Geo-Strategic Shifts
The Energy Variable and More

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Presentation Outline

Summary Points

1. What will drive change going forward?
2. What has happened and will happen to world energy markets?
    -Winners and losers from the petroleum price collapse
3. What uncertainties lie ahead?
    -Russia, Middle East, and Asia
4. What do these trends mean for the United States and Japan?

Summary Points

1. The contemporary era is characterized by a growing diffusion of global power, geopolitical complexity, and unprecedented connectivity.
2. Peoples, economies, and regions are linked by technology, trade, travel, opportunity, and risk as never before.
3. The "future" will result from the intersection of many variables: power diffusion, demographic trends, good and bad governance, economic performance, and worrisome security trends.
4. The energy revolution emerging in North America is having a profound impact on world energy markets, and this will continue in the future. However, energy "futures" cannot be separated from other variables.
5. Three regions are central to the future of global energy and global security: Russia's "near abroad," the Greater Middle East, and Asia.
6. Energy demand (and economic growth) is shifting to Asia. Three Pacific powers will play critical roles in the region: China, Japan, and the United States. Each faces challenges as power becomes more dispersed and institutions are perceived as failing.

Implications and Questions

1. Globalization – the linking of peoples and nations by commerce and communication – depends on the availability of energy at affordable prices. Interrupt the flow of energy and globalization fails.
2. For the next 20 years, fossil fuels will remain essential to global growth and prosperity.
3. A significant portion of that energy from fossil fuels will continue to come from the Middle East, particularly to fuel Asian growth.
4. Therefore energy security will be a defining security issue for Asia in the decades ahead.
5. These facts suggest profound implications for the climate of the earth and by extension profound implications for global equity. For example, are two to three billion Chinese and Indians entitled the same level of energy usage as 300 million Americans?

1. WHAT WILL DRIVE CHANGE GOING FORWARD?

Drivers of Change

- **Diffusion of Power**
  - No one is in charge and no one is responsible
- **Demographics**
  - Larger global population; aging and youth bulges
- **Governance**
  - Freedom is at risk, with bad governance at the root of many problems and no attractive governing model
- **Economics**
  - Mounting debt and aging societies
- **Resources**
  - Demand for water and food is rising
- **Technology**
  - “Good” technology, and technology with bad effects

Diffusion of Power

"A world order in which **no single country or durable alliance** of countries can meet the challenges of global leadership."

-Ian Bremmer

"The problem of peace was historically posed by the accumulation of power, the emergence of a potentially dominant country threatening the security of its neighbors. In our period, peace is often threatened by **the disintegration of power** – the collapse of authority into 'non-governed spaces' spreading violence beyond their borders and their region."

-Henry Kissinger

Diffusion of Power

- There are tensions between:
  - Established Powers (OECD, US, EU, Japan)
  - Rising Powers (China, India, Brazil, Turkey)
  - Dissatisfied Powers (Russia, Iran, China)

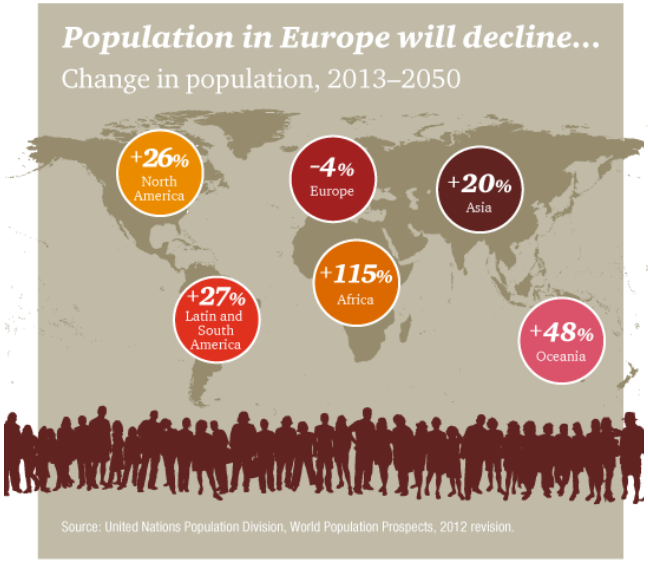
- Weak states vs. strong states vs. non-states:
  - Do we fear Russian or Chinese strength or weakness?
  - How to respond to state weakness? How to deal with non-state state actors, NGOs, or terrorists?

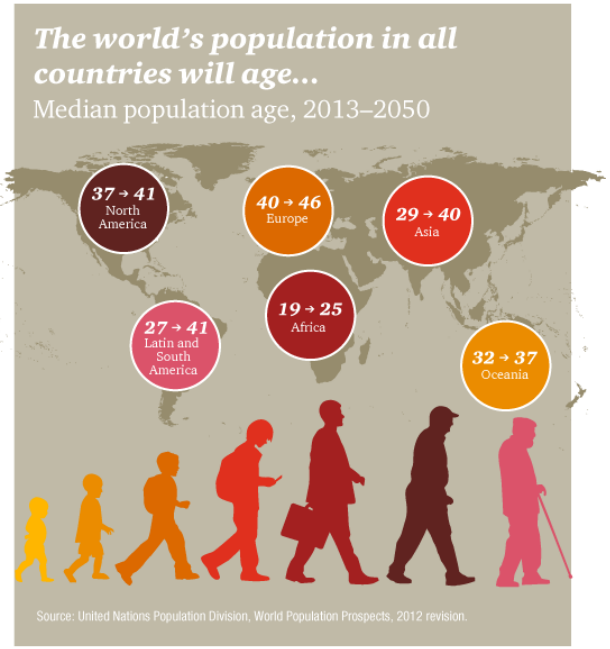
- Claims beyond borders:
  - Russia
  - China

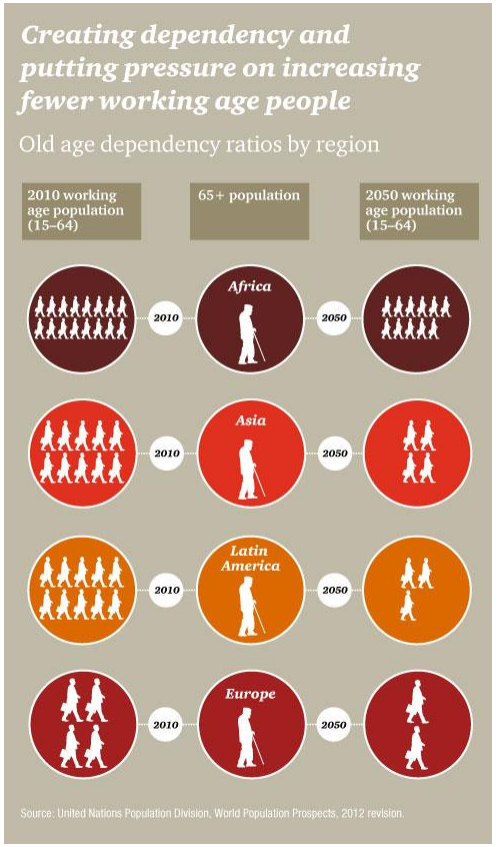
- United States:
  - The issue of decline: if the US does not act, who will?
  - Are some US allies and friends hedging?

Demographics

- A larger and more dependent population (except in Europe)







Source: PWC Project Blue.

Demographics

2010 – 6.9 billion total population

2030 – 8.3 billion total population

2010 – 50% of population in urban areas

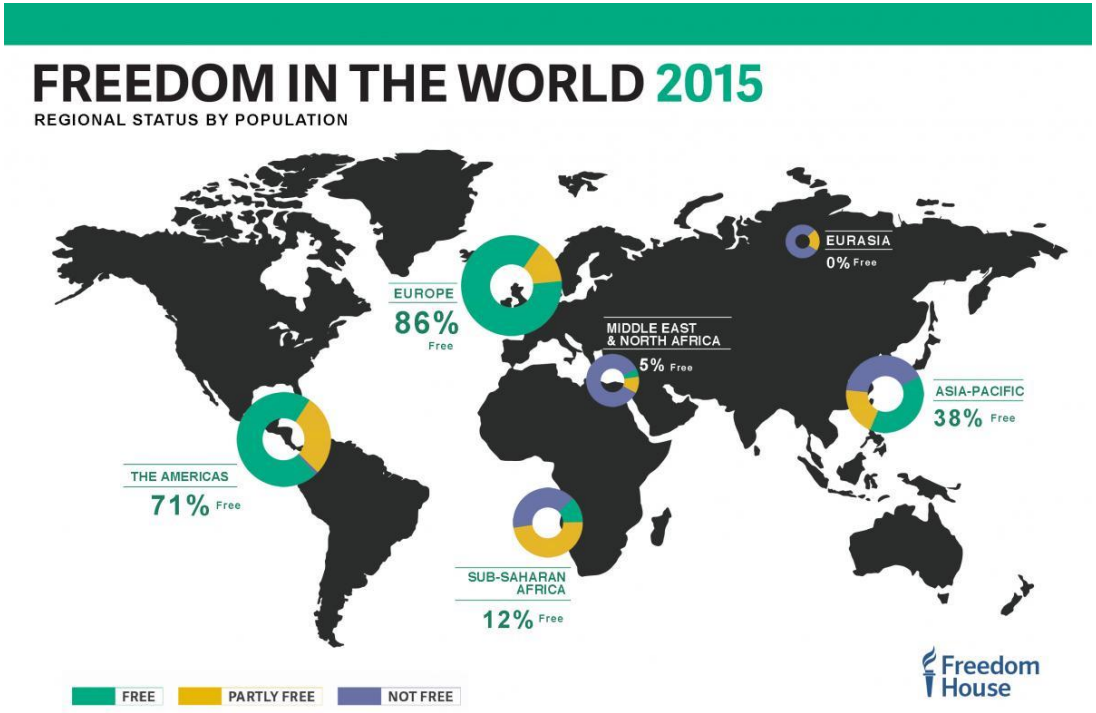
2030 – 60% of population in urban areas

2010 – 2 billion “middle class”

