Global Energy Shifts: What Naval Security Practitioners Should Know

Asia Drives Demand, OPEC Producers Bring Baseload Supply, U.S. Producers Bring the Marginal Barrels, and the U.S. Military + Key Partners Ensure Secure Transit of Resources Through the Global Commons
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Big Picture Themes

1) U.S. oil and gas production has boomed

2) Hydrocarbon supply and demand patterns continue to shift dramatically
   A. World energy structure poised to remain carbon-centric for at least the next decade, probably longer
   B. Carter Doctrine 3.0—Assessing a Possible Re-Think of U.S. role vis-à-vis the Gulf Region

3) “End of History” worldview unravelling fast
   A. Great power competition is back
   B. And so is nationalism and ideological competition
   C. How to balance (largely) shared economic interest in free transit of global maritime commons with the reality that the United States’ Near Peer Competitor and many secondary powers seek to restrict transit near their shores?
   D. How can the U.S. and its allies effectively respond?
The U.S. Unconventional Energy Revolution

Hydrocarbon “bombogenesis”

High global crude prices
Best in world E&P operators, service companies, capital markets, and industrial value chain
Strong property rights, rule of law
Quantitative easing (i.e. “easy money”)

Source: Weather Channel
Geopolitical Effects of Low Oil Prices

In prime parts of the U.S. oil patch, $60/bbl is the new $100. Global impacts ensue...

- Pressure on adversaries...
- ...But also on strategic partners

Source: Bloomberg
West African Crudes Largely Pushed Out of U.S. Market
China is a focal point because in the last decade, its incremental demand growth roughly equals the current oil consumption of Japan and Malaysia combined.
China Dependency Trends: Domestic Production Can’t Keep Pace With Demand

Source: Bloomberg, Authors’ Analysis
The probability of a disruptive, technology-driven transition in energy sources is rising. However, the most likely scenario is likely one in which fossil fuels remain important for decades. Naval security practitioners should expect carbon centricity for at least two more decades, but also be prepared to deal with adverse affects from climate change.
Global Energy Architecture Likely to Remain Carbon-Centric for at Least 10 More Years, If Not Longer

Global Primary Energy Use, By Fuel

Oil and gas remain vital baseload sources despite the fact that global primary energy consumption increased by a factor of 2.55 between 1965 and 2016.

Source: BP Statistical Review of World Energy, 2017
**Energy Transitions: Scale Matters…**

**EV Displacement of Gasoline**

(likely an overestimate because I use U.S.-centric assumptions)

Equal to only about 0.45% of current global gasoline consumption

Source: Inside EVs, BP Statistical Yearbook of World Energy

**Argument for a Hybrid Future**

- 2007 Ford F-150, 4WD, FFV, 5.4 I V8
  - 14 MPG combined, 300 HP, 365 lb/ft torque
- 2017 Ford F-150, 4WD, 3.5 I V6 Ecoboost
  - 19 MPG combined, 375 HP, 470 lb/ft torque
- 2007 Toyota Prius
  - 46 MPG combined, 76 HP, 82 lb/ft torque
- 2017 Toyota Prius
  - 52 MPG combined, 121HP, 105 lb/ft torque
- 6 mpg improvement only saves 0.3 gallons for every 100 mi driven.

**POLICY BRIEF 06.14.17**

**Seeking Scalable, Cost-effective Reductions in Gasoline Demand and Tailpipe Emissions? Focus on Pickup Trucks, Not Priuses**

...And So Does Energy Density and Reliability

1X \geq 10X

4X LM 2500 gas turbines
Source: Huntington Ingalls Shipyard

Source: GE Renewable Energy

Haliade-X 12 MW

GE Renewable Energy is developing Haliade-X 12 MW, the biggest offshore wind turbine in the world, with 220-meter rotor, 107-meter blade, leading capacity factor (65%), and digital capabilities, that will help our customers find success in an increasingly competitive environment.

One Haliade-X 12 MW can generate 67 GWh annually, which is 45% more annual energy production (AEP) than most powerful machines on the market today, and twice as much as the Haliade-X 150-6MW.

The Haliade-X 12 MW will generate enough clean power for up to 16,000 European households per turbine, and up to 1 million European households in a 750 MW configuration windfarm.
The Maritime Energy Transport Domain: A “100,000 foot view”

Source: Marine Traffic.com, 28 February 2018
Emerging Dimension: International Gas Trade Increasingly Maritime

- Around 40 BCF of gas loaded per day as seaborne LNG now.
- Rising to nearly 60 BCF/d by 2020.
- That is more gas than Russia currently produces.

Source: Tellurian
Expect a Sustained U.S. Military Presence in the Gulf Region
What is the Carter Doctrine?

“Let our position be absolutely clear: An attempt by any outside force to gain control of the Persian Gulf region will be regarded as an assault on the vital interests of the United States of America, and such an assault will be repelled by any means necessary, including military force.”

—President Jimmy Carter, 1980 State of the Union Address

Main Focus:

- USSR, Iran
- Iran, Iraq
- Iran, non-state actors, broader regional stability.

Source: EIA, Authors’ Analysis
Shifting Demand Call for Gulf Oil

East Asian Oil Demand Has Outpaced North America and Europe’s Since the Late 1980s

The Maritime Energy Transport Domain: A “100,000 foot view”

Massive concentration of eastbound tanker traffic

Source: Marine Traffic.com, 28 February 2018
Myth Busting...

