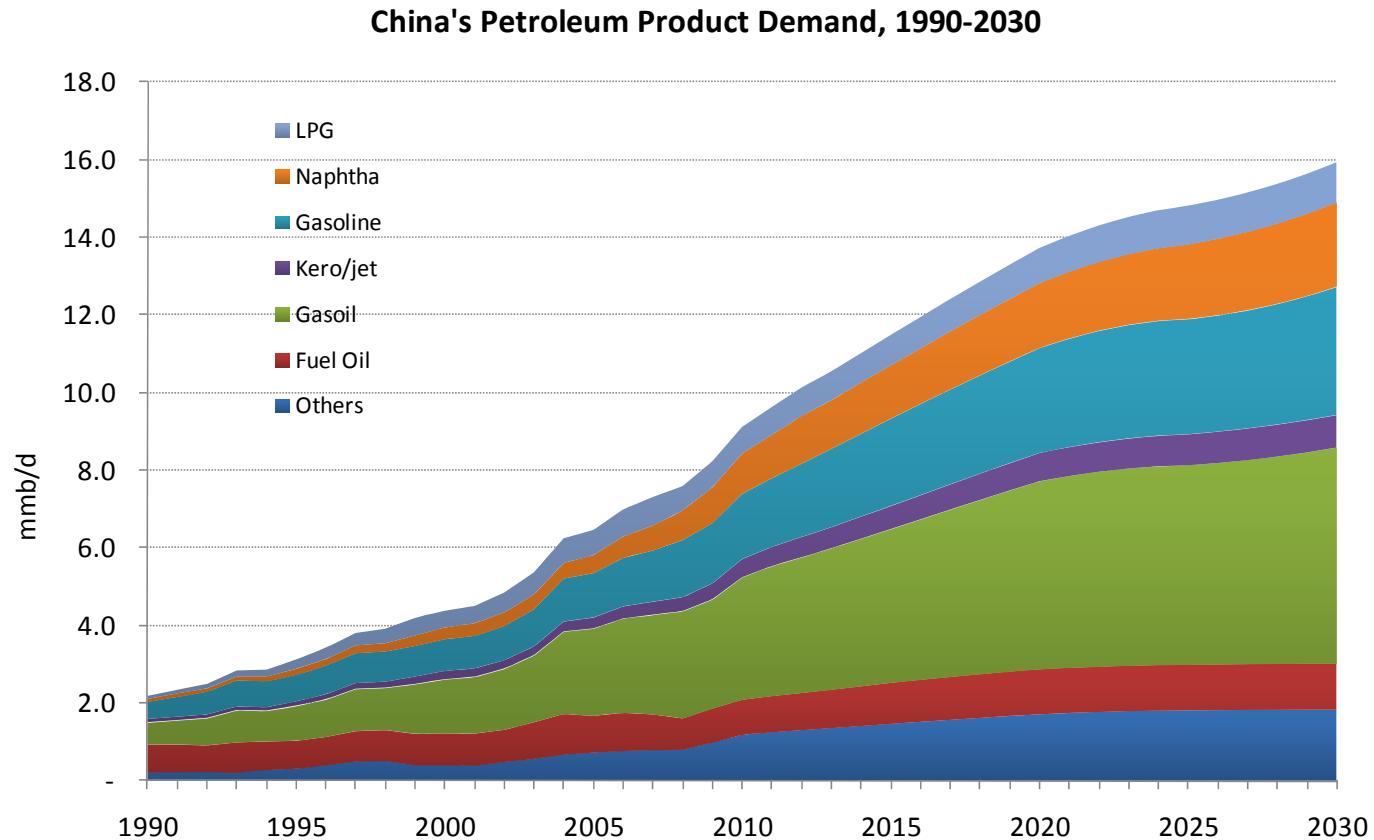
- Future growth of PCEC is led by gas, nuclear power, and hydroelectricity, but coal will continue to play the dominant role for decades.
- Beyond 2020, there is a good chance that China's coal and oil consumption growths will slow down considerably, while use of gas and nuclear power continues to grow.



Rising Oil Demand and Imports

Fast Growing Demand

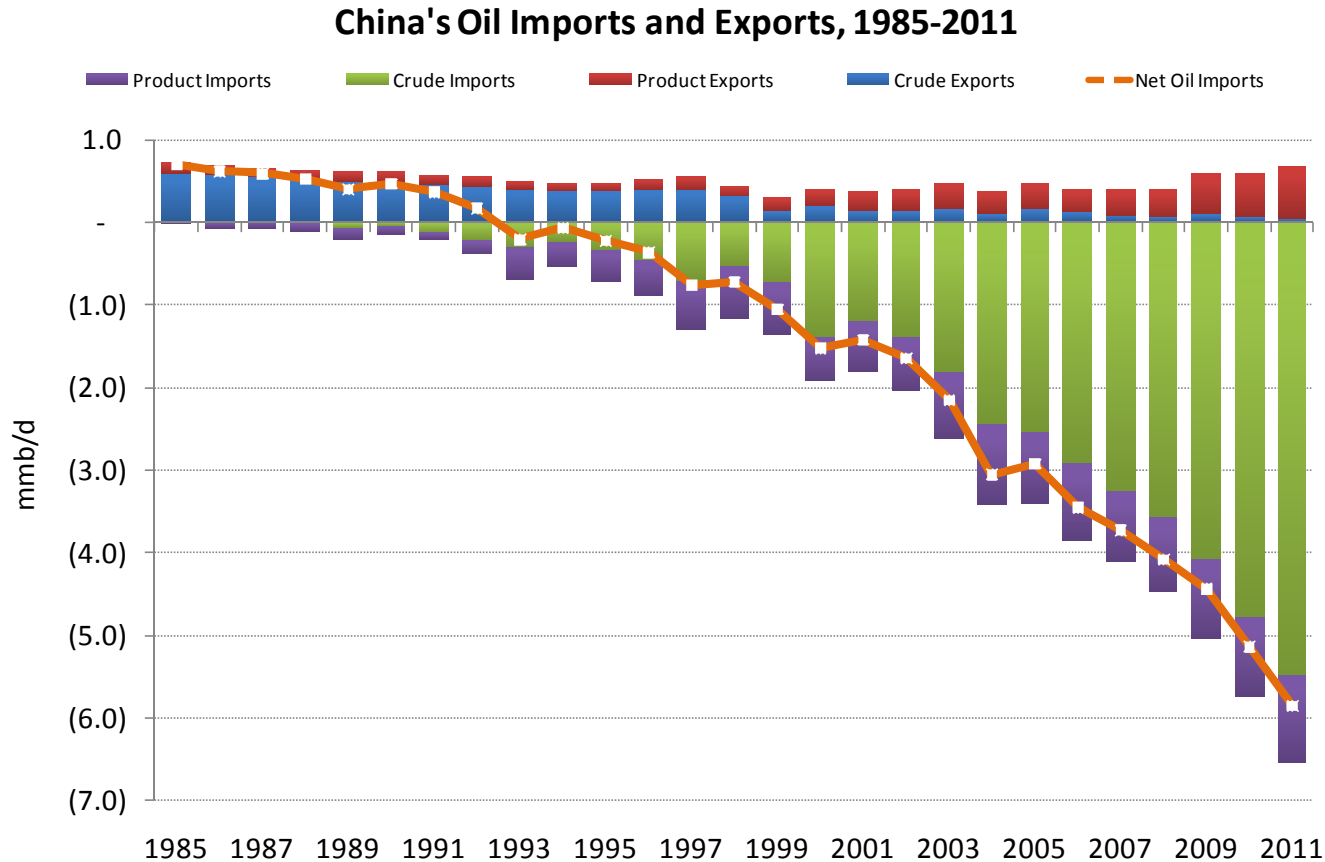
- The future oil demand growth is robust for China. However, a big uncertainty is expected to emerge after 2020 where the demand growth may be slowing down significantly.