2030 – 5 billion “middle class”

Governance

- According to Freedom House, global freedom **declined** in 2014 for the ninth consecutive year

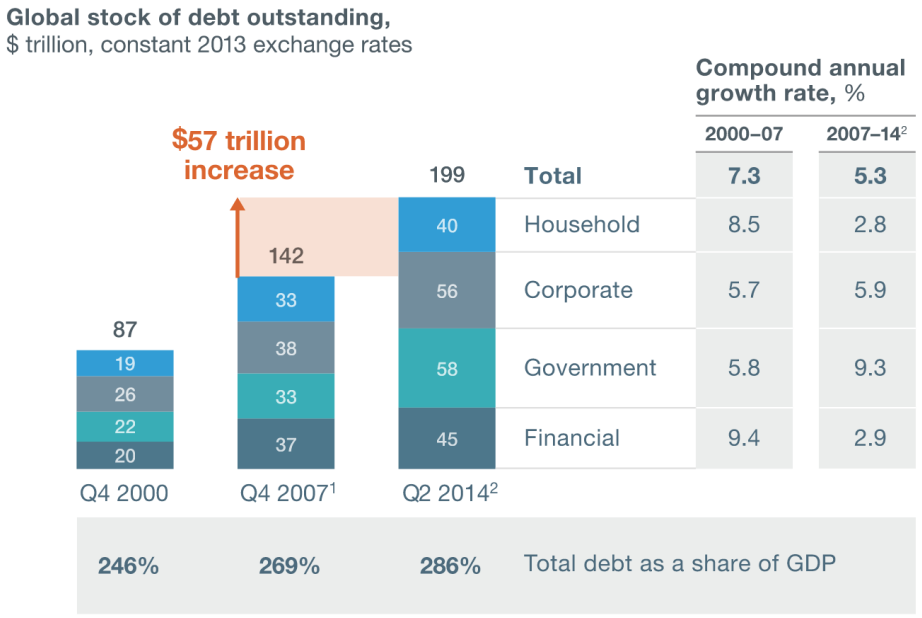


Reasons for Declining Effective, Democratic, and Legitimate Governance

1. Failure of the Western model
    - A dysfunctional Washington and Brussels
    - 2007-2008 financial crisis
2. Recent renewed use of the authoritarian state model (China, Russia, and Egypt)
3. Youth bulges, countries with median age of 25
4. Technology and empowerment of individual pose challenges to authority
5. Governance failures (Thailand, Pakistan, Iraq, Syria, Libya, Nigeria, Venezuela, Ukraine)

Economics

- Debt plays an "outsize role in creating boom-bust cycles across the world." And debt (of all kinds: public, private, and individual) has risen by *$57 trillion* since the financial crisis, according to McKinsey.



[1]Figures do not sum to total, because of rounding.
[2]Q2 2014 data for advanced economies and China; Q4 2013 data for other developing countries.

Source: Bank for International Settlements; Haver Analytics; International Monetary Fund *World Economic Outlook*; national sources; McKinsey Global Institute analysis

Source: The Upshot, Feb 5, 2015. *The New York Times.* McKinsey Global Institute, "Debt and (not much) deleveraging," Feb 2015.

Resources

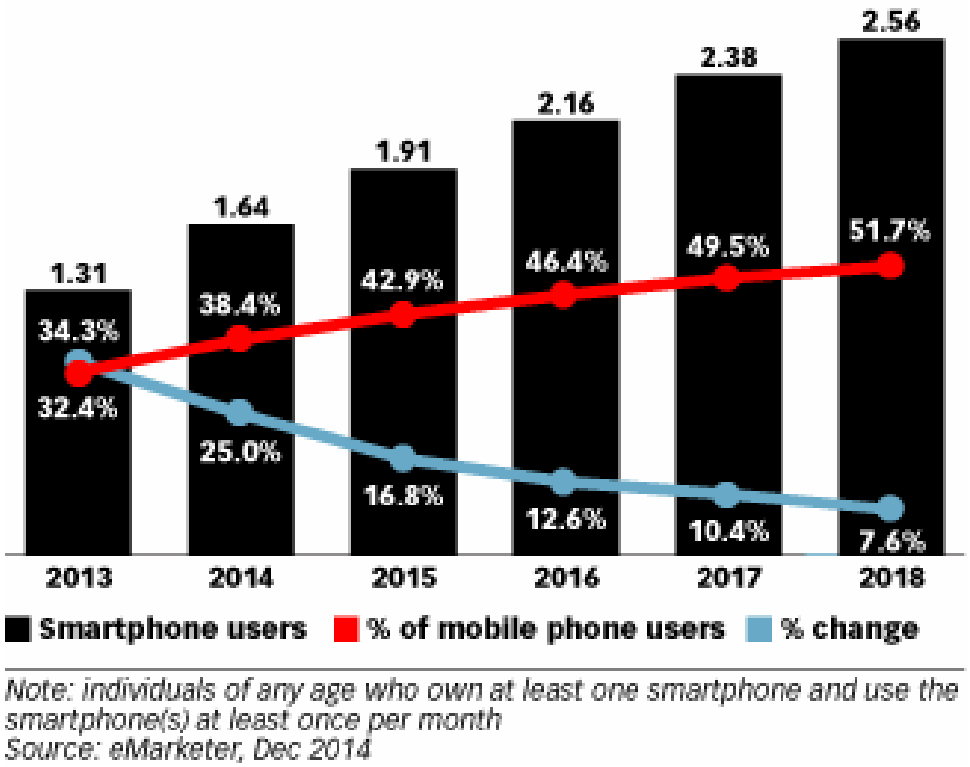
- "Global economic output is forecasted to rise by 115% by 2035. Asian emerging economies, principally China and India, are expected to generate more than 60% of that increase."
  - By 2035, energy consumption is predicted to rise by 37%
  - Demand for food is expected to rise by 35% by 2030

- Emissions of carbon dioxide are predicted to rise by 25% by 2035.
  - Between 1953 and 2014, the average area of Arctic Sea ice shrank by 48,000 sq. km. a year (The Economist)

- OECD estimates that by 2030 one half of the world's population will live in areas of severe water stress

Technology

- From 2013-2018, the number of Smartphone users and Smartphone penetration rates worldwide have been increasing (data in billions)



Technology and its Consequences

- 47 percent of US jobs will be at high risk of becoming automated in the next 20 years.

  – Oxford University

Military Technology: Cyber

- "Among the array of cyber threats, as seen today, only **government-sponsored programs** are developing capabilities with the future prospect of causing widespread, long-duration damage to US critical infrastructures. International corporate spies and organized crime organizations pose a medium-level threat to the US through their ability to conduct industrial espionage and **large-scale monetary theft**."

  -US Department of Homeland Security

Military Technology: Space

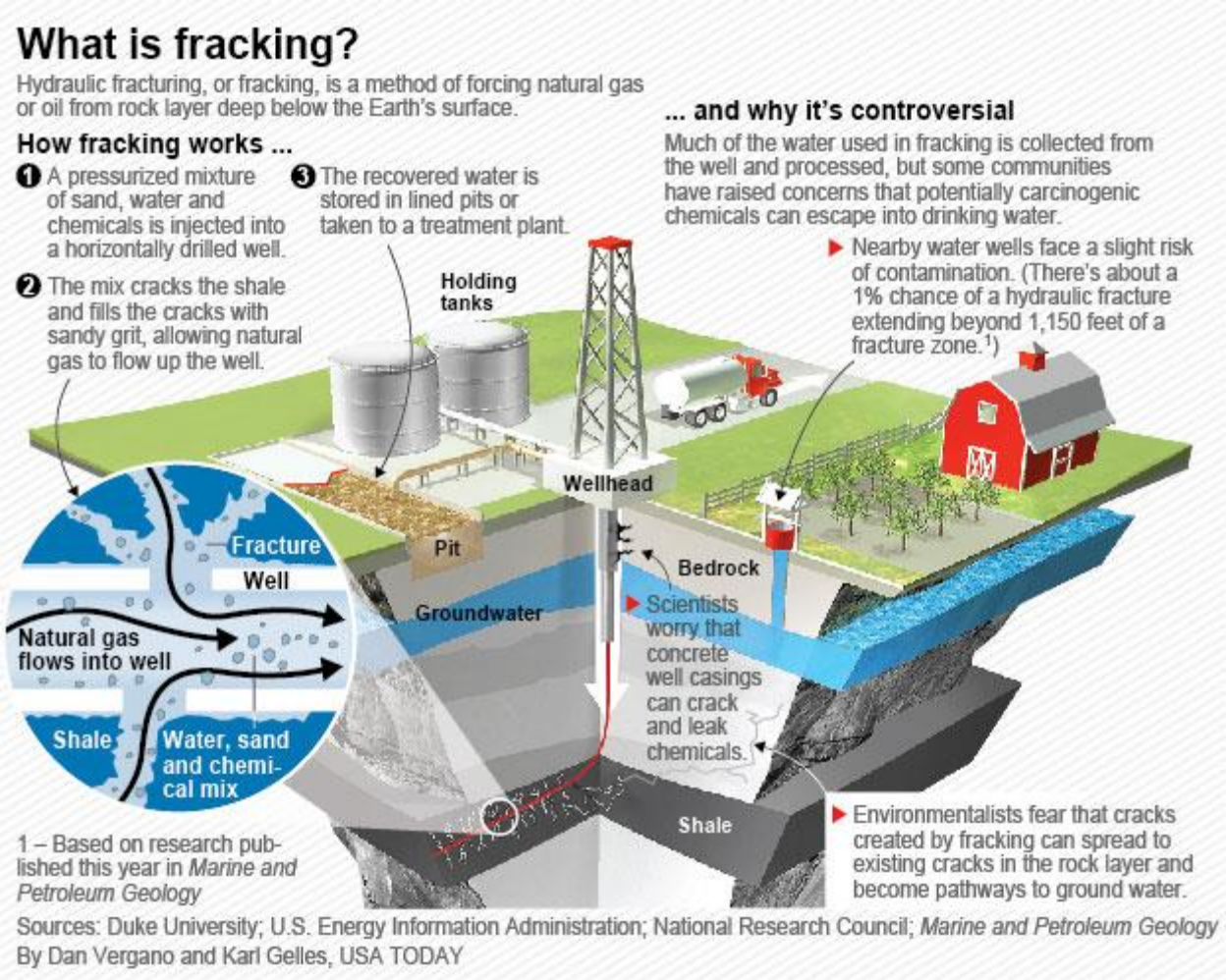
"Threats to US space systems and services will increase during 2015 and beyond as potential adversaries pursue disruptive and destructive counterspace capabilities."

