

***Economic and Energy Security
and its Impact on Maritime Forces***

Before We Start...U.S. Maritime Missions

- **Sea Control and Power Projection (Maritime Supremacy)**
 - But, Change required to go from a fleet that delivers power from a safe sanctuary to a fleet that will be attacked in Pacific or Indian Ocean waters
- **Area Defense**
 - Think Aegis BMD both ashore and at sea
- **Nuclear Deterrence**
 - Think SSBNs on patrol
- **Transport of Personnel and Materials in War Time**
- **Maritime Defense of the Homeland**
- **ISR**
- **Forward Presence and Support to Free Market Economies and Democracies**
- **Maintaining open “Sea Lanes of Commerce”**
 - Protecting safe transit of raw materials and manufactured goods
- **Anti-terrorism, Disaster Relief, Non Combatant Evacuation, Peace Enforcement, Counter Drug and Human Smuggling, Search and Rescue**
 - Humanitarian Missions: 2011-Japan, 2010-Haiti, 2004-Indonesia
 - 1970 - 2000, U.S. forces involved in 366 humanitarian and 22 combat missions

U.S. Naval Forces this Month

- **Humanitarian Assistance to Japan**
- **Strikes, EW & CSAR in Libya**
- **Combat Support in Afghanistan**
- **Stability Ops in Iraq**
- **Antipiracy Ops off Africa**
- **Nuclear Deterrence Patrols**
- **Presence around the World**

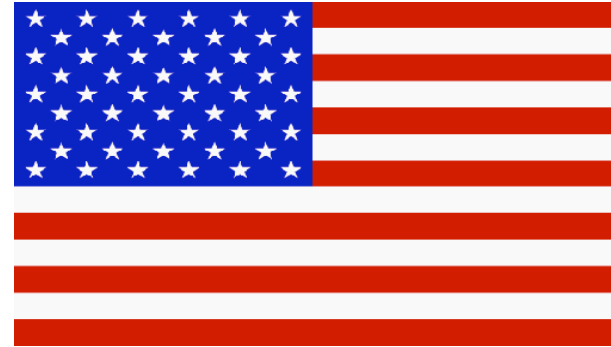


Economics



United States Inc

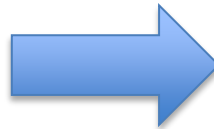
- GDP ~\$14.7T (China ~\$5.7T)
- ~20% of world's manufacturing (\$2.7T)
 - In 2008, manufacturing output was greater than that of China, India, and Brazil combined
- Largest gold reserves (8K tons)
- Home to 139 of the world's 500 largest companies (2x any other country)
- US \$ - 60% of world reserves (next largest is Euro at 24%)
- World's largest trading nation
 - \$1.7T exports / \$2.2T imports



Is Dependant on Bretton Woods and the Global System it Created

United States Inc

- **GDP (~\$14.7T) =**
 - private consumption (10.3)
 - + gross investment (1.8)
 - + government spending (3.0)
 - + exports - imports (-0.5)
 - (1.7 - 2.2)
 - (goods 1.1 - 1.8)
 - (services 0.6 - 0.4)



***~\$4T in Imports and Exports
Annually***

American Way of Life Depends on the Global Economy

Globalization and Trade

- **Interdependent production systems**
- **Growth in trade in intermediate goods**
- **Reduced cost, more goods traded**
- **Leveraging comparative advantage & exploiting economies of scale**
- **Enabled by intermodal transportation (containers)**

Three Pieces to Globalization and Trade

- **Informational**



- **Financial**



- **Physical (where Maritime Forces play)**



World Wide Trade at a Glance

- **1995 - 2008: world container traffic tripled from 137M to 387M TEUs (Twenty ft Equivalent Unit) per year**

**One 40 foot
container = 2 TEUs**



- **~ 90% by value of all imports into the U.S. arrive in containers**
- **In 2008. . .**
 - **28M TEU of U.S. trade moved through U.S. ports**
 - **U.S. ports handled ~77K TEU per day (30K were imports)**