U.S. “Energy Independence” a Fallacy

- Continued deep integration with global crude and refined products markets.
- Prices are influenced by factors outside US control (spare production capacity among major suppliers; rates of demand growth; inventories; geopolitics; natural disasters).
- Even full self-sufficiency in oil would not remove U.S. exposure to events in Middle East.
- An outage in the Middle East will influence US prices no matter where America’s oil is sourced.

And a Reminder of Reality

Saudi Arabia and OPEC Underpin Global Oil Supply Security

- Over the past 25 years, OPEC has accounted for 41% of global oil supplies.
- Saudi Arabia alone has accounted for an average of 13% of global oil supplies during that time, making it the largest global supplier.
- An outage in the Kingdom would severely rattle the global economy.
- Despite recent focus on shale, long-cycle barrels remain vitally important to global oil supply security.

Source: BP Statistical Review, EIA, Authors’ Analysis
Thinking About Carter Doctrine 3.0: What Does Military Underwriting of Energy Security Actually Mean?

- Hint: It’s Not a Mercantilistic Quid pro Quo.
- The oil exporter cited in this example, the UAE, sends hardly any oil to the U.S. and yet is one of our most important regional security partners and a robust proponent of continued intensive U.S. engagement in the Gulf region. The UAE Air Force flies F-16s more advanced than those in the USAF, the UAE armed forces actively participate in missions against ISIS and al-Qaeda, and the government has granted U.S. forces access to the strategically-located Al-Dhafra airbase since 1990.

Source: EIA, UAE Embassy
Markets Function Best Within a Framework of Stability

- American security ensures energy flows through the Strait of Hormuz, which include 20% of globally traded oil supply and roughly 30% of global LNG supplies.
- No other powers have the force projection or logistics capacity to independently assume the task and prospects for broad multi-lateral military cooperation are likely weak, at best.
- Strength of Gulf militaries has improved in the past decade
- But forces are generally deliberately composed to prioritize internal security and not threaten family-based rule.
- Insufficient capacity to guarantee *external* security of oil shipments without U.S. assistance.
Balancing Naval Security Imperatives: The Gulf and East Asia

KEY FOCUS ON CHINA
Chinese Energy Security Priorities

1) Reducing local air pollution

2) Hedging against oil import dependency

Somewhere further down the list... Reducing CO2 emissions

Significant diversity of views, but energy security viewpoints in China’s domestic scene broadly coalesce into two core factions: “globalists” and “nationalists.”

Overland Routes Won’t Offset China’s Seaborne Import Dependence

Follow the barrels…

And consult the map…

Not a new theme for us…

Growing Chinese Military Presence in the Middle East/Gulf Region

PLAN anti-piracy deployment has been sustained since December 2008, 27 task forces have now participated.

- At least 80 port visits have occurred in the region during this time.
- China now building a base in Djibouti.

Djibouti (23 visits) and Salalah, Oman (28 visits) are the PLAN’s key regional hubs.
China Now Openly Willing to Leverage its Hard Power

Source: CSIS AMTI project
China’s Continued Rise Not Pre-Ordained

China’s S-Curve Trajectory: Structural factors will likely slow the growth of China’s economy and comprehensive national power

Key Points:

- China is likely to follow an S-Curve-shaped path of slowing growth as key internal and external challenges—including pollution, corruption, chronic diseases, water shortages, growing internal security spending, and an aging population—feed off one another and exact increasingly large costs.

- One prominent China-based economist believes that the country’s growth will need to slow to 3-4% per year—less than half the current rate—if it is to sort out structural imbalances in its economy.

- China is encountering these headwinds at a much earlier stage in its development than did the U.S. and other great powers, thanks in part to its late start in modernization and its dramatic internal disparities.

- China could very well continue to expand its economy (and by extension its national power) at a rate that the U.S., Japan, and many European countries would envy.

- However, the global economic, environmental, and security implications of 4-5% Chinese economic growth are very different from a 7-8% annual growth regime.

China faces costly internal and external challenges that are likely to ease the country onto a structurally-constrained slower-growth trajectory. For all its policy navigation, efforts to guide national development, and claims of exceptionalism, China is not immune to larger patterns of economics and history. As such, it will likely not be able to avoid the S-Curve-shaped growth slowdown that so many previous great powers have experienced, and that so many observers

Gabriel B. Collins and Andrew S. Erickson, “China’s S-Curve Trajectory: Structural factors will likely slow the growth of China’s economy and comprehensive national power,” China SignPost™ (洞察中国), No. 44 (15 August 2011).
Naval Capacity is Fungible, Making Partnerships Especially Valuable

- PACOM and CENTCOM AORs: From India westward, the highest-probability naval security contingencies are those emanating from actions by non-state actors.

March 2010: USS Farragut (DDG 99) and Disabled Suspected Pirate Skiff

Greater collaboration with Indian Navy and other local partners, many of whom are well-positioned to help deter and prevent such non-traditional threats, can free up high-end U.S. combat capability for deployment to East Asia offsetting China, or to Europe, offsetting rising Russian naval activity.
The Bottom Line

- **Multi-decade strategic challenge 1**: Pre-existing and emerging energy supplies will require secure passage through the global maritime commons.

- **Multi-decade strategic challenge 2**: The US Navy is likely to remain resource-constrained, but under high operational demand for at least the next 10 years. Partner navies will be more critical than ever.

- **Multi-decade strategic challenge 3**: How to handle the growing level of global competition. Nationalism is resurgent. But it is also a stalking horse for a competition between systems: the liberal, rules-based international order of the past 70 years vs. a bloc of states favoring fragmentation of the global commons and predation by stronger states upon weaker ones.

Keep the Global Maritime Commons Open:

A robust, multilateral naval presence maintained by like-minded nations is essential to ensure global economic prosperity.