-James Clapper

Director National Intelligence

2. WHAT HAS HAPPENED AND WILL HAPPEN TO WORLD ENERGY MARKETS?

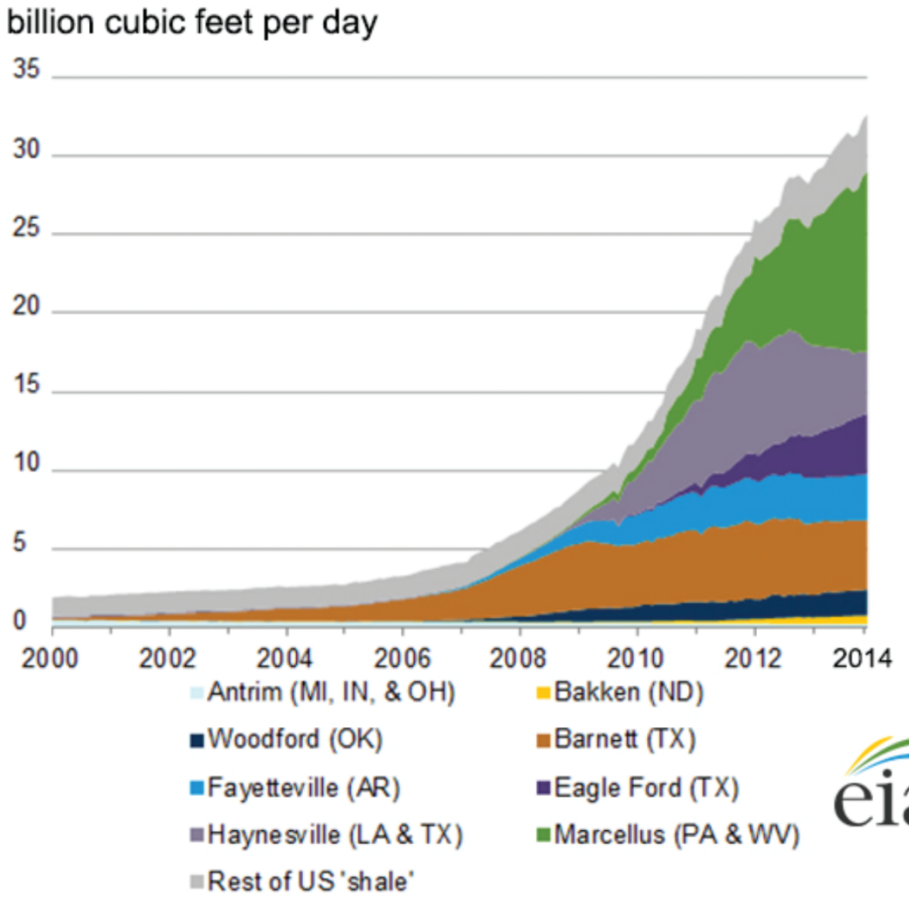
Horizontal Drilling: "fracking"



What Has Happened to World Energy Markets?

- The US contains 26 basins of **shale gas**, throughout 28 states. Shale gas production has increased by almost 900% from 2006 to 2013

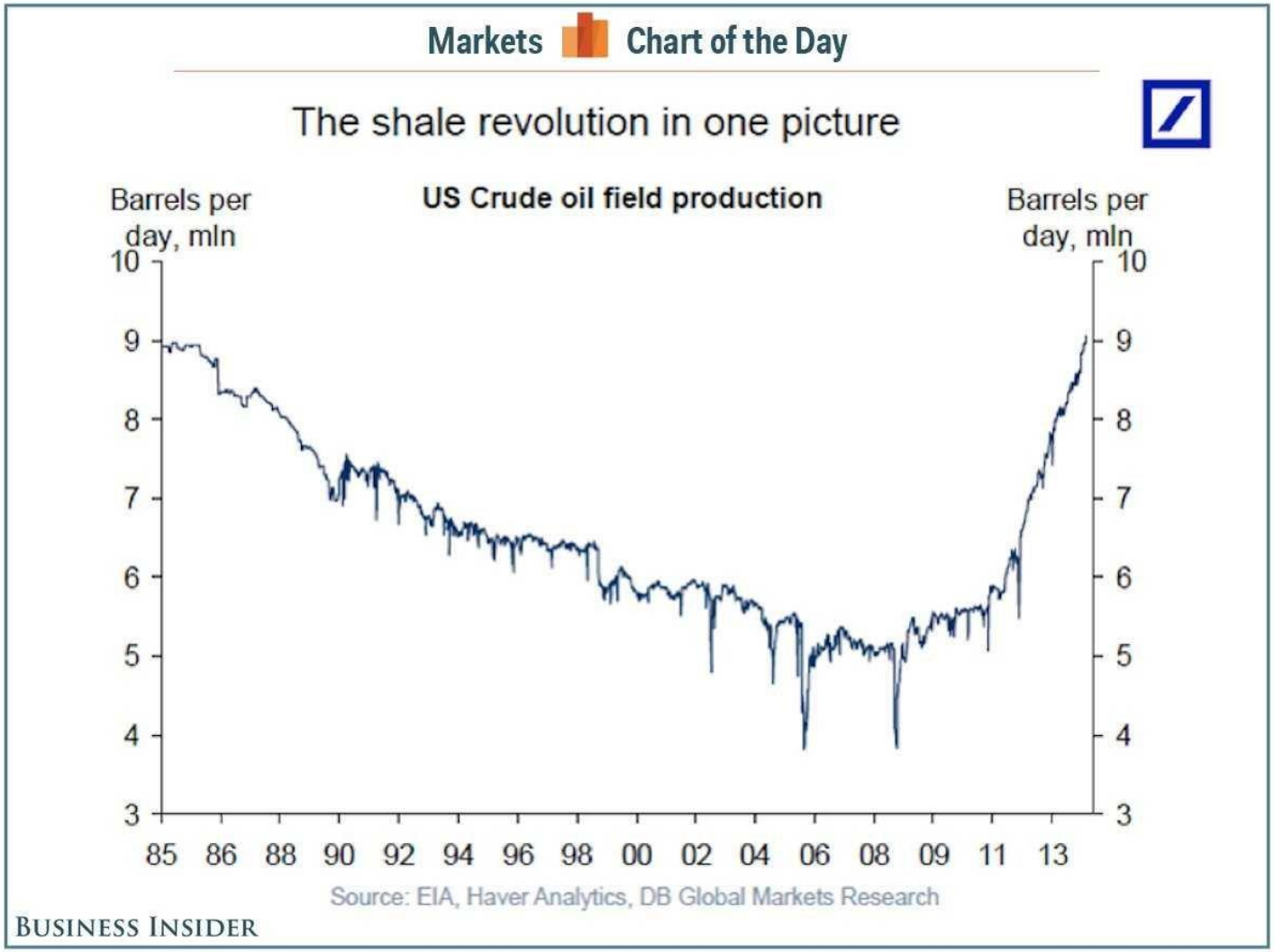
Figure 2: Domestic Production of Shale Gas, 2000–2014



Source: EIA, "Natural Gas Weekly Update," data through January 2014, http://www.eia.gov/naturalgas/weekly/.

Source: CSIS Report: "New Energy, New Geopolitics."

