China’s Pathways to Energy Security

A Capstone Project for the National Intelligence Council

February 2010
Sponsoring Organizations

National Intelligence Council (NIC)

The Bush School of Government & Public Service, Texas A&M University
Presentation Outline

1. Project Outline
2. Grand Strategic Assumptions
3. Macro-economic overview/assumptions
   - Petro-nationalism, hoarding v. sharing, SWFs
   - Overview of Chinese regional relations and future energy demand
4. Chinese energy policy:
   - Middle East
   - Kazakhstan/Central Asia
5. China’s Pathways
   - Realist/Mercantilist: China as a Realist Actor
   - Liberal/Institutionalist
   - Realist and Institutionalist Overlap
6. Conclusions
   - China by 2030: realist, institutionalist, or both?
   - What to look for
   - What this means for the U.S.
Will the next twenty years witness a transfer of power from the Euro-Atlantic sphere of influence to the East Asian sphere?

Setting the Stage
- China’s need for energy
- How this need for energy will affect China’s relations with the M.E.

Institutionalist vs. Realist Trends
- Indicators
- Intentions

Potential Game-Changers

Most Likely Outcomes

Implications for U.S. Policy
Grand Strategic Assumptions

• Research Question: Out to 2030, what strategies will China pursue to attain energy-security?

• Primary Assumptions:
  – There is an on-going power shift from the Euro-Atlantic sphere to the East Asian sphere.
  – Oil and Natural Gas are critical East Asia’s economic rise.
  – In order to capitalize upon this shift China will need to attain energy security.
Petro-Nationalism:
- Does it work?
- Does it pay?
Hoard ing or Sharing

Geography and Oil Transportation
Access to Oil
Sovereign Wealth Funds

SWFs and Drilling
SWFs and international finance
China and East Asia today

• China expected to become the second largest economy in the world by years end

• China is ASEAN’s 3rd largest trading partner

• FTA created between China and ASEAN

• ASEAN increasingly concerned about China’s economic clout

• China’s economy still export driven
  - Attempting to create a larger domestic market
China’s demand increase between 2006 - 2020

- Coal: 7,400%
- Copper: 600%
- Iron Ore: 380%
- Wood: 330%
- Soy: 80%
- Manganese: 30%

**Result:** China will need access to overseas markets in meet this demand
Figure 44. OECD Coal Consumption by Region, 1980, 2006, 2015, and 2030

Quadrillion Btu

North America | OECD Europe | OECD Asia | Total OECD

Figure 46. Coal Consumption in China by Sector, 2006, 2015, and 2030

<table>
<thead>
<tr>
<th>Sector</th>
<th>2006</th>
<th>2015</th>
<th>2030</th>
</tr>
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<tbody>
<tr>
<td>Electricity</td>
<td>25</td>
<td>37</td>
<td>57</td>
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<tr>
<td>Industrial</td>
<td>24</td>
<td>30</td>
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<tr>
<td>Other Sectors</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>52</td>
<td>70</td>
<td>98</td>
</tr>
</tbody>
</table>

Coal and China

• China is a net-importer of coal
• Disrupting China’s coals supply will have severe effects for its economy
• China may take aggressive measures to guarantee its supply of coal
• China demand for coal may lead it to use “hard power” to secure its needs
Mike R. Middle East

Energy Projections to 2030
Energy Patterns to 2030

• Assumptions:
  – Demand for Fossil Fuels (Oil, LNG, Coal) continues to rise through 2030 (i.e. no substantial alt. energy breakthrough).
  – The increase in global energy demand over the next 20 years will be driven primarily by Asian, non-OECD countries (China, India, ASEAN) and to a lesser extent, SK and Japan.
  – These nations will increasingly rely on energy imports to meet growing demand.
  – The Middle East will continue to be the world’s key supplier of liquid fuels causing Asia to seek closer relations.
    • highest proven reserves
Projecting Global Energy Consumption

- Global consumption of energy will increase by 44% from 85 million bpd in 2006 to 107 million bpd in 2030. \textit{EIA 2009}
- Non-OECD countries will see a 73% increase in energy consumption while OECD countries will only see a 15% increase by 2030. \textit{EIA 2009}
- China and India, which accounted for 10% of the world’s energy consumption in 1990, saw their shares rise to 19% in 2006 and are projected to account for 28% of the world’s total by 2030. \textit{EIA 2009}
- In comparison, the US accounted for 21% of global energy consumption in 2006 and the percentage will fall to 17% in 2030. \textit{EIA 2009}
- Projected growth in Chinese energy demand through 2030 is highest in world.
China’s Need for Energy

