

# **China's Energy Development and Its Global Implications**

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# Energy

- **Energy is NOT just Energy.**
- **Energy has a direct impact on almost all the major issues in the world today:**
  - **Development (*in all its aspects*);**
  - **Food;**
  - **Science & technology;**
  - **Engineering and equipment;**
  - **Capital & finance;**
  - **Climate change and environment;**
  - **Population;**
  - **Military;**
  - **Geopolitics;**
  - **War & peace; etc.**

# How Big Is China's Economy?

*Official GDP = US\$8.26 trillion; PPP = US\$ 12.26 trillion  
(2012)*

*China's GDP as % of US GDP (2012):*

- **China:**

- Official GDP: 52.67%
- PPP: 79.05%

- **Greater China:**

*(China + HK + Macau + Taiwan)*

- Official GDP: 57.53%
- PPP: 87.35%

# **The Largest Manufacturing Nation**

- **China is the largest manufacturing country in the world.**
- **China is now the largest producer in the world for more than 220 products, including iron & steel, automobiles, cement, chemical fiber, etc.**

# **The Largest Trading Nation**

- **In 2013, China's total foreign trade was US \$4.14 trillion.**
- **China is the largest trading nation in the world.**

# **The Largest Forex Reserve**

- **By the end of September 2013, China's total official forex reserve was US\$3.66 trillion.**
- **China has the largest forex reserve in the world.**
- **China is the largest creditor to the USA.**

# **The Largest Car Producer**

- **In 2013, China produced more than 22 million vehicles, with 20 million passenger cars.**
- **Most of China's passenger car production is sold domestically.**
- **In addition, China also imports many luxury cars from abroad.**
- **If you take out GM China, GM's overall profitability would lose luster significantly.**

# **The Largest Oil Importer**

- **China has surpassed the USA as the largest oil importer in the world.**
- **Oil import in 2013 at 300 million tons.**
- **China's oil import will significantly increase in the coming years and decades.**



# **The Largest Energy Producer**

- **China is the largest energy producer in the world.**
- **Total energy production in 2012 was the equivalent of 3.62 billion ton of standard coal.**
  - **Coal at 66.4%;**
  - **Oil at 18.9%;**
  - **Gas at 5.5% (5.9% in 2013).**
- **Per capital energy consumption was 2.68 ton standard coal.**
  - **About world average, but**
  - **Below developed countries.**

# **Astounding Growth of Power**

- **In 2013, China's total installed capacity for power generation reached 1,225,510 megawatts, the largest in the world.**
- **In 2013, China added 80,600 megawatts to its TIC;**
- **China's TIC is growing the size of Britain's TIC every year.**

# The Dominance of Coal

- In 2012, coal accounted for 66.4% of China's energy production.
- *(Globally, coal accounts for less than 30% of energy production.)*
- Oil and gas = 24.4% of China's energy production in 2012.
  - Gas @ 5.5% in 2012 (5.9% in 2013).

# **Low Per Capita Energy Ownership**

- **Coal:** 67% of the world average;
  - **Crude oil:** 5.4% of the world average;
  - **Natural gas:** 7.5% of the world average.
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- **Per capita energy consumption compared with the developed countries:  $\approx 1/3$ .**

# **Achilles' Heel: Oil Import**

- **China' s oil consumption:**
  - **500 million tons in 2013;**
  - **Oil import at 300 million tons;**
  - **Total oil consumption to increase to above 700 million tons by 2020.**
- **Dependence on oil import has increased from 32% around 2000 to above 58% in 2013.**
- **Dependence on oil import expected to go up to above 70% by 2020.**
- **Potential dangers:**
  - **Maritime security for oil shipping;**
  - **Safety and security of cross-border oil & gas pipelines;**
  - **Major jump in imported oil & gas price;**
  - **Insufficient strategic reserves.**

# **New Achilles' Heel: Gas Import**

- **China's gas consumption:**
  - 2001: 27.4 Billion cm;
  - 2013: 167.6 Billion cm (an increase of 13.8% over 2012);
  - 2020:  $\approx$  350 Billion cm.
  - At present
    - Natural gas = 5.9% of China's energy production in 2013.
    - Only about 14% of China's populations use natural gas.
- **Dependence on gas import:**
  - China became net gas importer in 2006;
  - Import @ 5.8% of total gas consumption in 2007;
  - Import @ 31.6% of total gas consumption in 2013.
  - Total import in 2013 @ 53 trillion cm.