Note: 2010 data are preliminary and 2011-2030 data are projections.

Oil Product Markets

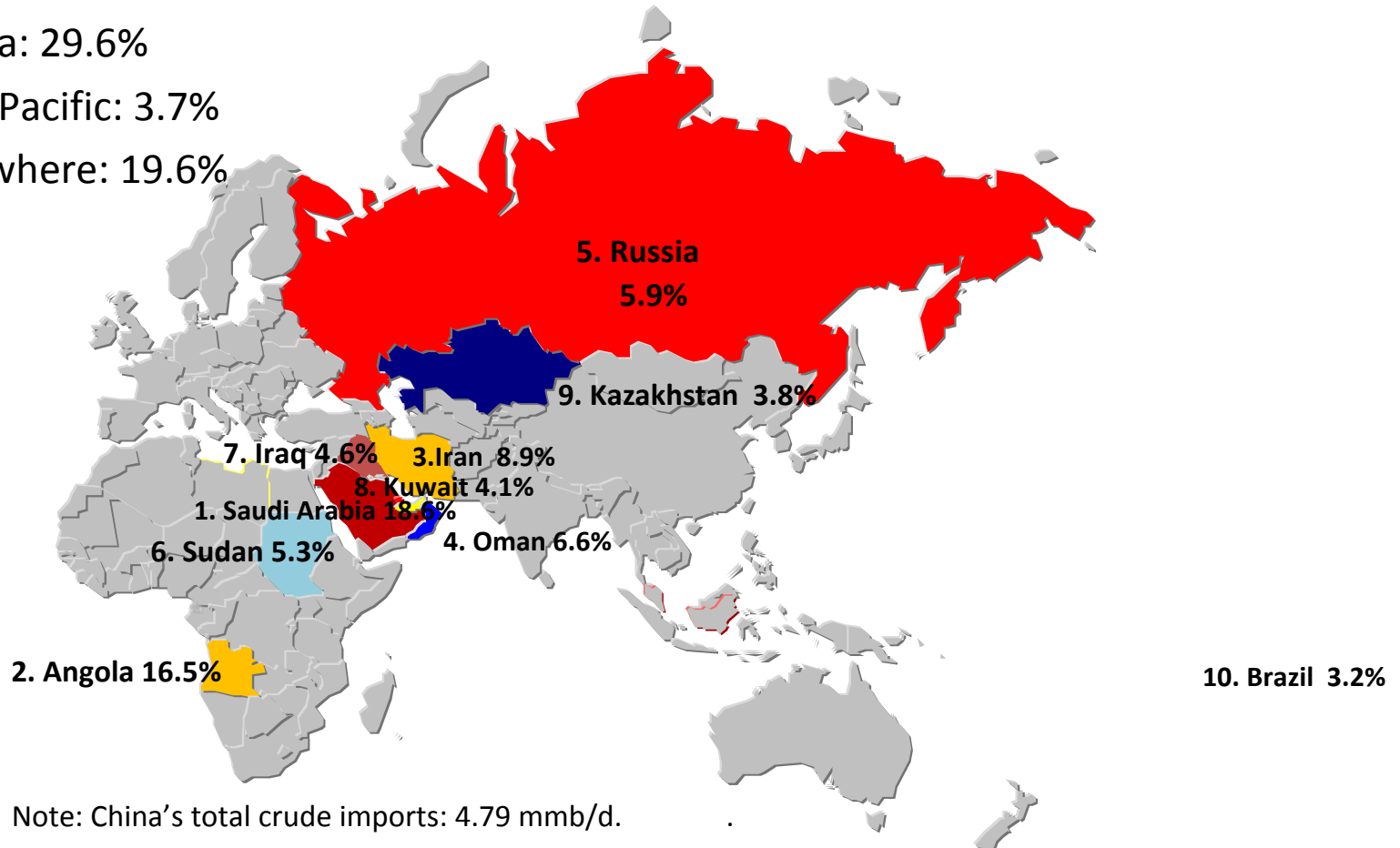
- China went from being the largest oil exporter in Asia in the mid-1980s to the largest importer today.



Note: 2011 data are projections.