- IEA estimates China will account for 39% of increase in global consumption of energy through to 2030. Oil demand will rise from 7.7 million bpd in 2008 to 16.3 million bpd in 2030. *IEA 2009*

- Chinese demand for natural gas will increase 5.2% annually through 2030, rising from 2.6 trillion cubic ft in 2010 to 6.8 trillion cubic ft in 2030. *IEA 2009*

- Global Industrial energy use will grow from 175 quadrillion btu in 2006 to 245.6 quadrillion btu in 2030. China alone accounts for 35% of this increase. *EIA 2009*

- To meet demand, China will increasingly become import dependent.
Net oil import dependence in main importing countries/regions in the Reference Scenario

Import dependence falls in the United States & OECD Pacific, but increases in all other importing regions – most markedly in Asia
Figure 10.2  Primary natural gas demand by region in the Reference Scenario

- India
- Africa
- OECD Pacific
- Latin America
- China
- Other Asia
- Middle East
- OECD Europe
- E. Europe/Eurasia
- OECD North America

Legend:
- 2007
- 2015
- 2030

bcm

0 200 400 600 800 1 000
Global oil production will rise from 83.1 mb/d in 2008 to 103 mb/d in 2030. Most of the projected increase comes from OPEC members who hold the bulk of proven oil reserves. OPEC’s share of world oil production increases from 44% to 52% in 2030.  

IEA 2009 pg. 86.

Current global liquid reserves are estimated to be about 1,342 billion barrels, with 56% located in the Middle East. 75% of the world’s natural gas reserves exist in the Middle East and Eurasia (Russia, Iran, and Qatar hold 57%). EIA 2009 Pg, 31.

Only energy producers in the Middle East and Central Asia have enough capacity to meet China’s increase in demand.
China and Saudi Arabia

- Saudi Arabia will remain the world’s largest producer of oil, boosting output from 9.2 mb/d in 2008 to 12 mb/d in 2030. IEA 2009 pg. 86.
- Saudi oil exports to China topped 1 million bpd in January 2010, surpassing the US for the first time.
- Saudi Arabia accounts for 20.5% of China oil imports.
<table>
<thead>
<tr>
<th>Date</th>
<th>Country</th>
<th>PRC Company</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>Iraq</td>
<td>CNPC</td>
<td>22 year production-sharing agreement. $1.3 billion, suspended by Iraq War</td>
</tr>
<tr>
<td>1998</td>
<td>Egypt</td>
<td>CNPC</td>
<td>Joint investment agreement with 2 Egyptian companies</td>
</tr>
<tr>
<td>2001</td>
<td>Iran</td>
<td>Sinopec</td>
<td>$150 million deal to design and build oil terminal at Neka, modernize refineries at Rey and Tabris; CROS project</td>
</tr>
<tr>
<td>2004</td>
<td>Saudi Arabia</td>
<td>Sinopec</td>
<td>$300 million gas exploration and production agreement w/ Saudi Aramco</td>
</tr>
<tr>
<td>2004</td>
<td>Egypt</td>
<td>Petrochina</td>
<td>Petroleum investment agreement</td>
</tr>
<tr>
<td>2004</td>
<td>Iran</td>
<td>Sinopec</td>
<td>MOU to purchase 10 million tons LNG a year, over 25 years, for lead role in Yadavaran development; $2 billion contract for 1st phase signed December 2007</td>
</tr>
<tr>
<td>2004</td>
<td>Saudi Arabia (Fujian)</td>
<td>Sinopec</td>
<td>$3.5 billion agreement to upgrade and triple capacity at Quanzhou refinery, joint venture with Saudi Aramco and ExxonMobil</td>
</tr>
<tr>
<td>2006</td>
<td>Saudi Arabia (Hainan)</td>
<td>Government</td>
<td>Agreement to set up 10 million cubic-meter oil storage facility</td>
</tr>
<tr>
<td>2007</td>
<td>Iran</td>
<td>CNOOC</td>
<td>Agreement on upstream and downstream development of North Pars LNG field</td>
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<tr>
<td>2008</td>
<td>Qatar</td>
<td>Petrochina</td>
<td>25 year deal with Qatargas to import 3 million tons of LNG annually</td>
</tr>
<tr>
<td>2008</td>
<td>Qatar</td>
<td>CNOOC</td>
<td>Agreement to import 2 million tons of LNG per year</td>
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<tr>
<td>2008</td>
<td>Iraq</td>
<td>CNPC</td>
<td>$3 billion, 22 year renegotiation of 1997 deal to develop al-Ahdad field in exchange for Iraqi debt cancellation</td>
</tr>
<tr>
<td>2009</td>
<td>Kuwait</td>
<td>Sinopec</td>
<td>$140 million contract to supply oil rigs to Kuwait Oil Company, Kuwait aiming to export 500,000 bpd to China by 2015</td>
</tr>
<tr>
<td>2009</td>
<td>Kuwait (Guangdong)</td>
<td>Sinopec</td>
<td>Construction of $9 billion petrochemical and refining plant in Guangdong (joint with Kuwait Petroleum and Royal Dutch Shell)</td>
</tr>
<tr>
<td>2009</td>
<td>Saudi Arabia</td>
<td>CNPC</td>
<td>Contracts to BGP Arabia (joint venture between Saudi Arabia's Rafid Group and CNPC) to gather geophysical data on Manifa oilfield and Red Sea gas deposits</td>
</tr>
<tr>
<td>2009</td>
<td>Qatar</td>
<td>CNOOC</td>
<td>$100 million exploration deal for Qatar’s Block BC</td>
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<tr>
<td>2009</td>
<td>UAE/ADNOC</td>
<td>CNPC</td>
<td>$218 million contract to Baoji Oilfield, joint petrochemical projects</td>
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<tr>
<td>2010</td>
<td>Qatar</td>
<td>CNOOC/Petrochina</td>
<td>Agreement to boost 2008 deals so each company imports 5 million tons annually</td>
</tr>
<tr>
<td>2010</td>
<td>Iraq</td>
<td>Petrochina</td>
<td>20 year joint development agreement for Halfaya oilfield with Total, Petronas, South Oil. CNPC will hold 37.5% stake.</td>
</tr>
</tbody>
</table>
Sources