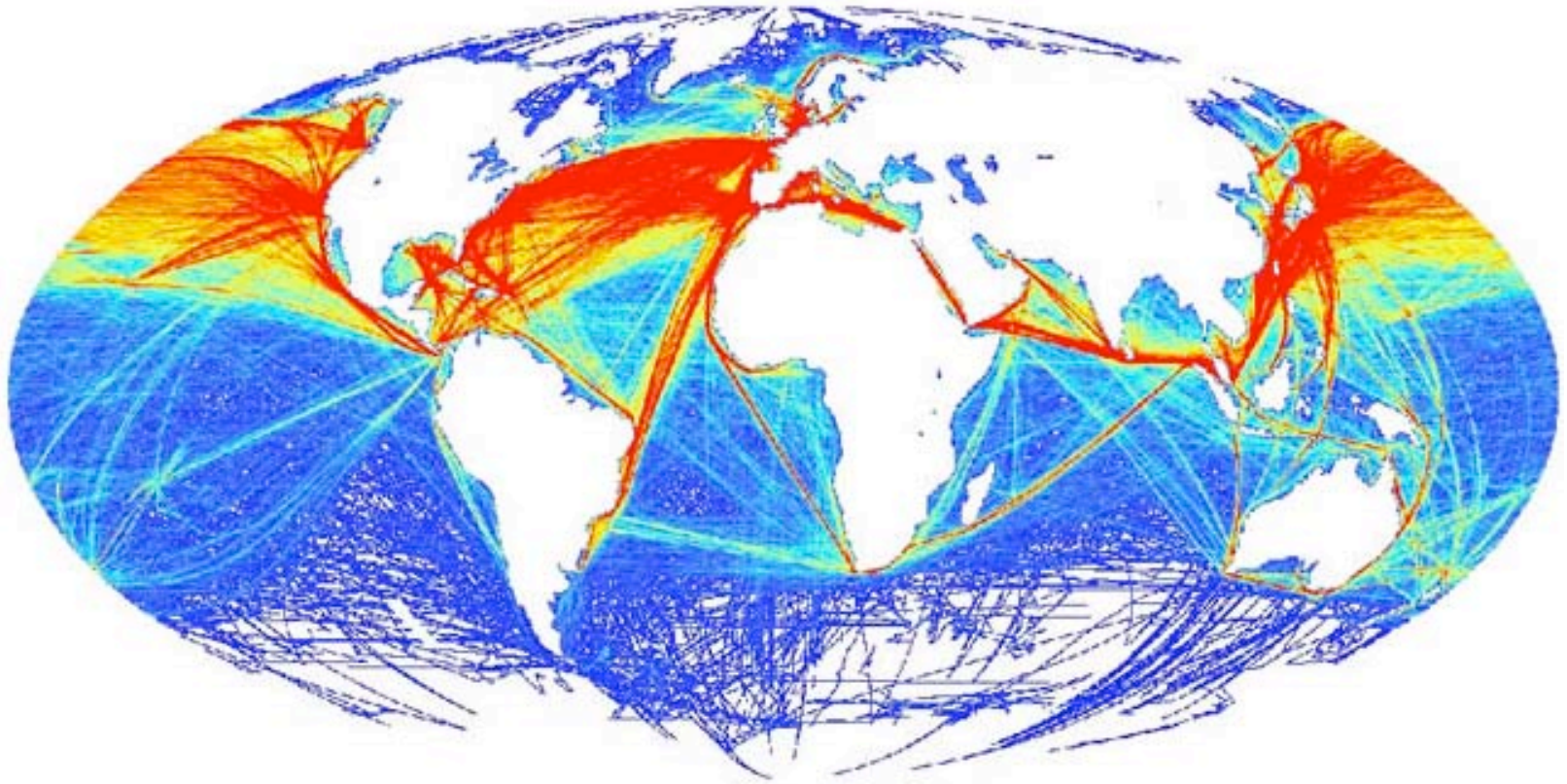


Supply Chains

- **Statistics indicate companies with well-run supply chains outperform others**
 - **AMR Research: average total return of companies in “Supply Chain Top 25” in 2007 was 17.89%, compared with returns of 6.43% for the Dow Jones Industrial Average**
- **But, supply chain glitches torpedo shareholder value (Georgia Tech study)**
 - **Total shareholder value loss associated with a glitch can be as high as 25%**
- **Dell: “The supply chain is the biggest leverage point we have”**
- **Spanish clothing manufacturer Zara: “the supply chain is the business model.”**
- **International trading company Li & Fung: “customer value lies in our ability to architect and operate supply chains.”**