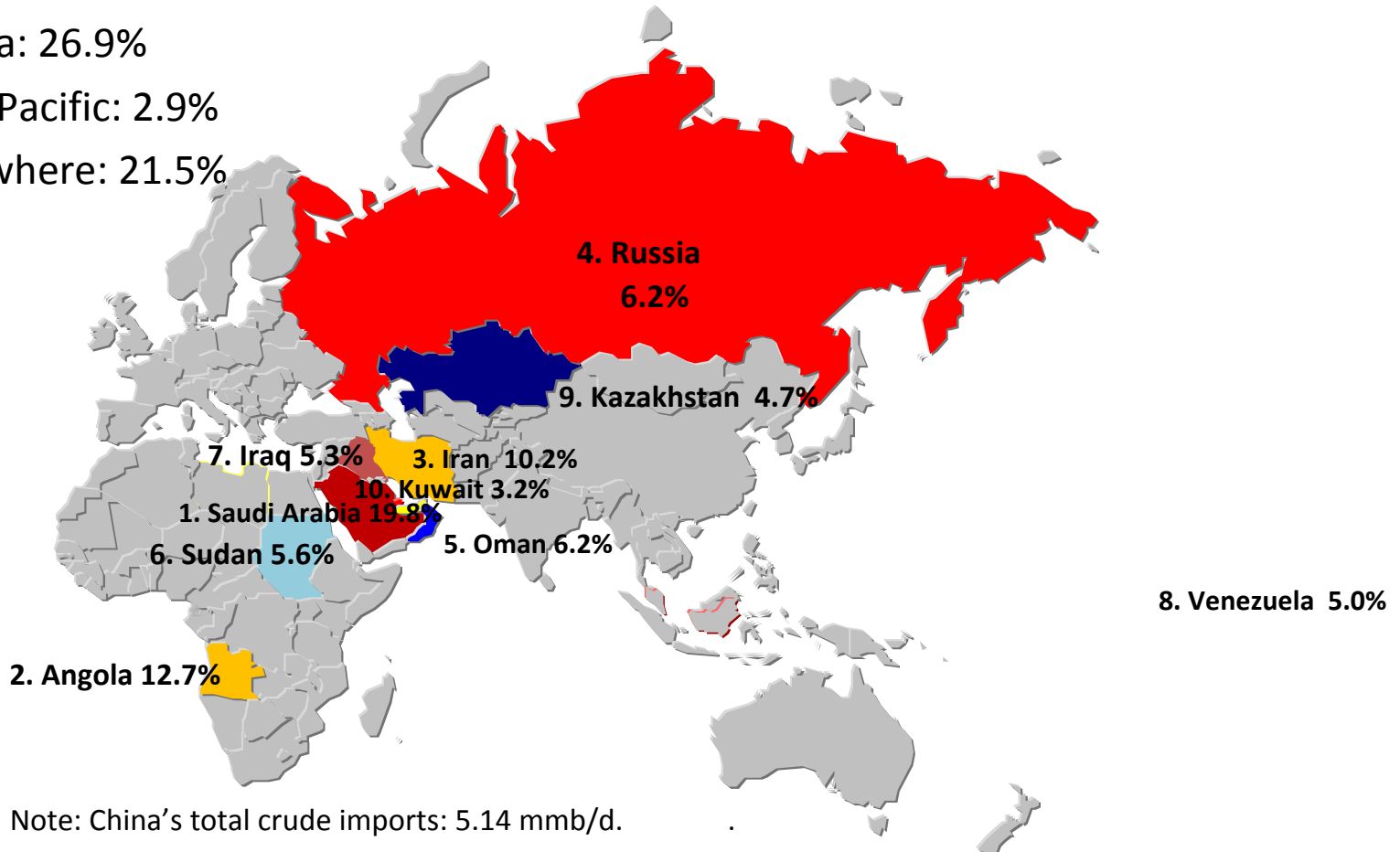
China's Crude Imports in 2010

- In 2010:
 - Middle East: 47.1%
 - Africa: 29.6%
 - Asia Pacific: 3.7%
 - Elsewhere: 19.6%



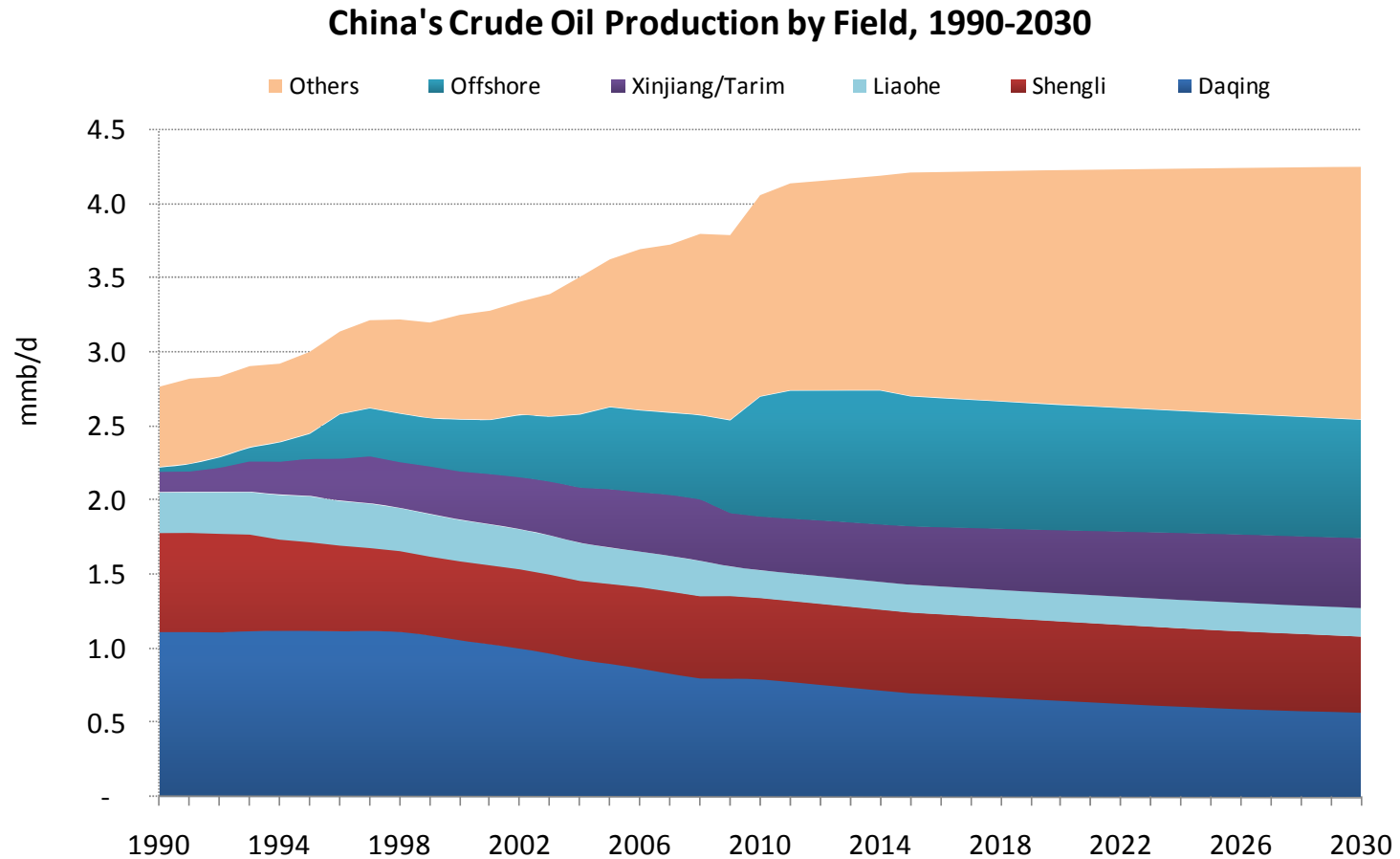
China's Crude Imports, First Quarter 2011