Kazakhstan (Central Asia) - China

Charles Coats
Chinese investment in Central Asia

Source: East Asia Policy, OCT-DEC 2009
## Chinese Bilateral Investment/Projects

<table>
<thead>
<tr>
<th>Involved Countries</th>
<th>Projects</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>China-Kazakhstan</td>
<td>• Oil pipeline (Atasu-Alashankou )</td>
<td>• Will complete in 2011</td>
</tr>
<tr>
<td></td>
<td>• Gas pipeline</td>
<td>• Completed in 2009</td>
</tr>
<tr>
<td></td>
<td>• China offers $10 bln loan</td>
<td>• For future oil supply</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China-Turkmenistan</td>
<td>• Gas pipeline</td>
<td>• Signed deals in 2006</td>
</tr>
<tr>
<td></td>
<td>• Gas field near Amu Darya River</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Gas well in the Iolatan region</td>
<td></td>
</tr>
</tbody>
</table>

*Source: East Asia Policy, OCT-DEC 2009*
Chinese ventures in Central Asia

• Chinese energy exploitation in Cen. Asia: Oil from Kazakhstan, Gas from several states (Garrison 43, 2009)
  – 220,000 bpd of Kazakhstan’s total oil exports of 1.0 million bpd goes to China
  – Kazakhstan is a major oil nation, with more oil reserves (30 bil. Barrels est) than the US and half that of Russia
  – Kazakhstan the only Cen. Asian nation that China can directly import energy from, bypassing Russia

• Chinese ventures in Cen. Asia:
  – Kazakh-China oil pipeline (finished Dec. 2009) (Garrison 47)
    • Could increase Chinese imports from this country from their current 1% of total imports to around 15% in coming years
    • China is currently outpaced by Western investors here, but has the long-term upper hand b/c its companies are state-run and so can afford risk
  – Buying up Kazakh oil fields
    • China recently bought company Petrokaz, giving it a controlling stake in several oil fields along the new pipeline
  – 2006 gas delivery agreement with Uzbekistan
    • Turkmenistan agreed to deliver 30 bil. Cm/yr in gas to China, with a pipeline between the two nations set to open in 2009 (p. 50)
    • By 2012, China could import 20 bil. Cm/yr from Cen asia (51)
  – Around $700 million in exploration and rehabilitation investments in Uzbekistan

Major natural gas pipelines in the Caspian Region

Source: Russian Analytical Digest 71, 25 Jan 2010, p. 15
The Atasu-Alashankou pipeline

• Direct oil supply lines lead to increasing opportunities for producer and consumer to influence one another’s politics and policies (Shaffer 2009, 49).