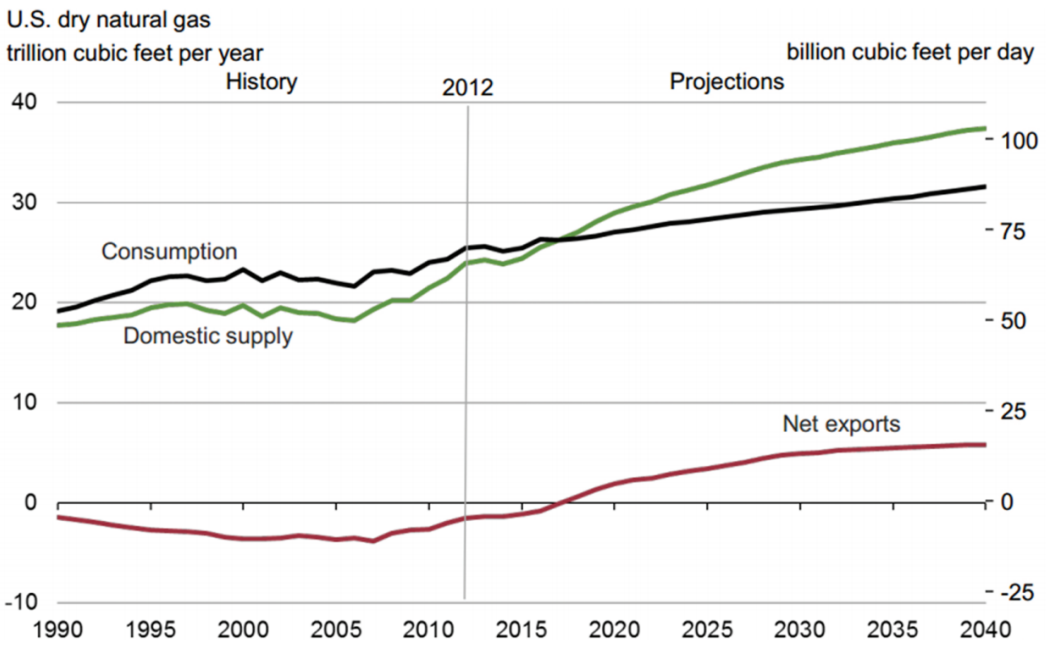
An Explosion in US Crude Oil Production



The Future?

- Many experts expect the US to become a **net exporter** of energy, around 2020

Figure 6: Domestic Natural Gas Production, Consumption, and Exports, 1990–2040



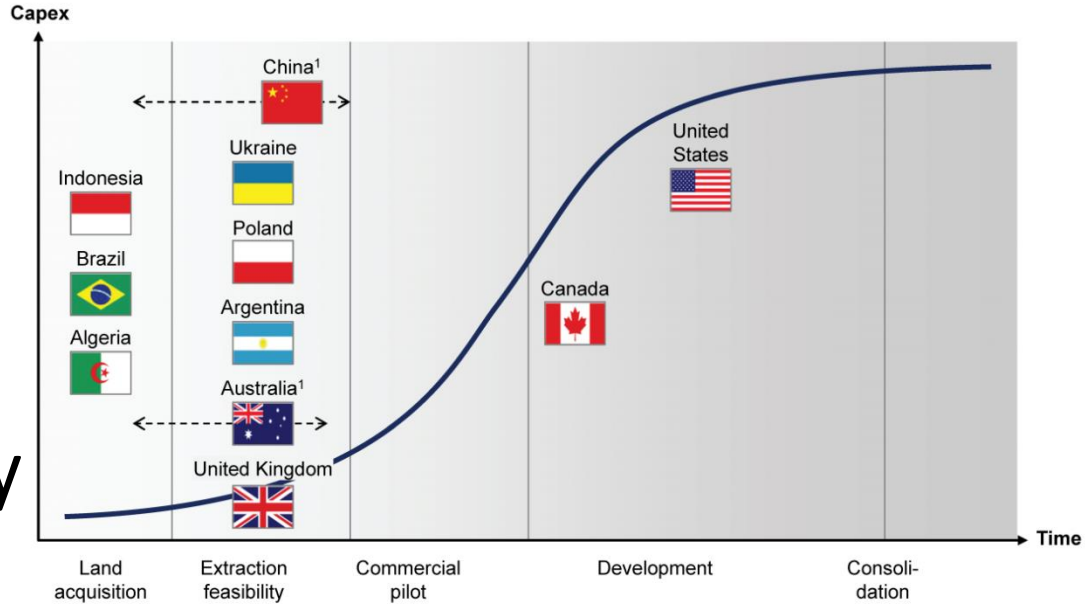
Source: EIA, *Annual Energy Outlook (AEO): 2014 Early Release Overview* (Washington, DC: EIA, 2014), http://www.eia.gov/forecasts/aeo/er/index.cfm.

Source: CSIS Report: "New Energy, New Geopolitics."

What Has Happened to World Energy Markets?

- Though the US leads the globe in the "energy revolution," it is not the only interested country

Figure 9: Current Position of Select Countries on Shale Gas and Oil Production



Note: Capex, Capital Expenditure.

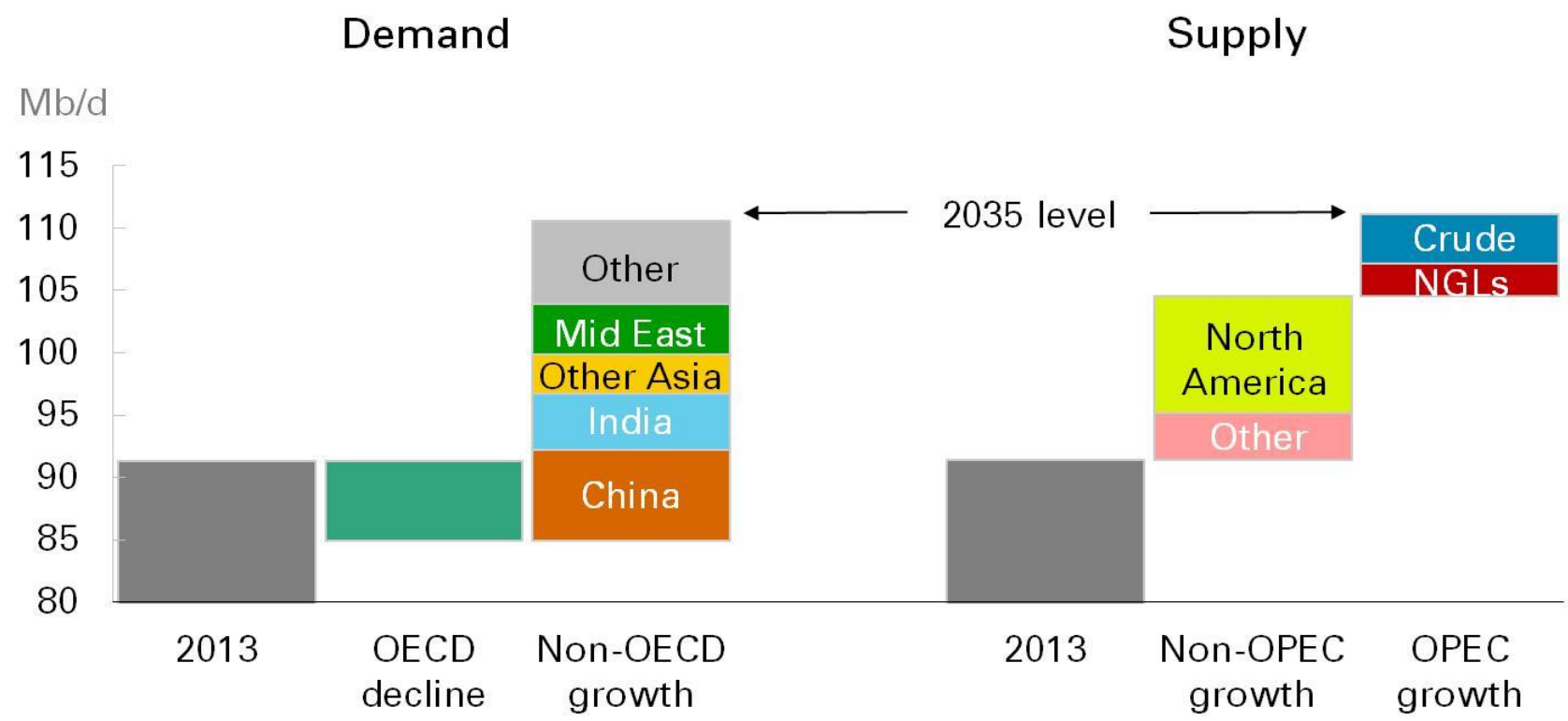
1. Flags based on most advanced basins in China (Sichuan basin) and Australia (Cooper basin). Other basins are still at the land acquisition stage.

Source: Susan Lund et al., *Game changers: Five opportunities for US growth and renewal* (New York: McKinsey Global Institute, July 2013), 26, http://www.mckinsey.com/insights/americas/us_game_changers.

Source: CSIS Report: "New Energy, New Geopolitics."