- First quarter 2011:
 - Middle East: 48.8%
 - Africa: 26.9%
 - Asia Pacific: 2.9%
 - Elsewhere: 21.5%



Future Outlook

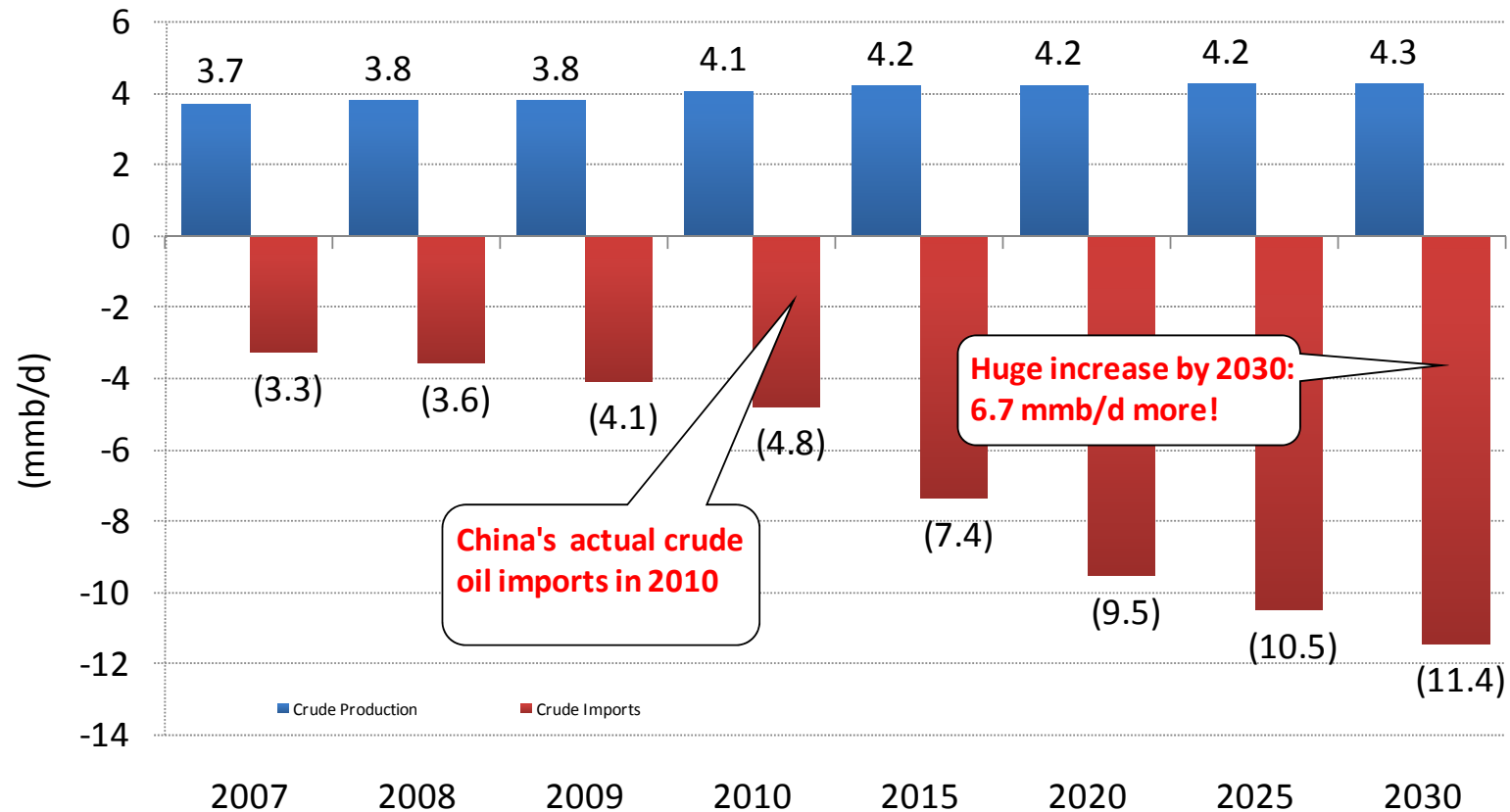
- China's crude oil production may reach its plateau after 2010.



Note: Data for 2010-2030 are base-case projections.