• The Atasu-Alashankou pipeline is one of these direct links, which bypasses the int’l market (Shaffer 50).

• In 2006, a new pipeline running from the Kazakh Aqtobe fields to the Chinese border town of Alashankou was opened, which would delivered a small 2.2 million tons of crude to China in 2006 (ICG 2007, 10)
  – 625 mi. long, cost of $800 million for China
  – 70 mil. b/yr, max output possibly 140 in the future
  – 50/50 joint venture between CNPC (China) and KazManaiGaz (Kazakhstan)
  – CNPC also major investor in Kazakh oilfield, Kumkol

Reasons and Likely Impact of Chinese Strategy in Central Asia

• Reasoning:
  – Majority of Chinese oil imports still come from the ME, but over the last decade the percentage of Russian and Central Asian oil and gas imports have increased while the percentage of ME imports have decreased (Shaffer 146, 2009)
  – Cen. Asia’s % of world energy production quite small, 2-3%.
    • But, b/c of the region’s proximity to China and China’s current reliance on expensive and unreliable sea transportation routes, this 2% could be vital to its long-term energy security (Garrison 41, 2009)
  – Reasons for A-A pipeline (Shaffer 50):
    • Kazakhstan – seeks to lessen reliance on Russian pipelines, wants to balance Russia with China in their neighborhood
    • China – wants to expand access to energy routes that are not reliant on international shipping sea-lanes (51).

• Strategies China has employed:
  • General infrastructure development used to ‘sweeten the deal,’ with Cen. Asian exporters, like it has done in Africa recently
  • Uses the Security Org. SCO as a conduit for making energy deals with the Cen. Asians (Garrison 54)
  • Emphasizes “similarity of interests” b/w china and the cen. Asian states (stability over human rights, balancing Russia, etc)

• Problems with exploitation:
  – Major population and industrial centers are on China’s east coast, far from Cen. Asia (Garrison 41)
  – Russia as an obstacle for closer ties with Cen. Asia

Kazakhstan’s energy economy

Exports

- Minerals (Energy, etc.): 73.0%
- Metals: 15.2%
- Food products: 4.2%
- Chemicals: 3.5%
- Others: 4.1%

Source: EIU, 2008
China rose from the 4th to the 3rd largest importer of Kazakh products, from 4.1% to 11.8% between 2003 and 2007 (EIU, 2008).
Sources

China’s Pathways
Realism and Institutionalism

China as a Realist Actor

• As economic growth continues to increase so will China’s energy needs.
• China will remain reliant on its SLOCs to transport its energy resources.
  – Projected pipelines will not satisfy this demand.
• The need for energy security will push China to become a revisionist naval power across S.E. Asia and the Indian Ocean (IO).

China as an Institutional Actor

• As economic growth continues to increase so will China’s energy needs.
• China will remain reliant on its SLOCs to transport its energy resources.
  – Projected pipelines will not satisfy this demand.
• This environment will push China to cooperatively engage with its neighbors in order to attain energy security.
China’s Great White Fleet

A Capstone Project for the National Intelligence Council

Jong-Hwan Lee

Joshua Murray

February 2010
Outline

• Key Assumptions
• China’s Dilemma: Defending its Sea Lines of Communication (SLOCs)
• Force Requirements for SLOC Defense
• Tracking the Dragon
• Net Assessment & Implications for U.S. Policy
• Sources
Key Assumptions

• As economic growth continues to increase so will China’s energy needs.

• China will remain reliant on its SLOCs to transport its energy resources.
  – Projected pipelines will not satisfy this demand.

• The need for energy security will push China to become a revisionist naval power across S.E. Asia and the Indian Ocean (IO).
For the PLAN, SLOC protection is currently a “bridge too far.”

Will China build the air and naval platforms needed to project power across the Straits of Malacca and into the IO?

If this holds true how do we distinguish SLOC protection from other naval missions?