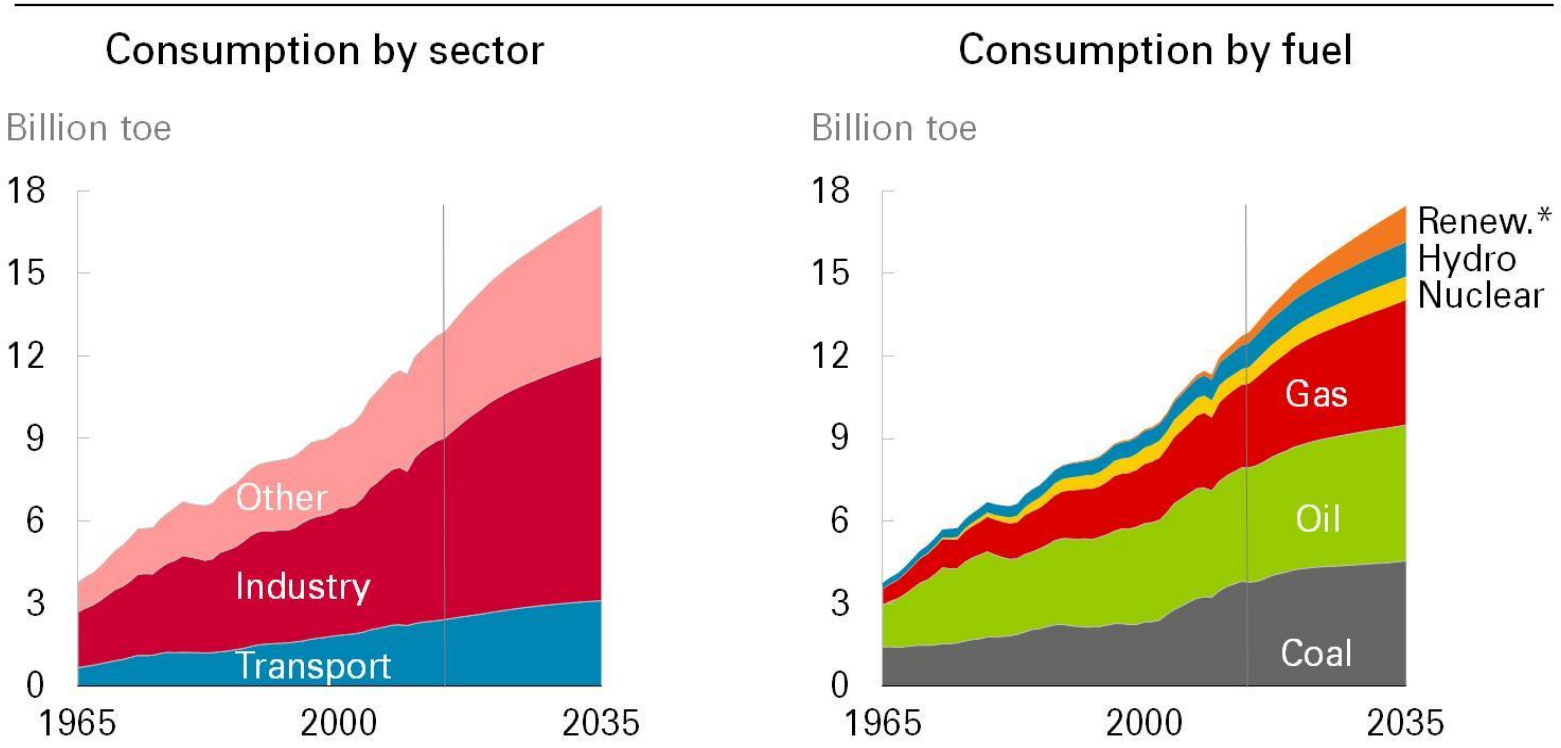
Supply and Demand by 2035

Global liquids demand and supply



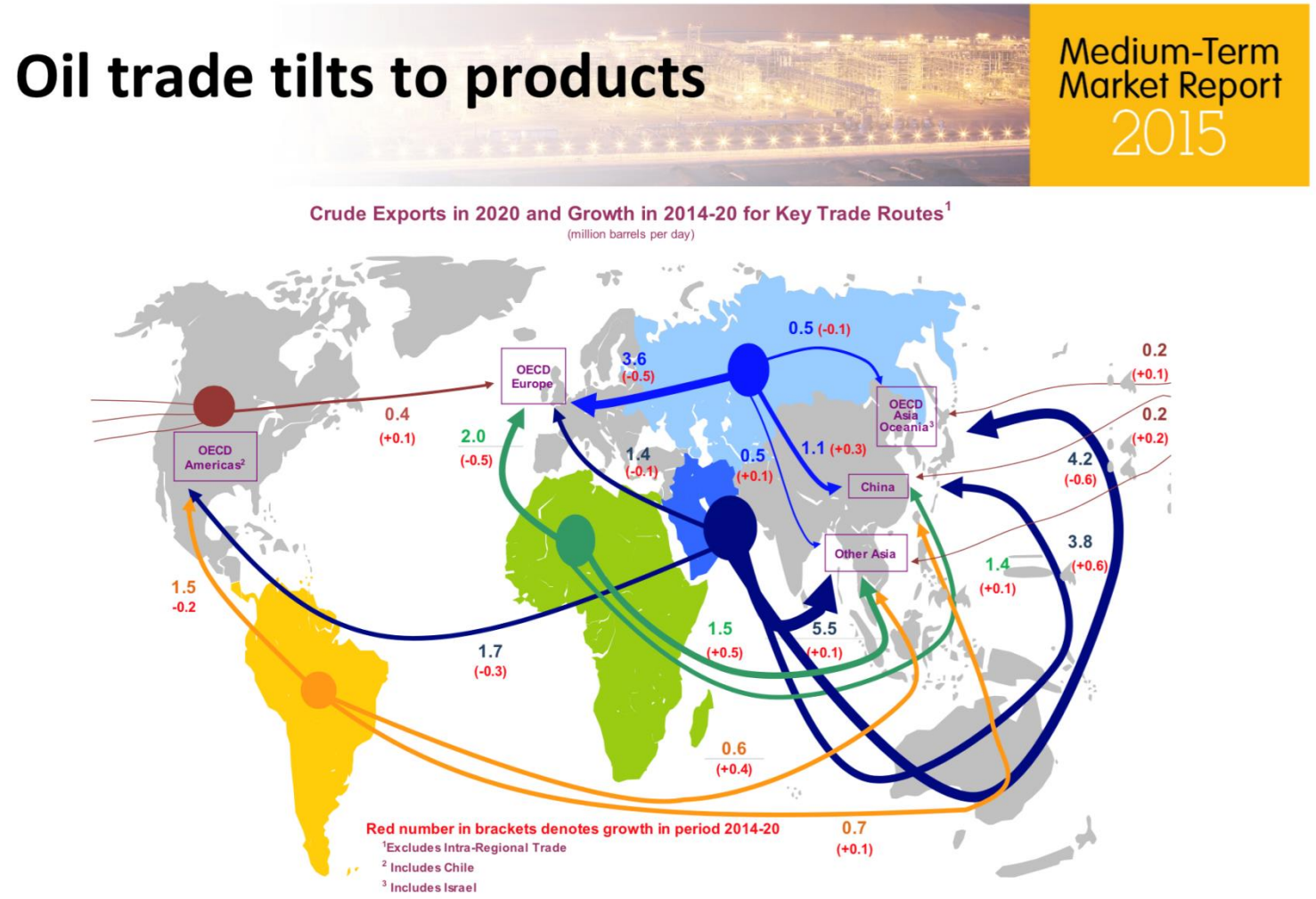
Energy Outlook 2035

Global Energy Demand by Sector and Fuel

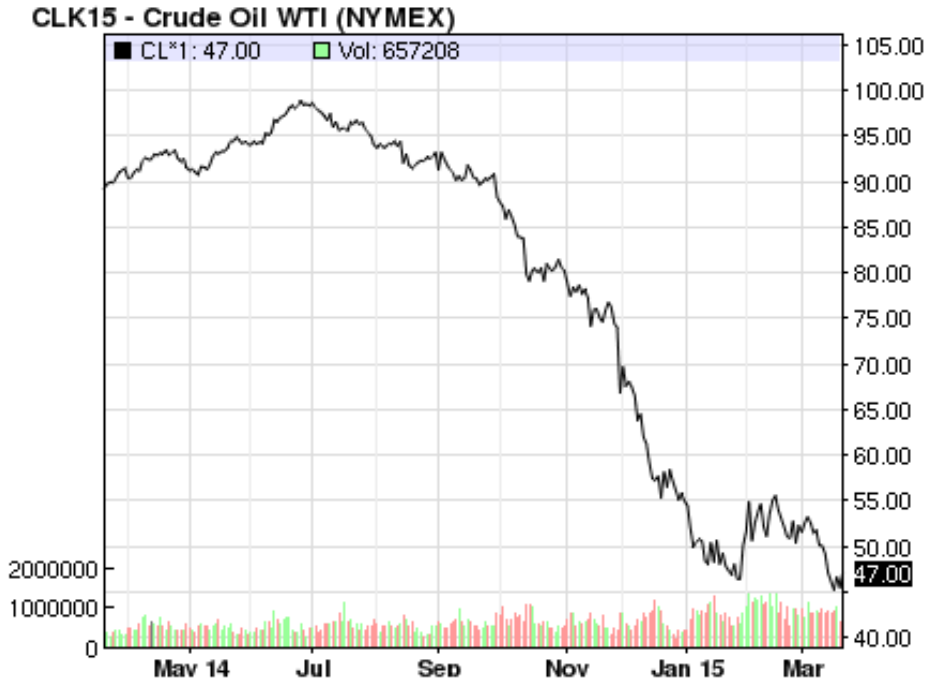


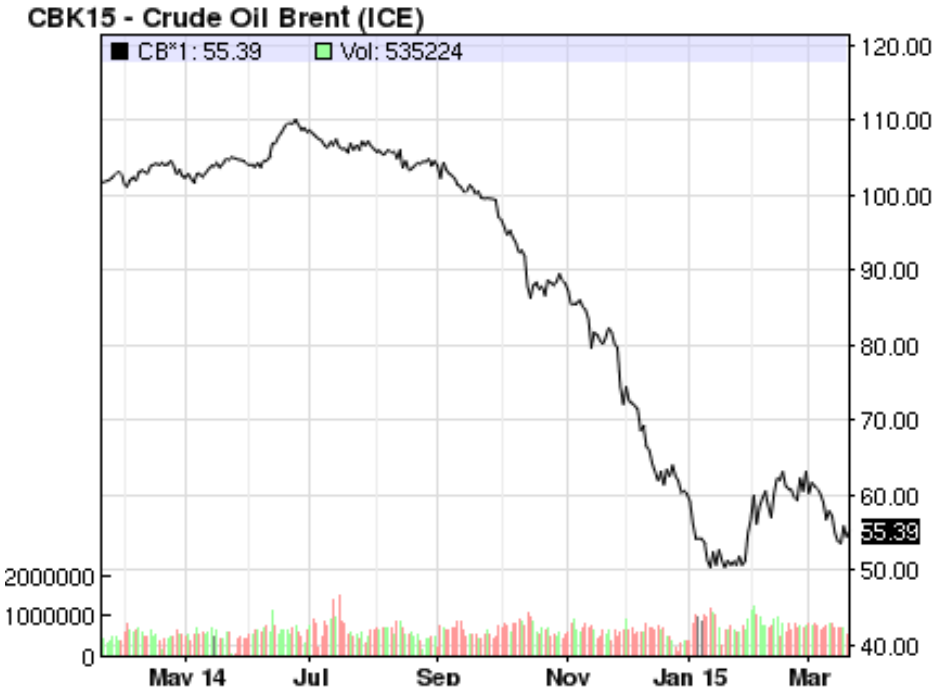
Energy Outlook 2035

Trade Patterns for Crude Exports



Oil Prices (June 2014-present)





Why Did Prices Drop?

1. Increased supply
   - United States
   - Iraq
2. The world economy slowed
   - EU
   - China
   - Japan
3. Saudi/OPEC did not cut production

Winners and Losers of the Price Decline

Clear Winners	Mixed Winners	Clear Losers
Global consumers	United States	Russia
Farmers	Saudi Arabia	Venezuela
Oil and gas importers		Iran
Japan		Nigeria
China		Brazil
India		Central Asia
Countries prepared to cut subsidies		Jordan/Egypt
		Iraq

3. WHAT UNCERTAINTIES LIE AHEAD?

Uncertainties

1. **Economic**
   - Global GDP growth, the strength of the dollar
2. **Potential Petroleum Supply**
   - US production, Middle East production
3. **Regulation**
   - Shale and nuclear
4. **Technology**
   - Future of fracking, water
5. **Energy Pricing**
   - Low cost producers vs. high cost producers
6. **Security threats**
   - Russia, Middle East, and China

Economic

- Weak recovery from 2008-2009 downturn
- Slow growth in the EU, Japan, and declining growth in China – and with a decline in oil prices, Russia's economy is in big trouble