Outlook for Oil Imports

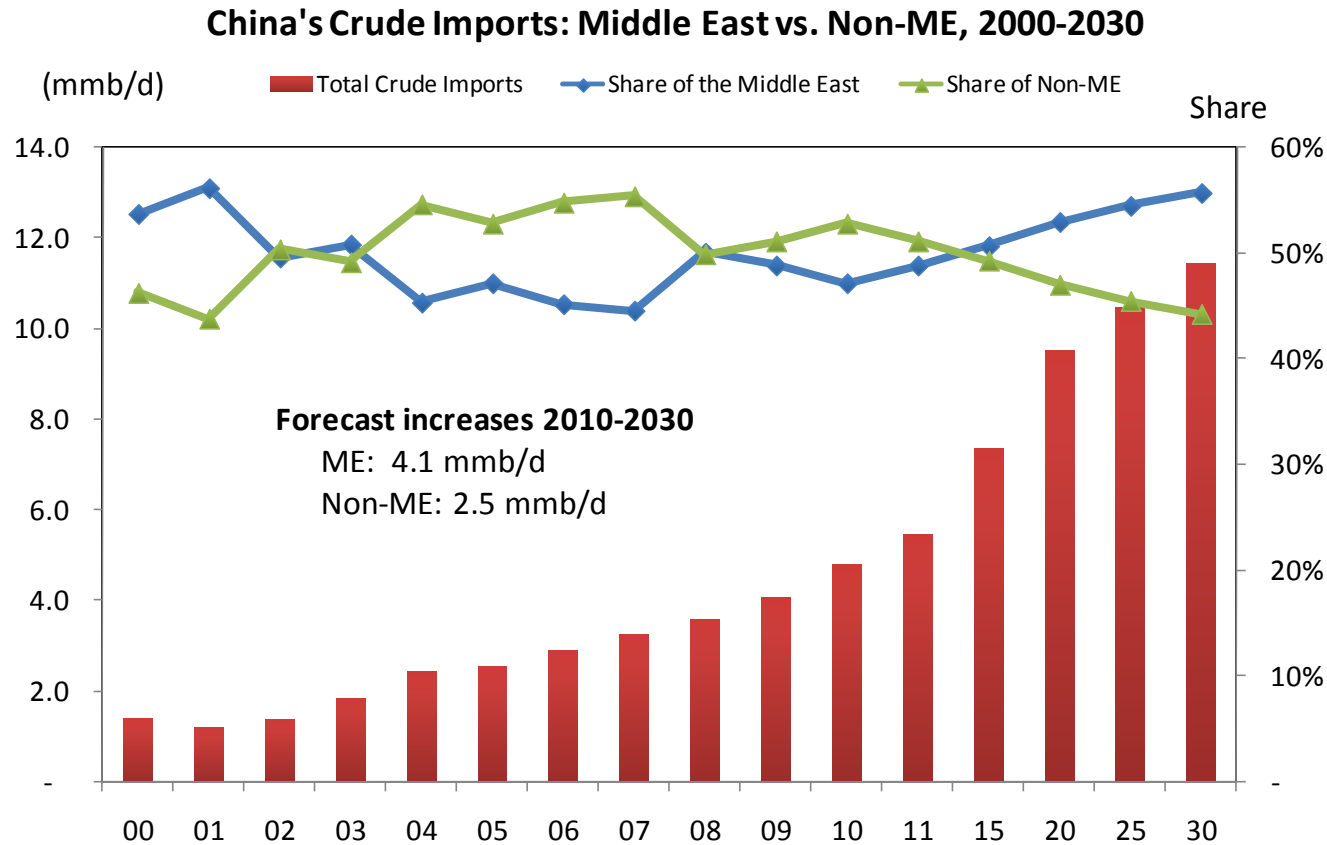
**China Will Have a Huge Increase
in Crude Oil Imports!**



Note: 2015-2030 data are projections.

Crude Balance Outlook

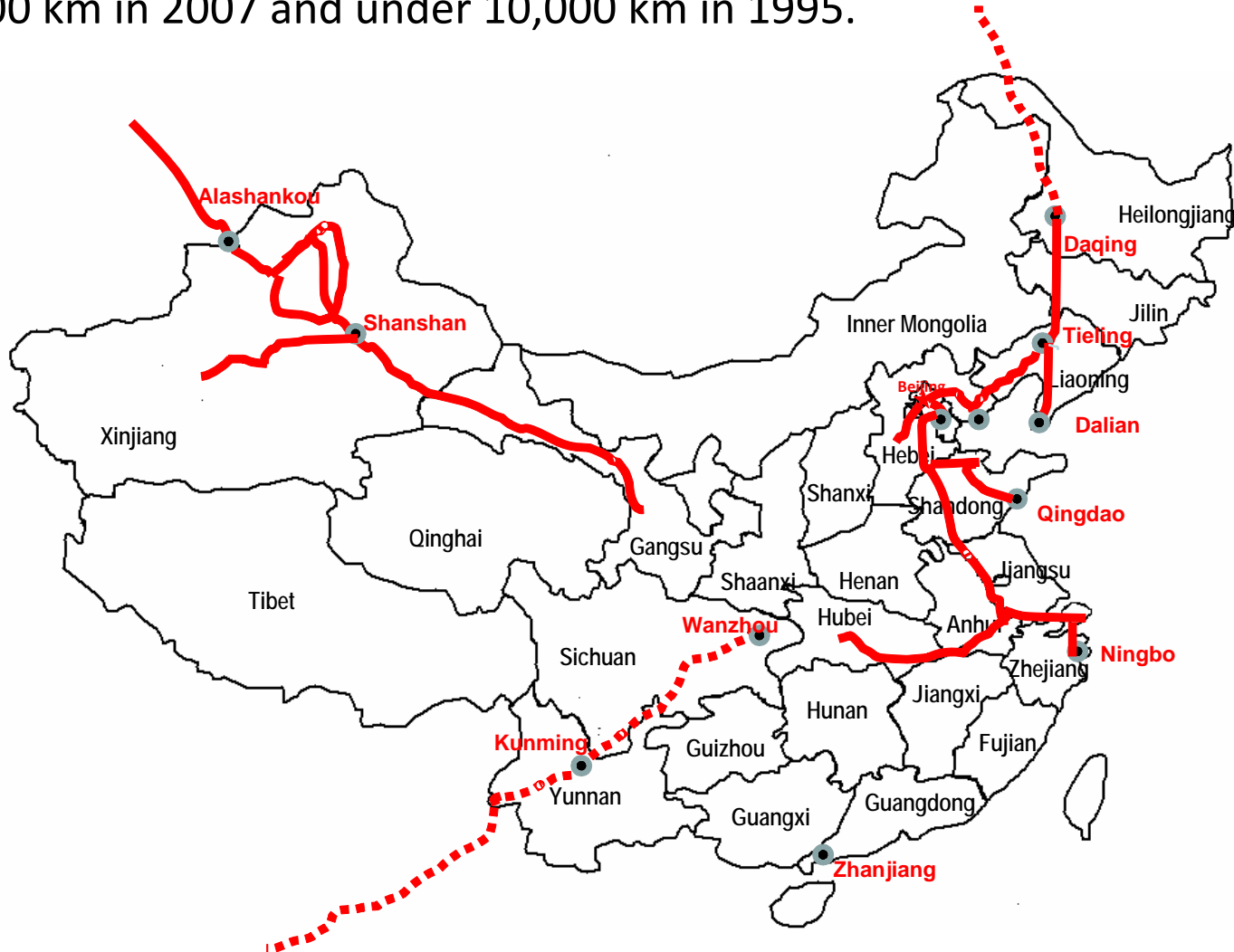
- Crude imports from outside the Middle East are as important as those from the Middle East for China at present. In the long run, the ME share is likely to go above 55%.



Note: Data 2011-2030 are forecasts.

Key Crude Pipelines

- At the start of 2010, China has 20,000 km of crude oil pipelines, up from 17,000 km in 2007 and under 10,000 km in 1995.