# **“We will go wherever there is oil!”**

- **Promoting international energy cooperation almost in all parts of the world: the Gulf & the Middle East, Africa, Central Asia, Russia, North America, South America, Australia, ASEAN.**
- **Coordination of domestic energy production and international supply.**
- **Promoting the establishment of a new international energy order.**

# Energy Mega Trends in China

- **Oil**: Demand is increasing fast. Need to add 200 to 300 million tons to oil consumption by 2020;
- **Gas**: Government has ordered gas consumption to double in five years;
- **Coal**: Consumption needs to go down: down to 60%, or even down to 50%?
- **Nuclear**: Will go up. 26 new nuclear power stations are being built. Increase to 5%, or even to 10%?
- **Hydro**: How much more can it grow?
- **New & Renewable**: We have to keep faith and spare no efforts. But, alas, how much can they really contribute to China's staggering energy demand?
- **The great variables:**
  - Shale gas: When and how can they be developed en masse?
    - Shale gas as a bonus and an insurance policy.
  - Improving energy efficiency: How to improve? How much to improve?



# Gasoline and Diesel

- **Production in 2013:**
  - Gasoline production @ 97.72 million tons;
  - Diesel production @ 172.21 million tons.
- **Major shifts:**
  - Gasoline production & consumption are expected to increase significantly in the coming years;
  - Diesel production & consumption are expected to level off or even decrease in the coming years;
  - Rule of thumb is that if GDP stays at or below 7.5% per year, demand for diesel will level off or even decrease.
  - In the past years, China exported gasoline and imported diesel. With increasing domestic demand for gasoline, China's gasoline export will decrease.

# **Gasoline & Diesel: Environment**

- **With pollution becoming more and more serious in China, more attention is paid to vehicle emission and environmental protection.**
- **Few passenger cars in China use diesel. Most use gasoline. Should a shift from gasoline to diesel be encouraged?**
- **Some local governments encourage cars to shift from gasoline to gas.**
- **China has announced new gasoline and diesel standards to lower vehicle emission.**

# **If There Were No Shale Gas**

- **For China:**
  - **Continue to rely heavily on coal;**
  - **Need to dramatically increase import of oil;**
  - **Dependence on imported oil may go up to as high as 80%;**
  - **Worsening emission problem;**
  - **Greater environmental degradation;**
  - **Increasingly fragile and unstable geopolitical situation relating to energy security.**

# **If There Were No Shale Gas**

- **For the USA:**
  - **Continue to rely heavily on imported O&G, especially from politically unstable countries and regions;**
  - **Deteriorating job crisis;**
  - **Worsening federal and local budget deficits;**
  - **Worsening debt crisis;**
  - **Increasingly pessimistic prospect for the future of America.**

# **If There Were No Shale Gas**

- **For China and the USA:**
  - **China and USA would continue to import a lot of O&G;**
  - **China and USA would eventually compete for the same barrel of oil;**
  - **Greater shortage of oil;**
  - **Higher oil prices,**
  - **Eventual confrontation or even war over energy.**
- **The world without SG would be a terrifying world.**

# **Shale Gas in Transition**

- **Moving from “unconventional energy” to “mainstream energy” ;**
- **Moving from a possibility to a reality;**
- **Moving from a dispensable and insignificant thing to a major energy contributor;**
- **Moving from the margin of the energy sector to its center stage;**
- **Creating a real revolution in energy;**
- **The SG revolution will spread from USA to China and elsewhere.**

# Global Implications

- **The SG-triggered global energy revolution will have profound implications to many stakeholders in the world:**
  - Producers of O&G;
  - Exporters of O&G;
  - Importers of O&G;
  - Traders of O&G;
- **The current supply & demand patterns in O&G will change profoundly.**
- **The prices of O&G will change profoundly.**
- **Anyone who fails to grasp the profound significance of the SG-triggered global energy revolution will do so to his or her own harm.**