- The US economy is doing well, but the strength of the dollar will have a negative impact on exports and will hurt economies with dollar debt
- Longer term prospects: global economic output will rise by 115 percent by 2035, driven by China and India

Potential Petroleum Supply and Demand

- Global energy consumption projected to rise by 37% by 2035 (BP)
- US will shift from being a net importer of 12mbd of oil in 2005 to being a **net exporter** by 2035. China will be a **net importer** of 13mbd by 2035. India will be a **net importer** of 7mbd (BP)
- Middle East energy production is expected to rise by 32 percent by 2035 – but consumption will grow by 69 percent

Security Threats

- Russia
- Middle East
- Asia

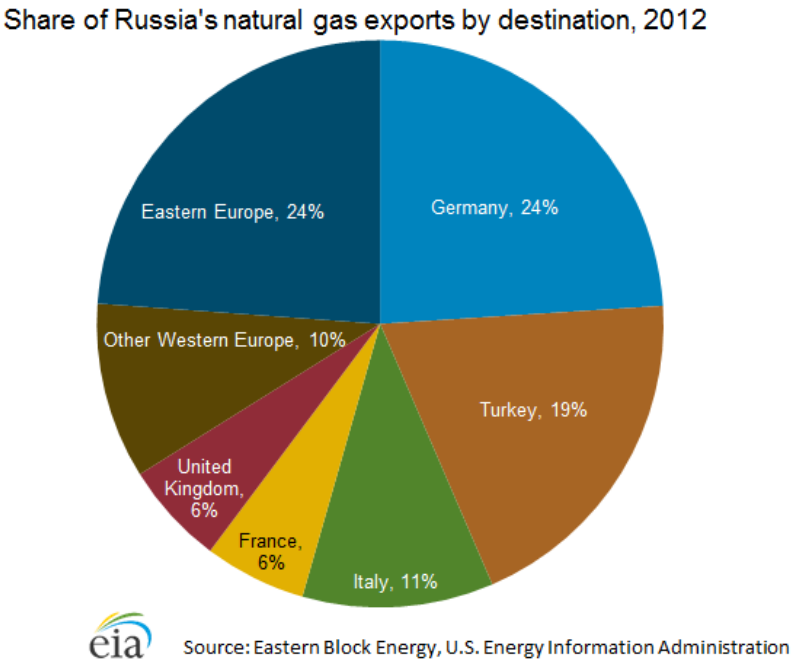
Note: These are not just threats to supply. They include growing cyber threats to infrastructure.

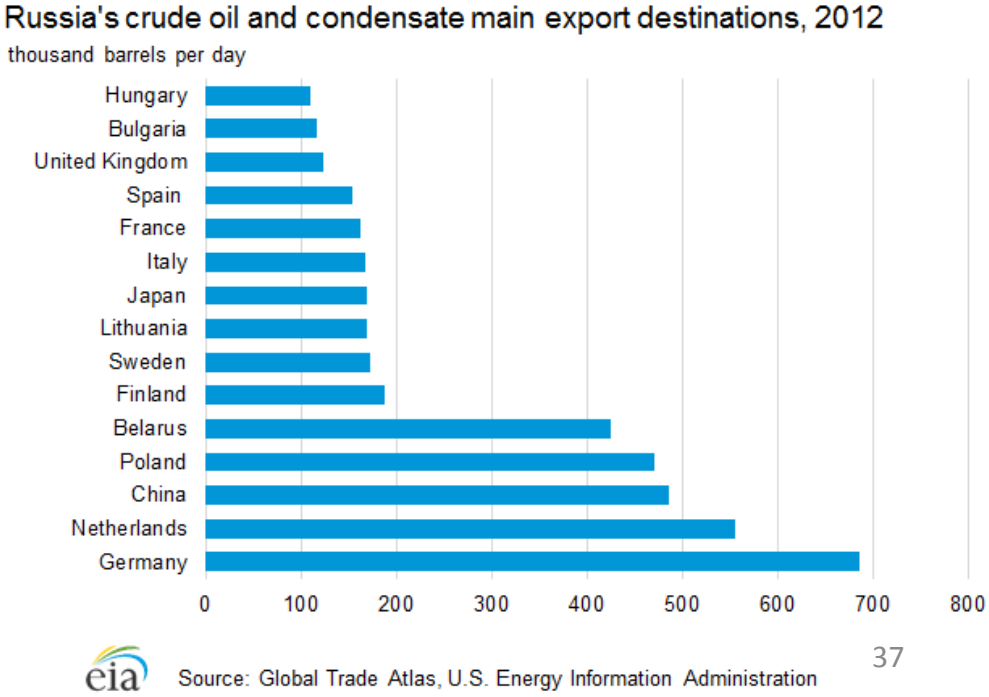
Russia

- President Putin

Russia

- 2nd largest producer of natural gas (2013)
- 3rd largest producer of oil (2013)





Geopolitical Uncertainties in Russia

- Putin has decided to challenge the post-Cold World order
- He is determined to enlarge the Russian sphere of influence and control in Georgia, Crimea, and Ukraine
- He views Europe as weak and the US as distracted
- He is pursuing a form of hybrid war
- He does so despite a contracting economy, suffering from sanctions, fall of oil prices, and a collapsed ruble