<table>
<thead>
<tr>
<th>End Point</th>
<th>Distance from Zhanjiang (km)</th>
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<tbody>
<tr>
<td>Malaccan Strait</td>
<td>3,294</td>
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<tr>
<td>Chittagong, Myanmar</td>
<td>5,658</td>
</tr>
<tr>
<td>Hambantota, Sri Lanka</td>
<td>5,535</td>
</tr>
<tr>
<td>Gwadar, Pakistan</td>
<td>8,754</td>
</tr>
<tr>
<td>Gulf of Oman</td>
<td>9,687</td>
</tr>
<tr>
<td>Gulf of Aden</td>
<td>9,897</td>
</tr>
</tbody>
</table>

*Measurement s were attained using Google Earth.*
China’s Critical Sea Lanes

Force Requirements for SLOC Defense

• Based upon operations analysis of WW II Atlantic convoys the adequate ratio of ASW escorts to merchant vessels is 1:2 or 1:3

• Number of Chinese petroleum and LNG tankers: 288

• Number of Chinese principal surface combatants: 78

• Assumptions:
  - 1/4 of China’s tankers and escorts will be loading in the M.E.
  - 1/2 of the tankers and escorts will be en-route to either their home port, or the M.E.
  - 1/4 of China’s tankers and escorts will be unloading at their home ports.

• These assumptions leave China’s in-transit convoys with an ASW escort to tanker ratio of \( \textbf{0.27:1} \)

• The PLAN will need 95-100 principal surface combatants just to protect its tanker fleet.
Tracking the Dragon

**Observed Evidence**
- The construction of port facilities abroad
- The deployment of naval forces abroad
- PLAN replenishment - at-sea exercises
- An increase in training hours
- The acquisition of power projection platforms
- Open-source doctrinal writings discussing SLOC missions

**Projections**
- The increased deployment of military forces along the “string of pearls”
- Increased funding for the PLAN and PLAAF.
- The increased acquisition of SSN, carrier aviation, and ASW platforms.
- Increased ASW, replenishment-at-sea, air-to-air refueling, and long-range strike training.
- Continued doctrinal discussion concerning SLOC protection missions.
China’s String of Pearls
Conclusions

Net-Assessment

• China’s SLOCs present two strategic problems: distance and dispersion.
• Overcoming these twin challenges currently remains a “bridge too far” for the PLAN.
• Solving the problems of SLOC defense by 2030, will require a major re-allocation of Chinese defense resources.

Implications for U.S. Naval Power

• U.S. Naval forces currently “command the commons” in S.E. Asia and the IO
• A Chinese contest for regional naval mastery could lead to one of the following:
  – A U.S. withdrawal from S.E. Asia and the IO
  – Joint patrolling by U.S. and Chinese naval forces
  – A naval arms-race between China and the United States
Questions?
Sources


Sources


Institutionalist Viewpoint
Steven

- Key Assumptions
- China and S.E. Asia
- China and India
- Other indicators of engagement
Key Assumptions

- As economic growth continues to increase so will China’s energy needs.
- China will remain reliant on its SLOCs to transport its energy resources.
  - Projected pipelines will not satisfy this demand.
- The need for energy security will push China to avoid conflict with neighbors and develop closer ties to make war less likely
China and S.E. Asia

• China and S.E. Asia have grown closer over the last decade
• Chinese Foreign Minister has attended ASEAN Foreign Minister meetings since 1991
• Became a Dialogue Partner in 1996
• Have held ASEAN +3 meetings since 1997 (formalized in 1999)
• Has attended all but 1 ASEAN Regional Forum meetings since 1994
China and S.E. Asia

• China initiated negotiations to form Free Trade Area – established Jan. 1, 2010
• In 2003 proposed to create a Security Policy Conference within the Asian Regional Forum
China and Vietnam

• Vietnam provides a key barometer of China – S.E. Asian relations given historic animosity
• Relations have improved in recent years
• Relations were normalized in 1991
• Reached agreement on border demarcation
Spratly Islands

• Dispute over the ownership of the Spratly Islands and maritime borders represents main obstacle to relations

• In 2002, agreed to restraint and confidence building measures in dealing with the dispute
China and India

• Chinese relations with India have steadily improved over the last two decades.
• Trade has grown
• 2003 – India accepted Chinese sovereignty over Tibet
• 2005 – Reached agreement on principles for settling border dispute.
• Chinese statements during Indo-Pakistani crises are more balanced than in the past
China and India

- Signed agreement in 2006 to hold joint exercises.
- India participated in Chinese International Fleet review in 2009
- Held joint naval exercise in 2003
Sources