Every organization is impacted by the supply chain because every organization has one

Trade Routes



**Image graphically displays worldwide maritime ocean vessel traffic
Higher density routes displayed in red, lower density routes displayed in blue**

Port Disruptions

- **Disruptions do not need to be large to have an impact**
- **Lack of excess space and capacity for recovery magnifies disruption – and as congestion increases magnification also increases**
- **Effects of disruption could persist and propagate**
- **Multiple small disruptions can cause cascading effects that can reinforce each other, leading to system failure**

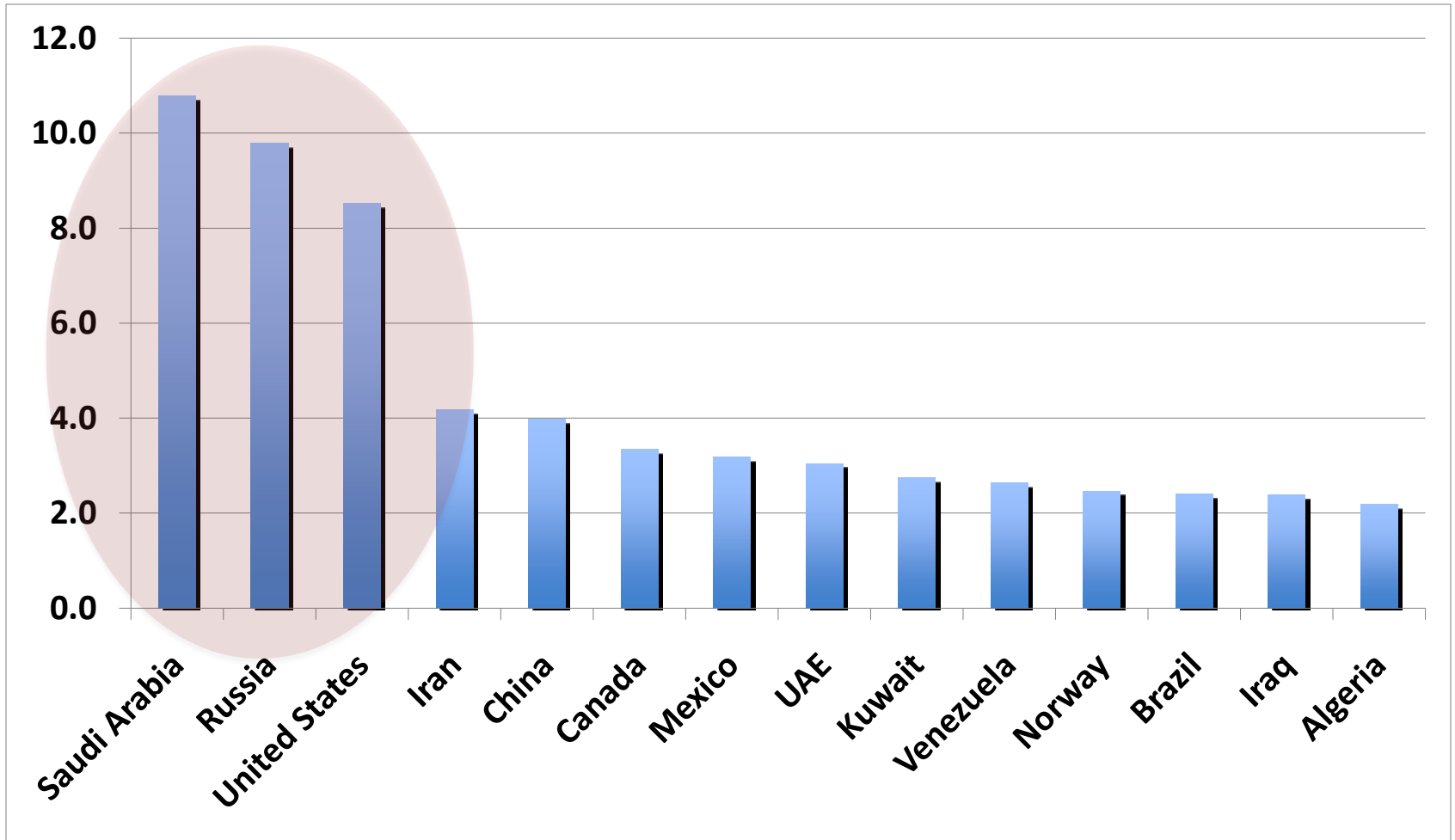


Long Beach, CA

Energy

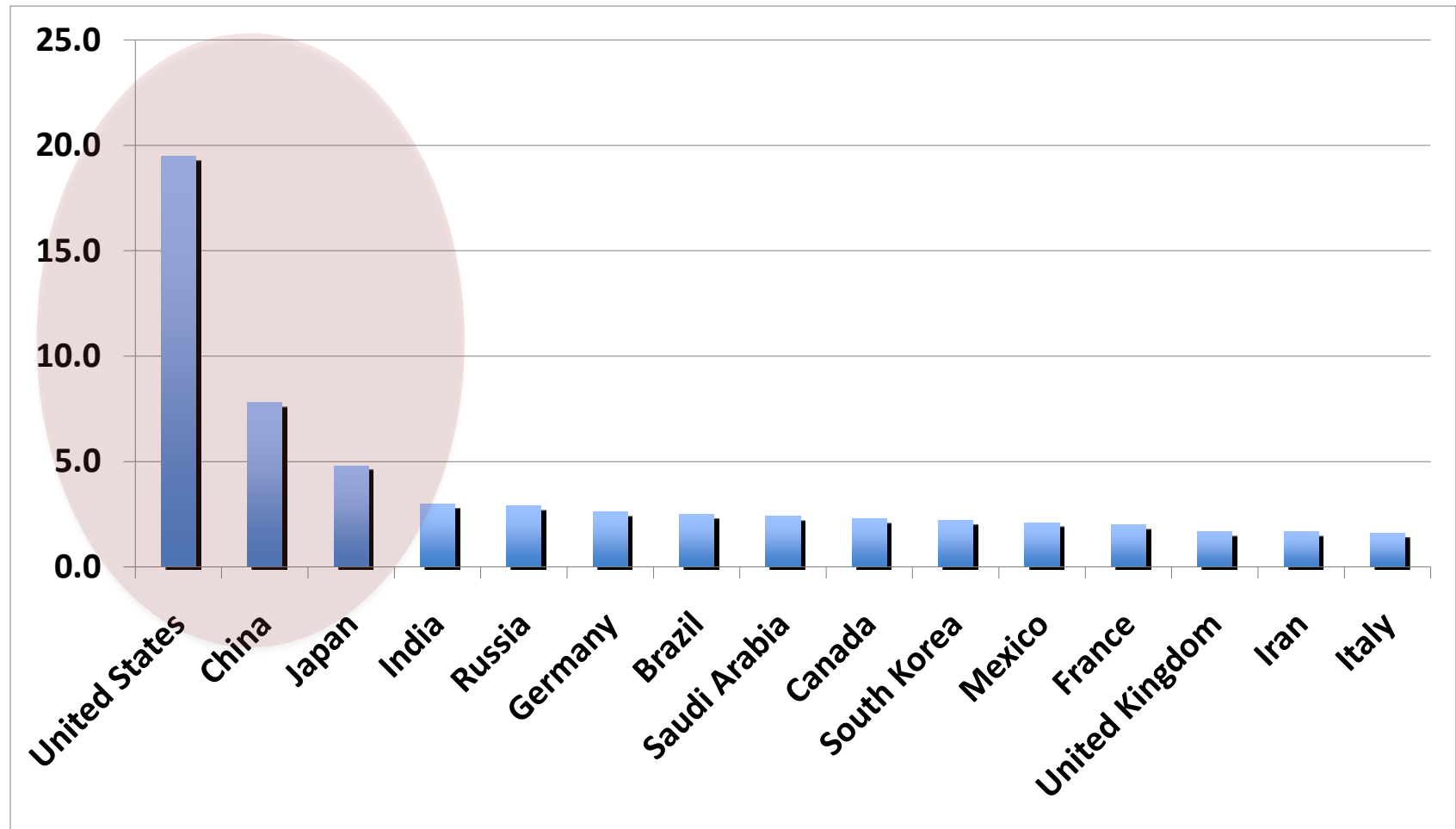


World Oil Producers (MBD - 2008)