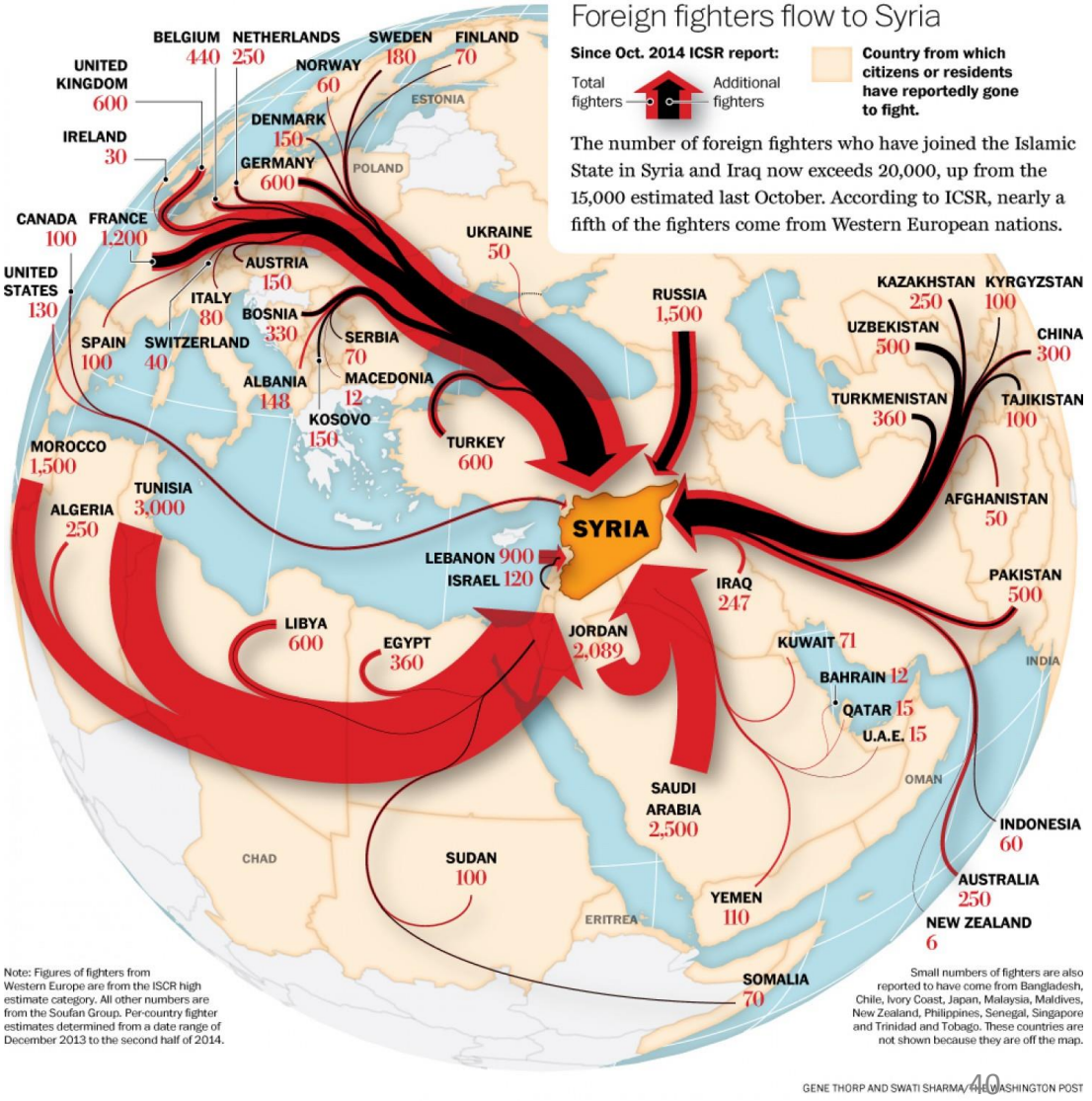
Middle East

- Classic examples of: diffusion of power, empowerment of individuals, demographic challenges, and bad governance
- In the Middle East-North Africa more than half the population is under 25. There is 30 percent youth unemployment – 48 percent in Saudi Arabia
- Region divided by Islam, and by Turkey, Iran, and Saudi Arabia

Countries at Risk of Collapse	Countries with Severe Internal Problems	Countries at Risk
Iraq	Lebanon	Bahrain
Syria	Jordan	Tunisia
Yemen	Egypt	Algeria
Libya		

Syrian Civil War

- Statistics
  - Pre-war population: 20mm
  - Killed or wounded: 1.2mm
  - Refugees abroad: 4.6mm
  - Internal refugees: 6mm



Transport Uncertainties

"World chokepoints for maritime transit of oil are a critical part of global energy security. About **63%** of the world's oil production moves on maritime routes. The Strait of Hormuz and the Strait of Malacca are the world's most important strategic chokepoints by volume of oil transit."

-US Energy Information Administration (2014)

Strait of Hormuz

- The EIA estimates that more than 85% of crude oil that passed through the **Strait of Hormuz** went to Asian markets.
- At present, only Saudi Arabia and the UAE have developed any alternate delivery options to bypass Hormuz.

Source: US Energy Information Administration (2014)

Strait of Malacca

- The **Strait of Malacca** is an important transit route for LNG from Persian Gulf and African suppliers to East Asian countries. Japan and South Korea are the largest importers of LNG in the region.

Table 3. Strait of Malacca oil and liquefied natural gas (LNG) flows

million barrels per day	2009	2010	2011	2012	2013
Total oil flows through Strait of Malacca	13.5	14.5	14.6	15.1	15.2
crude oil	11.9	12.8	12.9	13.3	13.4
refined products	1.6	1.7	1.7	1.8	1.8
LNG (Tcf per year)	1.6	1.9	2.5	3.2	4.2

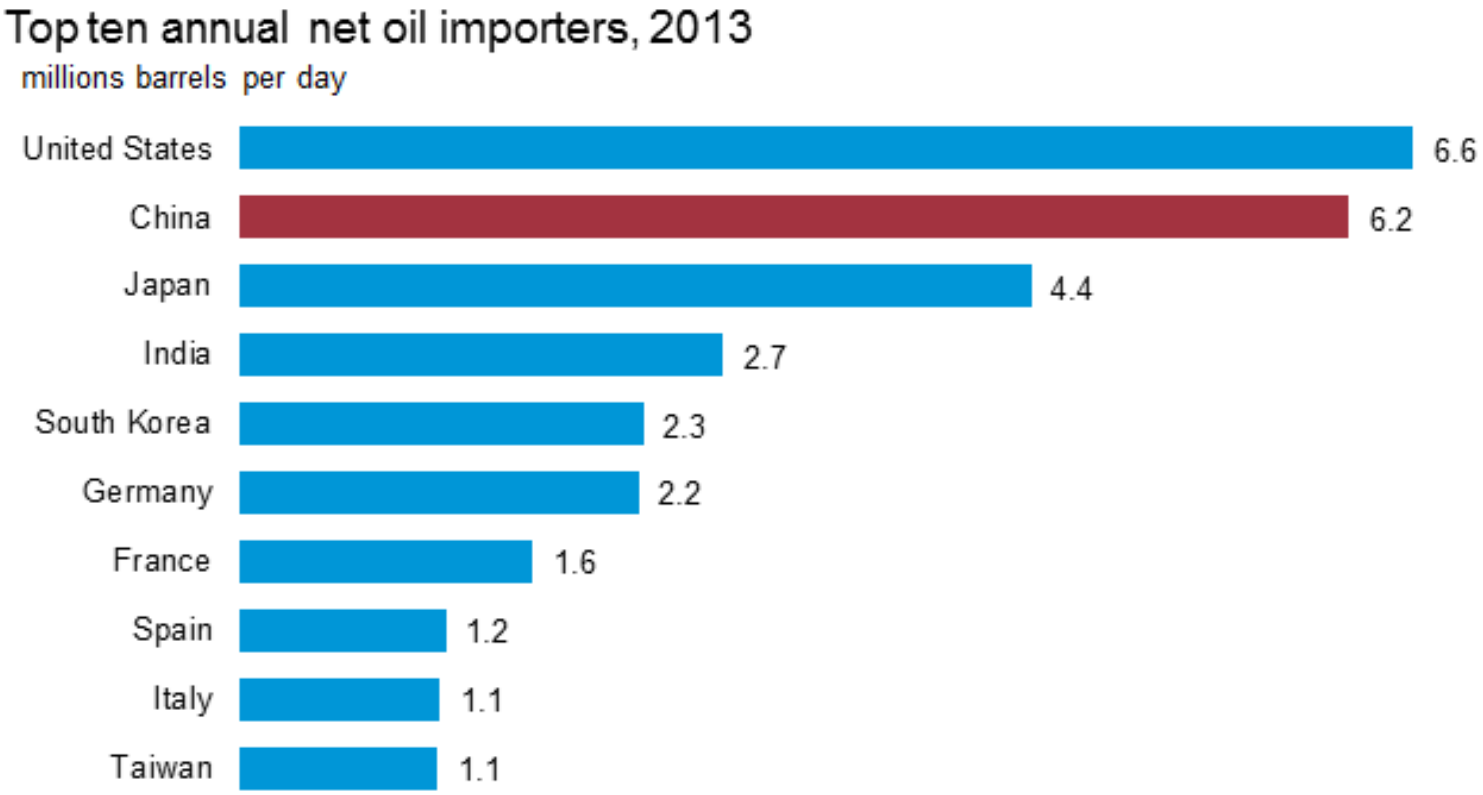
Source: US Energy Information Administration (2014)

South China Sea

- The **South China Sea** is a contested body of water with geostrategic importance:
  - 1/3 of global crude oil and 1/2 of global LNG passes through the South China Sea