China's Energy Security Strategies

Energy Security for China

Main elements of China's energy security policy:

- Enhance domestic oil and gas E&P activities and maximize oil and gas production;
- Diversify the sources of oil and gas imports, increasing the share of oil and gas imports from Russia and Central Asia;
- Strengthen the overseas investments by state oil companies, particularly in the Middle East, Asia Pacific, Russia, and Central Asia;
- Increase the investment in oil and gas infrastructure and open more channels to imports;
- Establish the strategic or government petroleum reserves;
- And most recently, move toward a system for comprehensive energy security.

SPRs in China

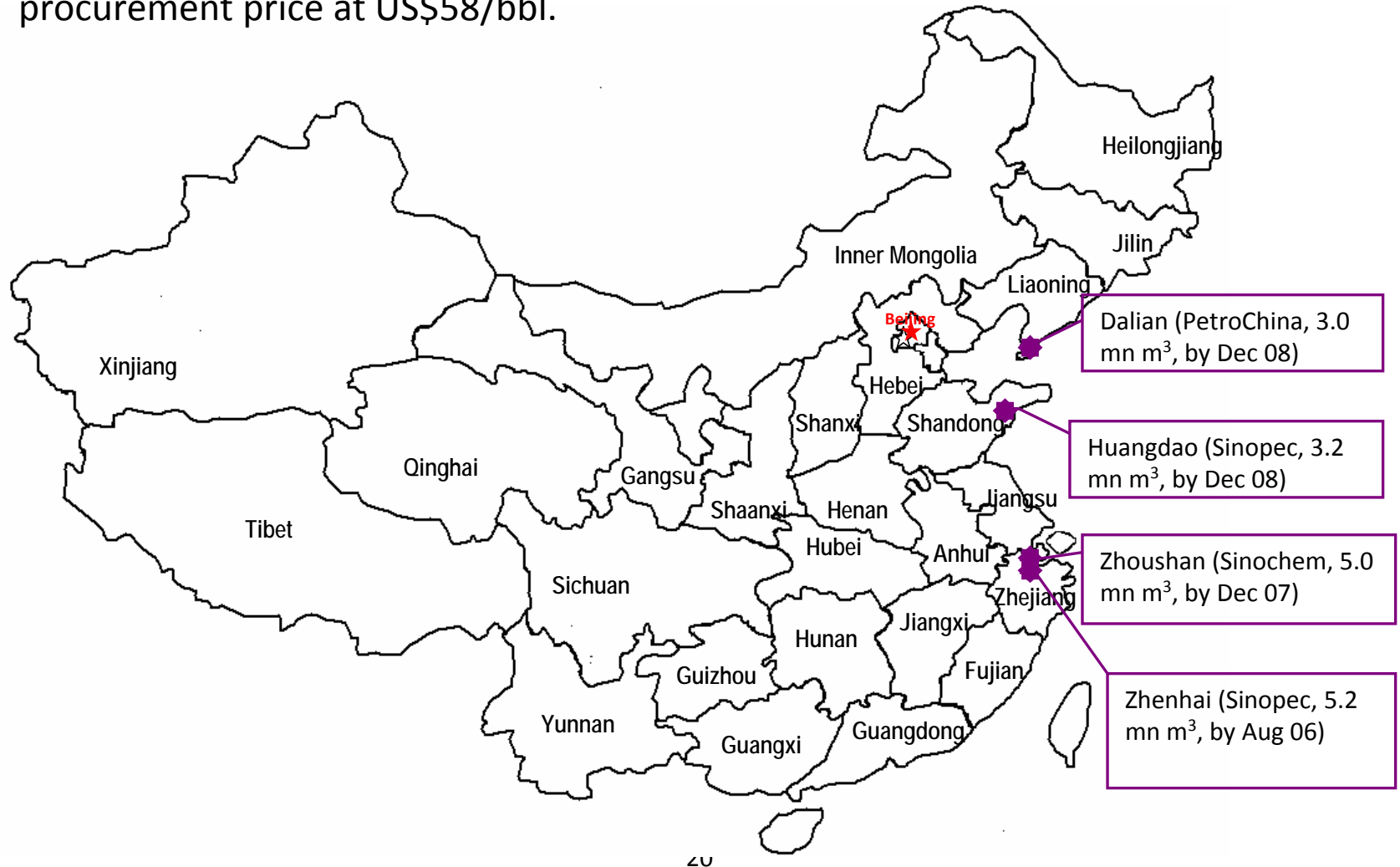
- China's SPRs program is mainly to reduce the impact of crude supply disruption.
- Phase I (by end 2008): 16.4 million m³ or 103 million bbl (approximately 31 days of net imports or 15 days of total consumption) in four sites (Zhenhai, Zhoushan, Huangdao, and Dalian). Phase I construction was completed and all the tanks were filled by April 2009, with average crude procurement price at US\$58/bbl.
- Target for Phase II (by 2012/13): Another 26.8 million m³ or 169 million bbl, totaling 272 million bbl (approximately 60 days of net imports or 33 days of total consumption).
- Target for Phase III (by 2015/2016): To establish 500 million bbl of SPRs.

SPRs in China (cont'd)

- The National Petroleum Reserves Center (NPRC), established in December 2007, is in charge of China's SPRs. The NPRC is supervised by the National Energy Administration.
- Commercial operations and management of the storage may be allowed to a certain degree, while the government retains overall control.
- The government is passing laws to require oil companies to also establish a minimum level of storage as a supplement to the national storage.
- Overall, the government could divide China's SPRs into three categories: a truly national SPRs, commercial petroleum storage by state oil companies, and commercial storage by local government or private companies.