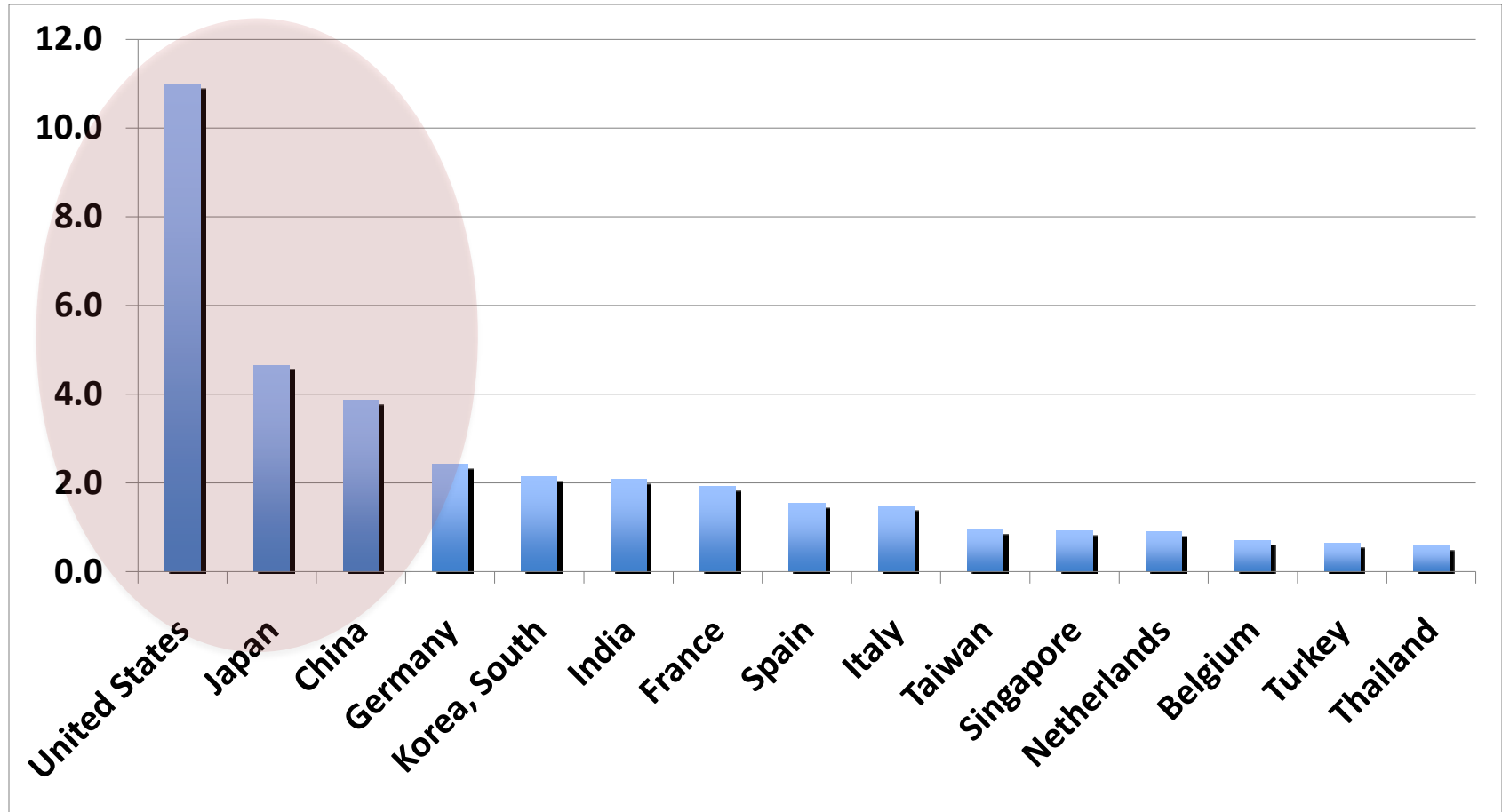
Source: DOE EIA

World Oil Consumers (MBD - 2008)