# **Energy Revolution**

- **We are faced with an energy revolution in the world, triggered mostly by SG in the USA.**
- **The rigid divide between conventional vs. non-conventional energies is fast coming down.**
- **America's EI will profoundly change the existing supply-and-demand equations in the global energy sector, and will create profound geopolitical implications.**



# **How Much SG Does China Have?**

- **China has the largest SG reserves in the world;**
- **Total SG reserves at 134.42 trillion cubic meters (not including the Qinghai-Tibet plateau and China's off-shore areas).**
- **The abundant SG reserves will boost China's confidence in energy security and reduce its fear of vulnerability.**

# **Barriers to Overcome**

- **Legal ownership structure;**
- **Water resources;**
- **Potential underground water contamination;**
- **Geological conditions;**
- **Pipelines and other infrastructures;**
- **Technologies and know-how;**
- **Economy of scale;**
- **Who wants to do what, why, when, and how?**

# **China Fully Supports America's EI**

- **America needs to achieve EI:**
  - **To reduce dependence on imported energy;**
  - **To increase revenue and reduce deficit and indebtedness; and**
  - **To create more jobs.**
- **China has all the reasons to fully and wholeheartedly support America's EI.**
- **The faster and the better America achieves EI, the better for China.**

# AmeriChina

- **AmeriChina = America + China**
- **China will fully support America's EI and is willing to provide:**
  - **Capital;**
  - **Equipment; and**
  - **Uptake for oil & gas produced in other countries thus freed up by America's EI.**

# **The Rest of the World**

- **With America achieving EI, China can provide demand for the O&G that America will no longer import from the rest of the world, including the Middle East, Africa and Latin America.**
- **China will also increase energy cooperation with Russia, Central Asian countries, Australia, etc.**
- **What are the economic, strategic and geopolitical implications from this major shift in the global O&G market?**

# **China & OPEC**

- **At present, half of China's imported oil comes from the Middle East; 1/3 comes from Africa.**
- **China will continue to heavily depend on OPEC members for its imported O&G for many years to come.**

# **China and Saudi Arabia**

- **Saudi Arabia is the largest oil exporter to China, with 53.92 million tons in 2012, and around 60 million tons expected in 2013.**
- **China may soon surpass the USA as the largest oil importer from Saudi Arabia.**
- **By coincidence, China's total oil consumption in 2014, expected at 518 million tons, will be approximately equal to the total oil production of Saudi Arabia in 2013 (about 521 million ton).**
- **Half of China's oil import comes from the Middle East.**
- **Ten largest oil exporters to China are: Saudi Arabia, Angola, Russia, Iran, Oman, Iraq, Venezuela, Kazakhstan, Kuwait and UAE.**

# **The Importance of Saudi Arabia**

- **From China's perspective, the Middle East will remain the most important supply of crude oil for decades to come.**
- **No other country is more important than Saudi Arabia as the largest oil supplier to China.**
- **China's oil import strategy centers around the Middle East, especially Saudi Arabia, supported by supplies from Africa, Russia, Central Asia and other regions.**



# China's Ultimate Goals

- **20% of global economy**
  - 11.51% in 2012 (*official exchange rate*).
  - 14.87% in 2012 (*ppp*).
- **20% of global trade**
  - Total foreign trade in 2013 @ US\$4.14 trillion; about 11% of global trade.
- **20% of IPR**
  - China surpassed USA in 2011 as the largest country in the world in new patent applications.
- **20% of Fortune 500 companies**
  - 95 in 2013 (Mainland China, Hong Kong and Taiwan).

# **China in the Coming Decade**

- **China will be the largest economy in the world, with about 20% of the global economy; and about 20% of global trade.**
- **China will be the largest importer of O&G, and will continue to invest in mega deals in O&G throughout the world.**
- **Rmb will become a major reserve currency.**
- **The USA will export oil and gas to China.**
- **China will have greater democracy and transparency and better governance and rule of law than today.**

# Thank you!

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