SPR Phase I in China, Completed in Dec 2008

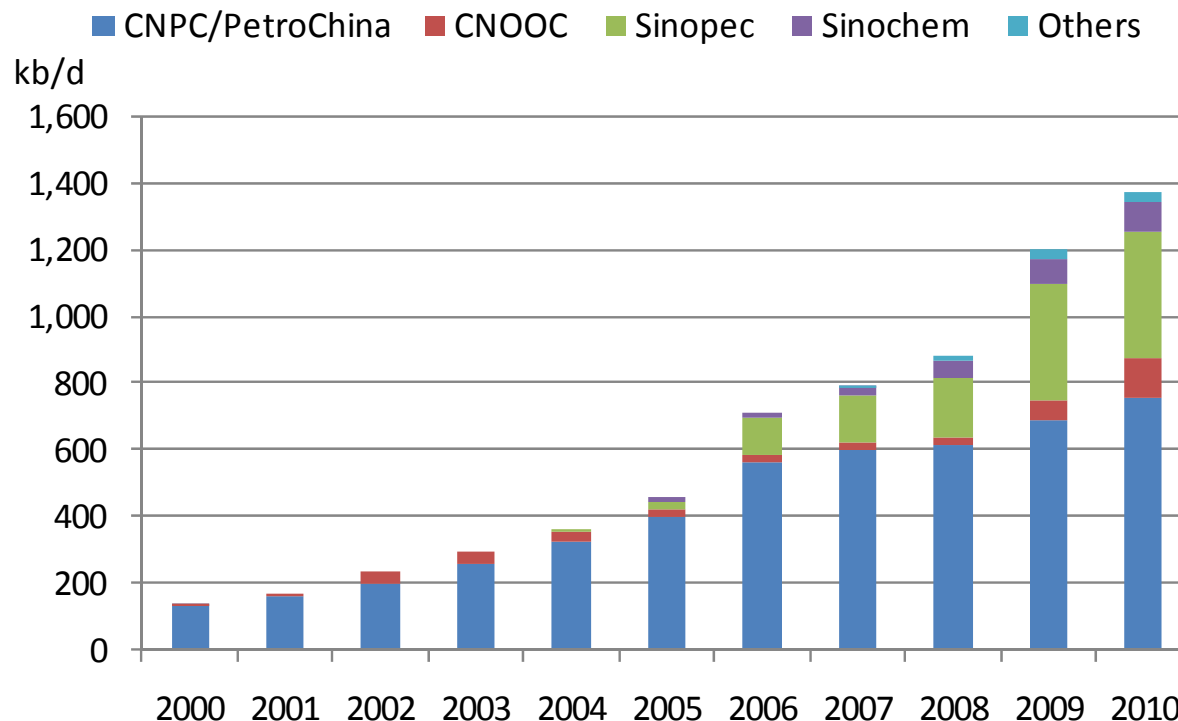
- China completed construction of Phase I sites [total capacity - 16.4 million m³ (103 mmb)] in end 2008, and has filled all the tanks by April 2009, with average procurement price at US\$58/bbl.



China's Overseas Oil Equity Production

- In 2009, total overseas equity oil output is estimated at 1.16 mmb/d, up from 870 kb/d in 2008, 710 kb/d in 2006, 360 kb/d in 2004, and 140 kb/d in 2000.
- In 2010, it is estimated to be 1.33 mmb/d, up by 15% from the 2009 level.

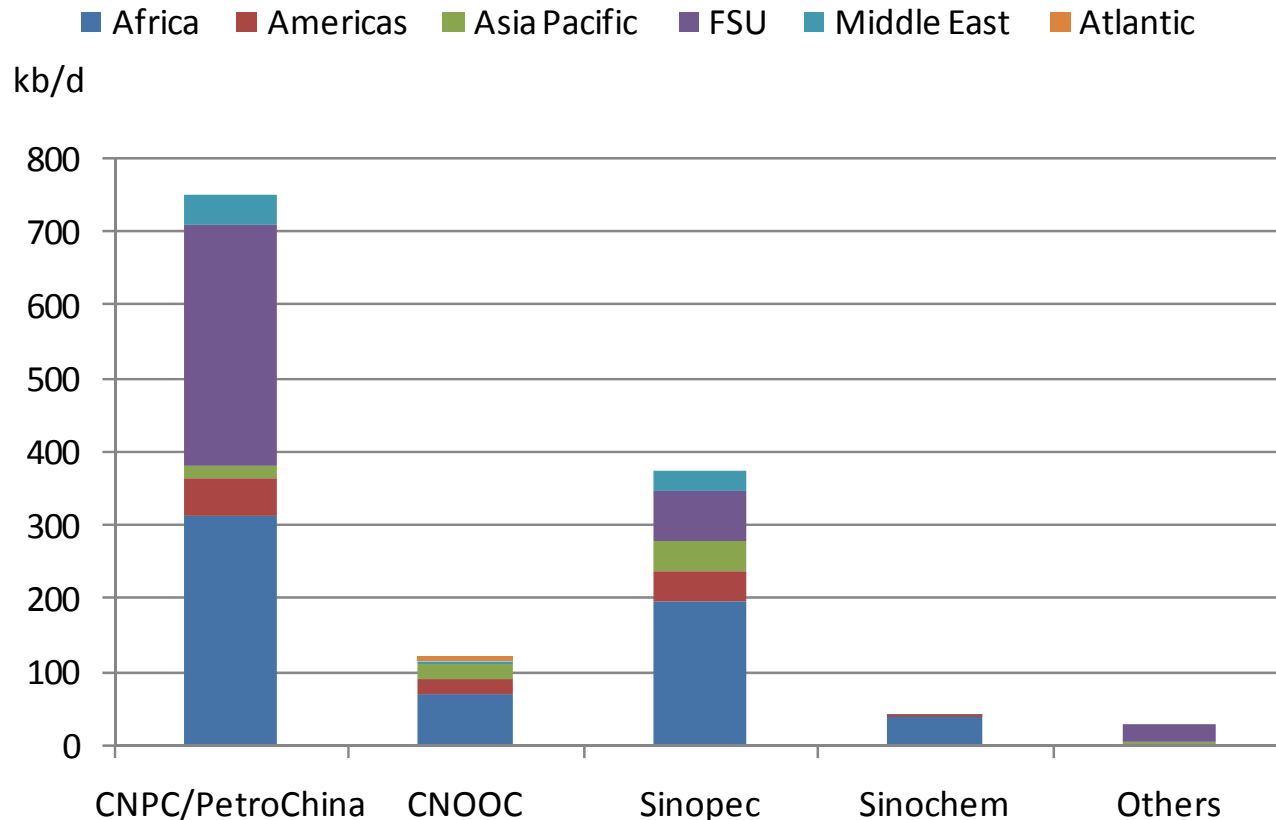
China's Overseas Oil Equity Production, 2000-2010



China's Overseas Oil Equity Production in 2010

- Current equity production is mainly in Africa (49%) and FSU (32%, mainly from Kazakhstan).