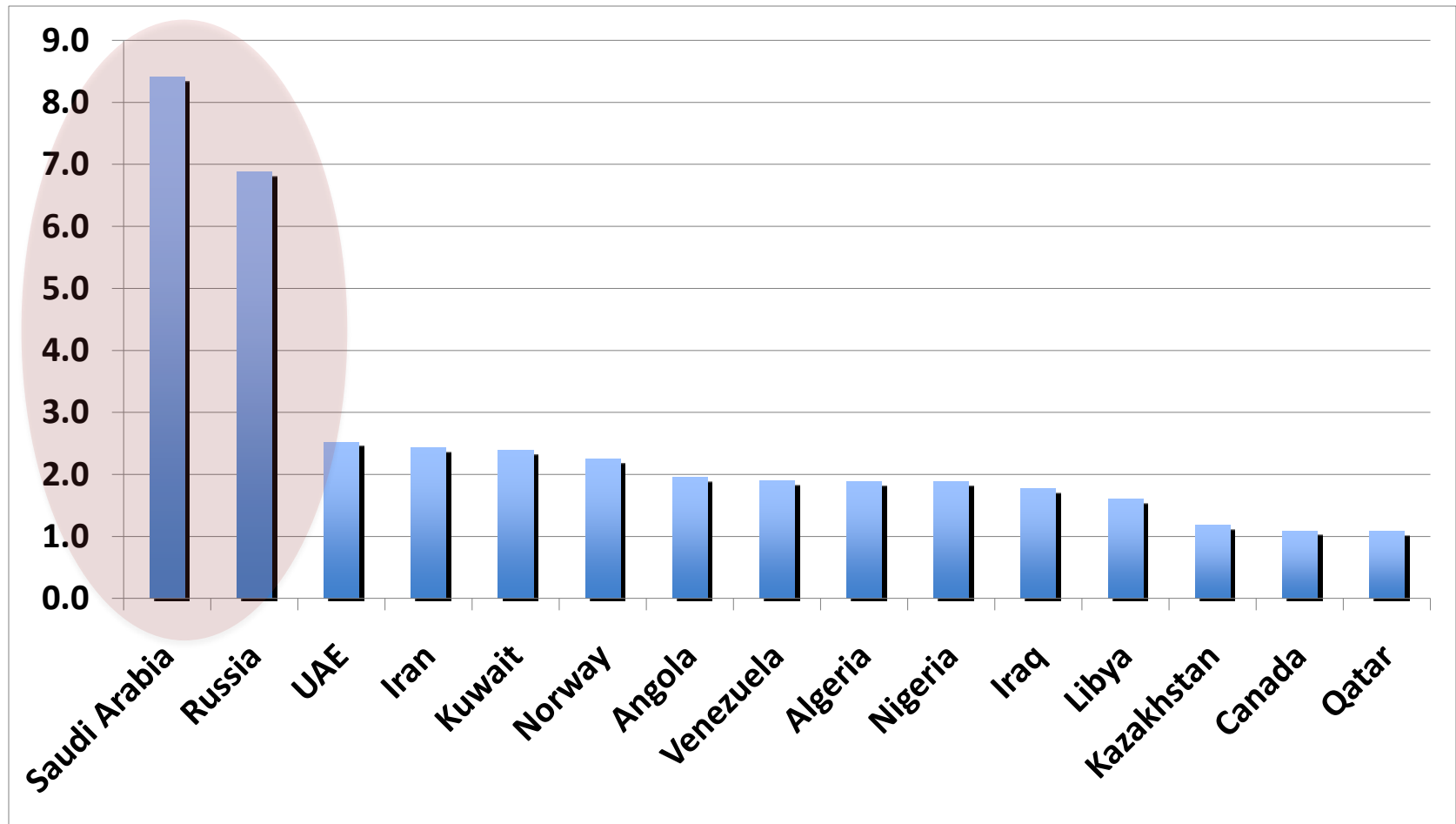
Source: DOE EIA

World Oil Importers (MBD - 2008)