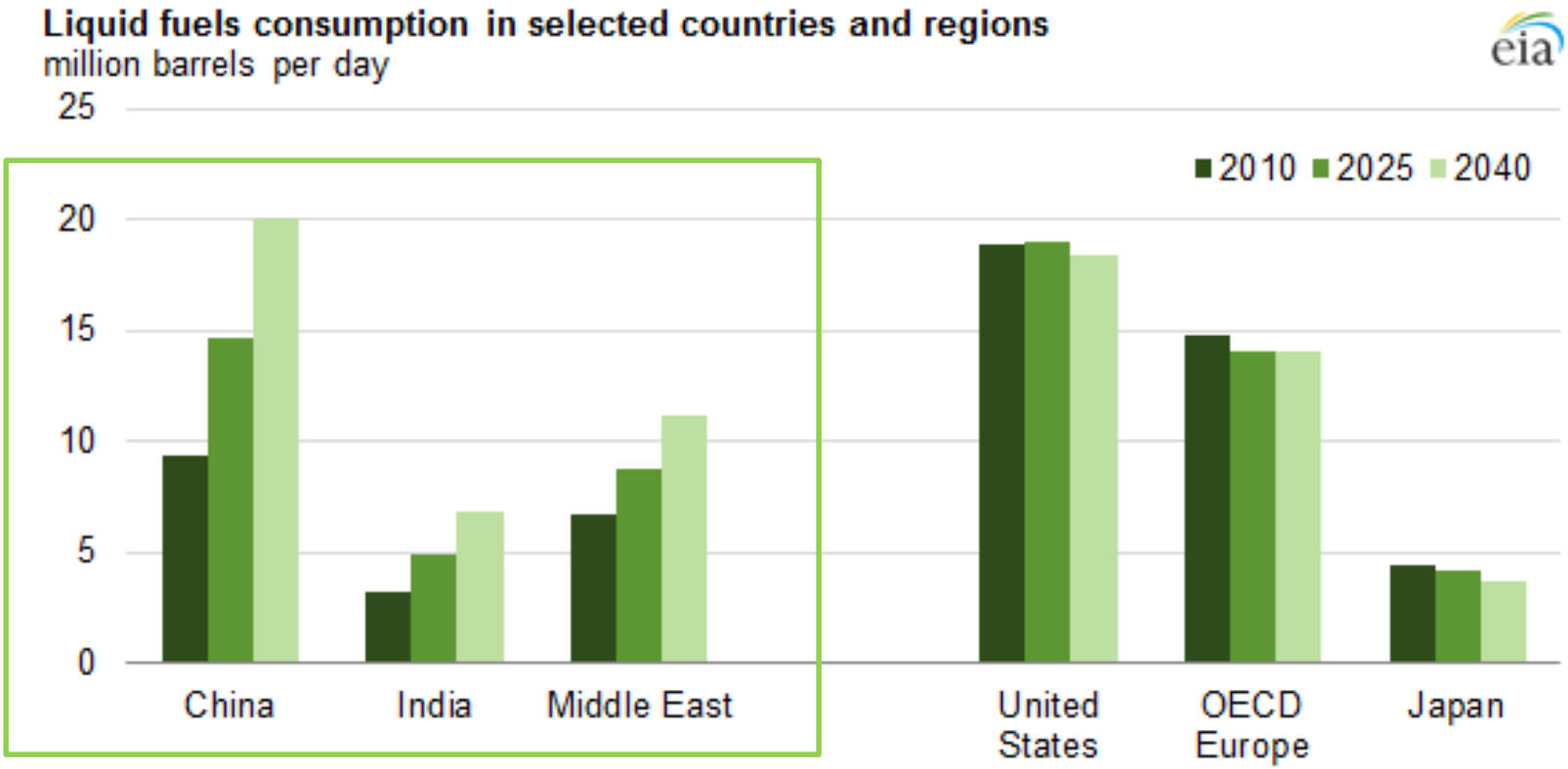
Source: US Energy Information Administration (2014)

China, A Growing Energy Importer



Note: Estimates of total production less consumption. Does not account for stockbuild.
Source: U.S. Energy Information Administration, *Short Term Energy Outlook, January 2014.*

Oil Consumption is Expected to Keep Rising in Some Regions



China's Energy Consumption

- By 2035 China will become the world's largest energy importer, overtaking Europe as import dependence rises from 15% to 23% (BP)
- Energy "mix" evolves:
  - Coal decreases from 68% to 51% in 2035
  - Natural gas doubles to 12%
- Oil largely must be transported by sea
- Uncertainties
  - Access to energy in South China Sea, East China Sea
  - Shale gas deposits in China

The South China Sea

Evaluating China

Strengths

- Claim up to 80% of South China Sea – “nine dash line”
- Substantial military buildup
- Authoritarian leadership able to act without severe restrictions
- End of Deng Xiaoping's “hide your capabilities and bide your time”

Weaknesses

- Ideology without appeal
- Oil must be imported from Africa and the Middle East
- Few close allies
- Economic vulnerabilities:
  - GDP growth slowed (10% to 7%)
  - Ratio of debt to GDP has doubled since 2008 to 282%
- Export led growth model is no longer sufficient
- Shift to consumption-driven growth is not easy
- Aging nation – by 2030 more elderly dependents than children

4. WHAT DOES THIS MEAN FOR THE UNITED STATES AND JAPAN?

Implications for the United States

"The United States has not faced a more diverse and complex array of crises since the end of the Second World War."

-Henry Kissinger

Energy

- The energy revolution is producing a significant boost for the US and its interests
  - In 2005, the US produced 40% of the oil it used. In 2015 it will produce 73%
  - The US is moving from being a natural gas (LNG) importer to being a LNG exporter
  - Gas is providing feedstock for a renewing chemical industry
  - US energy production has contributed to the drop in global oil prices, which has hurt Russia, Iran, and Venezuela
  - But the US still has a vital interest in maintaining the free flow of Middle East energy to its friends and allies

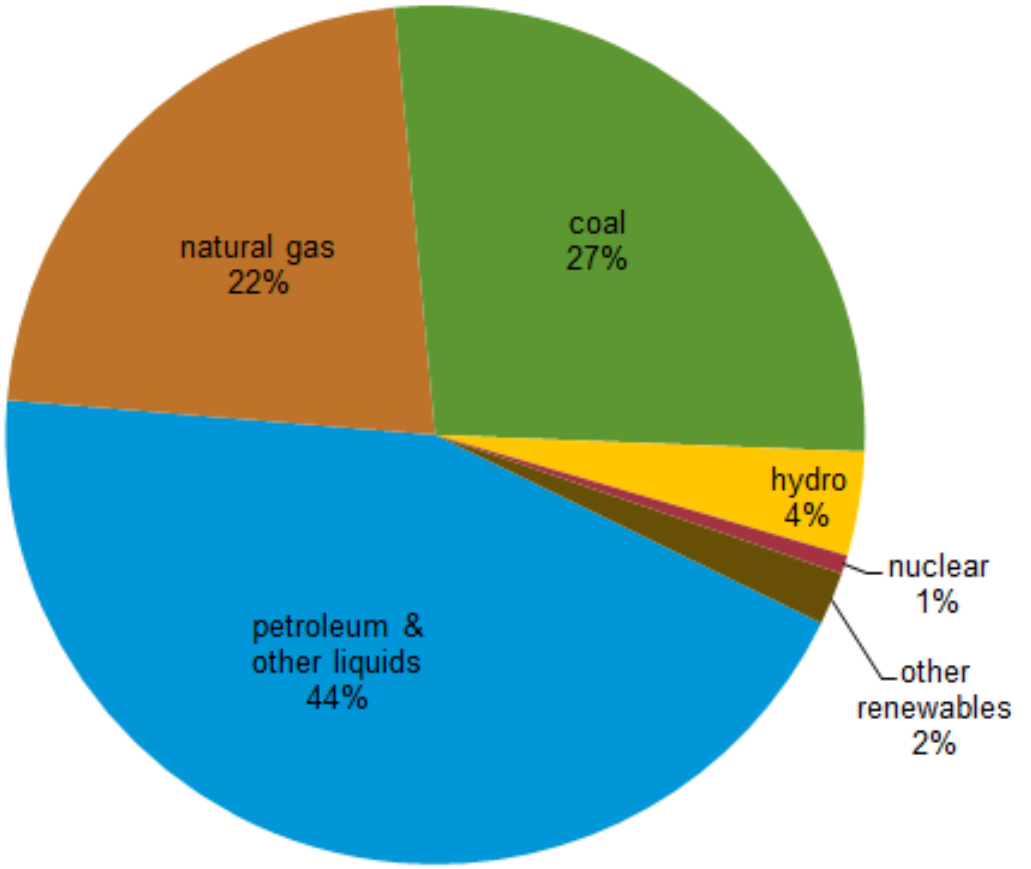
Strategic Regions and Challenges

1. In three regions, the US is constrained
   - Europe
   - Middle East
   - East Asia
2. In all three regions accidental war is possible
3. Does the US have more to fear from weak states or strong states?
4. Policy tools are unclear
5. How to balance “accommodation” and “cooperation” with “confrontation”

Implications for Japan

- Energy
  - Domestic energy resources have met less than 9% of Japan's energy use since 2012 (post-Fukushima)
  - Japan is the third largest petroleum consumer in the world: 4.3mbd of oil in 2014
  - Japan is the world's largest LNG importer, second largest coal importer, and third largest net importer of crude oil and crude products
  - Japan is highly dependent on the Middle East for most of its supply of petroleum

Japan's Total Energy Consumption (2013)



Sources: U.S. Energy Information Administration's International Energy Statistics, *BP Statistical Review of World Energy 2014*

Strategic Regions and Challenges

1. Japan is a global economic power with global interests
2. It is dependent on the Middle East for energy
3. It is a primary Asian power with immediate regional security challenges
   - Rising China
   - North Korea
4. US/Japanese interests are closely aligned
   - Security alliances
   - Common democratic values
   - Major trade relations

Partial US-Japan Agenda

1. Emerging Trade and Finance Architecture
   - Trans-Pacific Partnership (TPP)
   - Trade Promotion Authority (TPA), US
   - Asian Infrastructure Investment Bank (AIIB), China
2. China
   - East China Sea (Senkaku)
   - North Korea
   - Engage or Confront

3. United States
   - Is the “rebalance” genuine?
   - Energy revolution: will the US become a reliable energy supplier?
   - Will the US remain committed to Persian Gulf security?
4. Japan
   - Future of structural reform
   - 70th Anniversary issues
   - Revision of US/Japan Guidelines for Defense Cooperation
   - Revisions in the Constitution and collective self-defense
   - Japan/Republic of Korea relations