China's Overseas Oil Equity Production by Companies in 2010



Motivations for Overseas Investments

- From 1992 to the end of 2010, China invested over US\$75 billion in overseas upstream oil and gas assets, of which about 75% was spent on direct acquisitions of upstream assets.
- In 2010, CNPC, Sinopec, and CNOOC have looked to acquire upstream gas assets, and they moved into the Latin America region aggressively.
- CNPC/PetroChina aspires to become an international oil and gas company, both in the upstream and downstream oil and gas business. The firm plans to spend at least US\$60 billion in the next decade.
- Sinopec seeks to become a multinational refining and chemical company with global competitiveness. Because of the mismatch of the firm's crude requirement and refining capacity, it has stated that upstream oil asset acquisition/cooperation is the firm's priority for its globalization strategy.
- Motivations for overseas investments:
 - Take advantage of the Chinese government's concerns over the security of energy supply
 - Expand as much as possible
 - Realize their individual globalization strategies
 - Make full use of China's technologies and labor force to seek international profits.

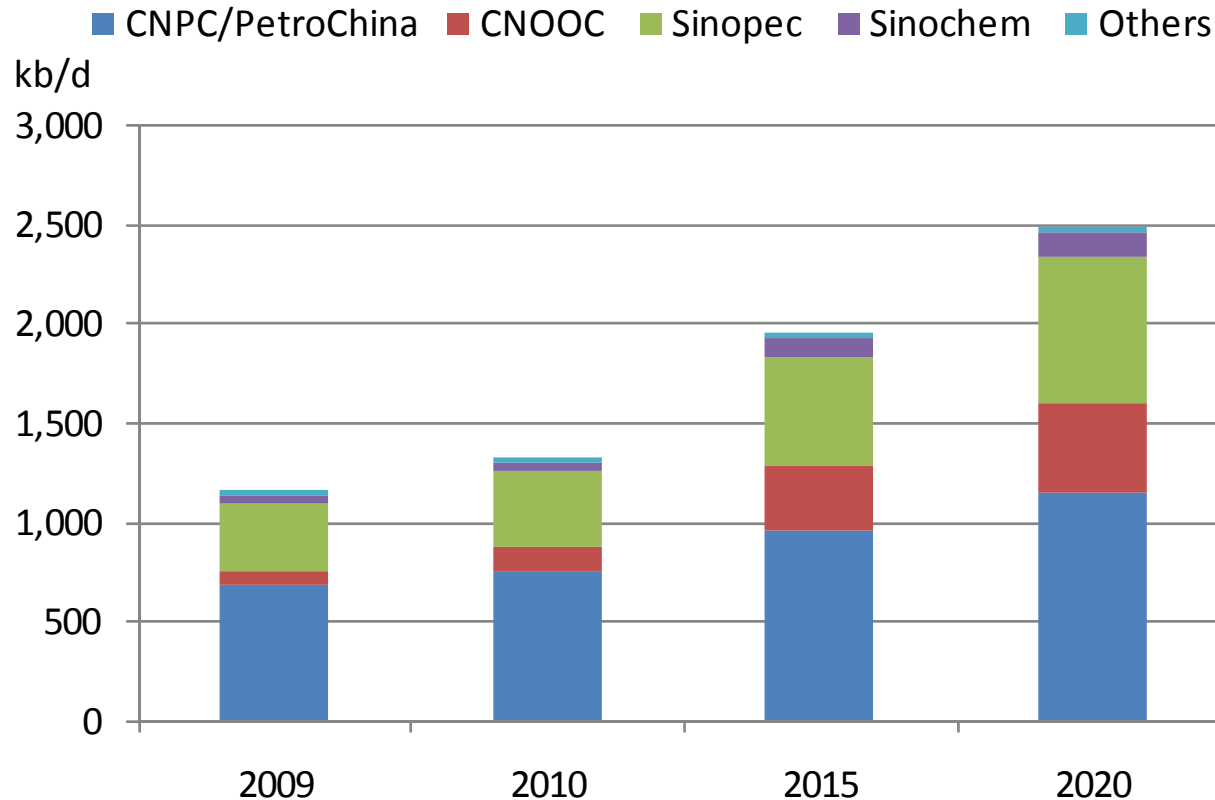
Methods of China Overseas Investments

- Direct assets acquisitions
 - Oil sands projects
 - Many others (Chesapeake's shale gas assets by CNOOC, Arrow Energy with Shell by PetroChina, SPC in Singapore by PetroChina, Addax Petroleum by Sinopec, etc.)
- Partnered with IOCs to win service contracts to develop fields in Iraq
 - Rumaila oil field (CNPC – 37%, BP – 38%, and Iraqi South Oil Co – 25%)
 - Halfaya project (CNPC – 37.5%, Total – 18.75%, Petronas – 18.75%, and Iraqi South Oil Co – 25%)
 - Missan fields (CNOOC – 63.75%, TPAO – 11.25%, and Iraqi Drilling Company – 25%)
- Heavily involved in the Iranian oil and gas business as IOCs pull out of the country due to US' sanction.
- Offered a total of US\$90 billion in loans to oil and gas producing countries in exchange of long-term oil and gas supply contracts or upstream assets.
- International pipeline investments
 - China – Kazakhstan crude pipeline (200 kb/d to 400 kb/d by 2013)
 - China – Russia crude pipeline (300 kb/d beginning 2011)
 - China – Myanmar crude pipeline (440 kb/d, later than 2014)

China's Overseas Equity Oil Production Forecast

- In 2010, overseas equity oil production is about 28% of China's crude imports. We expect the amount could increase to about 27% in 2015 and 2020.

China Overseas Equity Oil Production by Companies



China-Canada Energy Connections

China-Canada Energy Connections

Oil Trade:

- China imported less than 10 kb/d of crude oil from Canada and less than 25 kb/d so far in 2011.
- The need for more crude by China is huge.

Energy Investment:

- All major state oil companies in China have invested in Canada's oil and gas sectors.
- CNPC first entered Canada in 1993 by buying into the North Twing oil field in northern Alberta and gaining production rights in several oil fields, though these operations are small-scale in nature.

China-Canada Energy Connections (cont'd)

Energy Investment (cont'd):

- In 2010, Sinopec and China Investment Corp spent a total of US\$5.46 billion on oil sands projects. Adding the US\$1.9 billion acquisition deal by CNPC/PetroChina on 60% of Athabasca Oil Sands Corps in 2009, China has spent about US\$7.4 billion on oil sands projects in Canada.
- Separately, the China National Offshore Oil Corporation (CNOOC) holds a stake in MEG Energy, which operates the Christina Lake project. The initial investment by CNOOC was made in 2005.

Thank You