- Xiao, Ren. 2009. “Between Adapting and Shaping: China’s Role in Asian Regional Cooperation.” In Journal of Contemporary China
- He Sheng. 2009 “Building a Border of Friendship.” Beijing Review
Institutionalist Viewpoint
Broderick
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Underlying Values</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability</td>
<td>Independence and diversification</td>
<td>Diversifying the fuels used to provide energy services as well as the location of facilities using those fuels, promoting energy systems that can recover quickly from attack or disruption, and minimizing dependence on foreign suppliers</td>
</tr>
<tr>
<td>Affordability</td>
<td>Equity</td>
<td>Providing energy services that are affordable for consumers and minimizing price volatility</td>
</tr>
<tr>
<td>Energy efficiency</td>
<td>Innovation and education</td>
<td>Improving the performance of energy equipment and altering consumer behaviours</td>
</tr>
<tr>
<td>Stewardship</td>
<td>Social and environmental sustainability</td>
<td>Protecting the natural environment, communities and future generations</td>
</tr>
</tbody>
</table>
ASEAN: Overview

- ASEAN Energy Security
- ASEAN as a Security Community
- ASEAN and China
ASEAN & Energy Security

- Overview of Current Energy Situation and Future Projections
- Energy Integration
- Potential Setbacks
## Reference Scenario: ASEAN

<table>
<thead>
<tr>
<th></th>
<th>Energy demand (Mtoe)</th>
<th>Shares (%)</th>
<th>CAAGR (%)</th>
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<tbody>
<tr>
<td><strong>Total primary energy demand</strong></td>
<td>243</td>
<td>513</td>
<td>612</td>
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<tr>
<td>Coal</td>
<td>12</td>
<td>76</td>
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<tr>
<td>Oil</td>
<td>90</td>
<td>179</td>
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<td>Gas</td>
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<td>Hydro</td>
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<td>6</td>
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<tr>
<td>Biomass and waste</td>
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<td>120</td>
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<td>Other renewables</td>
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<tr>
<td><strong>Power generation</strong></td>
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<td>Coal</td>
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<td><strong>Other energy sector</strong></td>
<td>41</td>
<td>71</td>
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<td>of which electricity</td>
<td>2</td>
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<td>9</td>
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<tr>
<td><strong>Total final consumption</strong></td>
<td>177</td>
<td>362</td>
<td>423</td>
</tr>
<tr>
<td>Coal</td>
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<td>45</td>
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<td>Oil</td>
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Projected Energy Demand...

Figure 15.4 - ASEAN primary energy demand by fuel in the Reference Scenario

...and Production

Figure 15.7 - ASEAN oil production by country in the Reference Scenario
Trans ASEAN Gas Pipeline

Figure 15.16 • The Trans-ASEAN Gas Pipeline (TAGP)

The boundaries and names shown and the designations used on maps included in this publication do not imply official endorsement or acceptance by the IEA.

Source: ASCOE Secretariat
ASEAN Power Grid

Figure 15.15 - Existing and proposed ASEAN Power Grid interconnections

1) P. Malaysia - Singapore  Existing
2) Thailand - P. Malaysia  Existing
3) Sarawak - P. Malaysia  2015
4) P. Malaysia - Sumatra  2012
5) Batam - Singapore  2015
6) Sarawak - West Kalimantan  2012
7) Philippines - Sabah  2015
8) Sarawak - Sabah - Brunei  2015
9) Thailand - Lao PDR  - Roi Et - Nam Theun 2  2009
    - Udon - Nabong  2010
    - Mae Moh - Hog Sa  2013
10) Lao PDR - Vietman  2010
11) Thailand - Myanmar  2014
12) Vietnam - Cambodia  2009
13) Lao PDR - Cambodia  2010
14) Thailand - Cambodia  Existing

The boundaries and names shown and the designations used on maps included in this publication do not imply official endorsement or acceptance by the IEA.
Sources: HAPVA Secretariat
Potential Setbacks

- Energy Inefficiency
- Maritime Border Disputes
- Problems with TAGP
ASEAN & Regional Security

ASEAN as a Security Community: Theoretical Explanations

- The ASEAN WAY
- Military Matters
- Diplomatic Relations
ASEAN & China

- China’s View of ASEAN
- ASEAN’s view of China
- Diplomatic Dialogue
- Increasing Ties
Conclusions

• China by 2030
• What to look for
• What this means for the U.S.