Source: DOE EIA

World Oil Exporters (MBD - 2008)

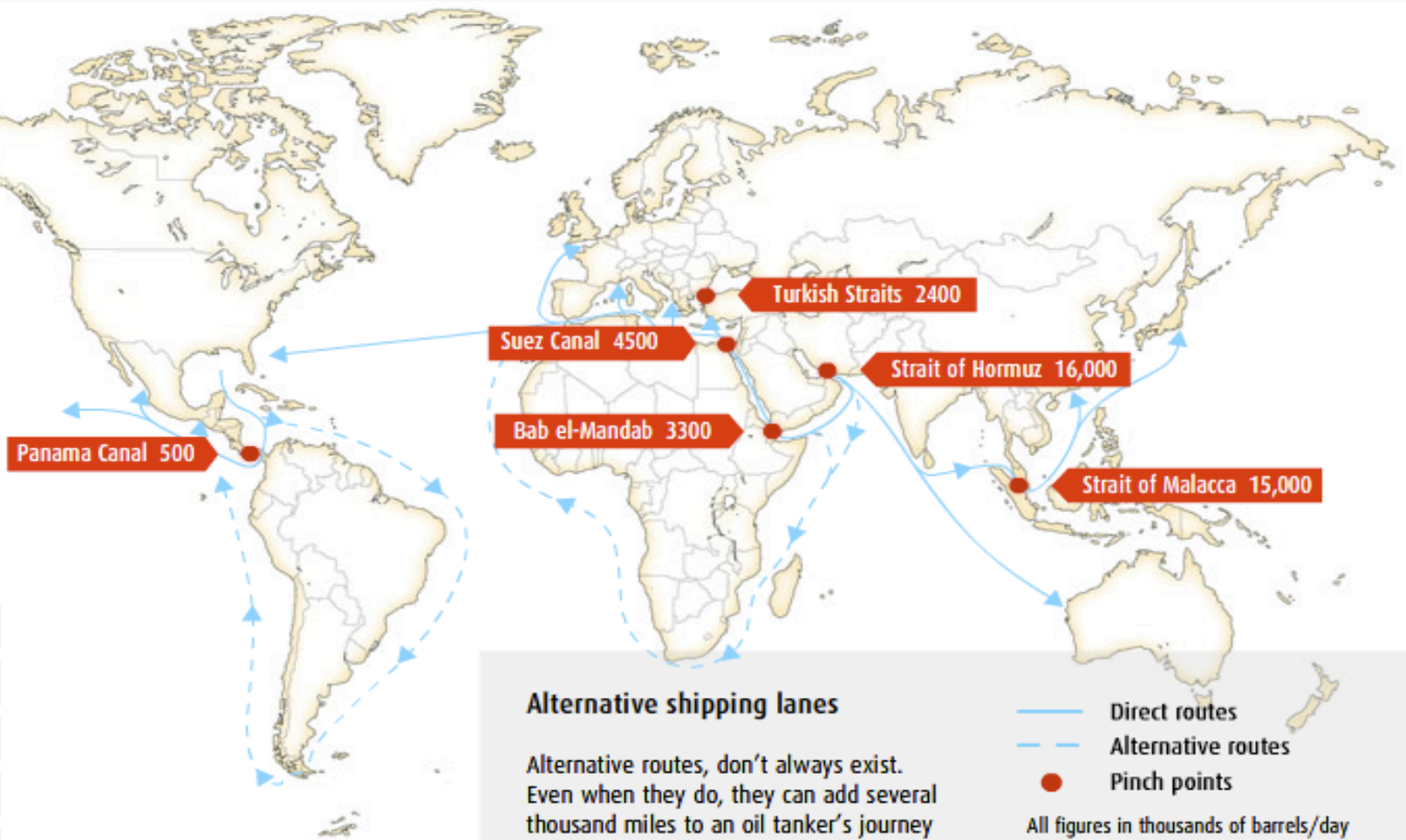


Source: DOE EIA

World Oil Flows



Major Oil Shipment Routes



Click on a label

Oil pipelines

Oil pinch points

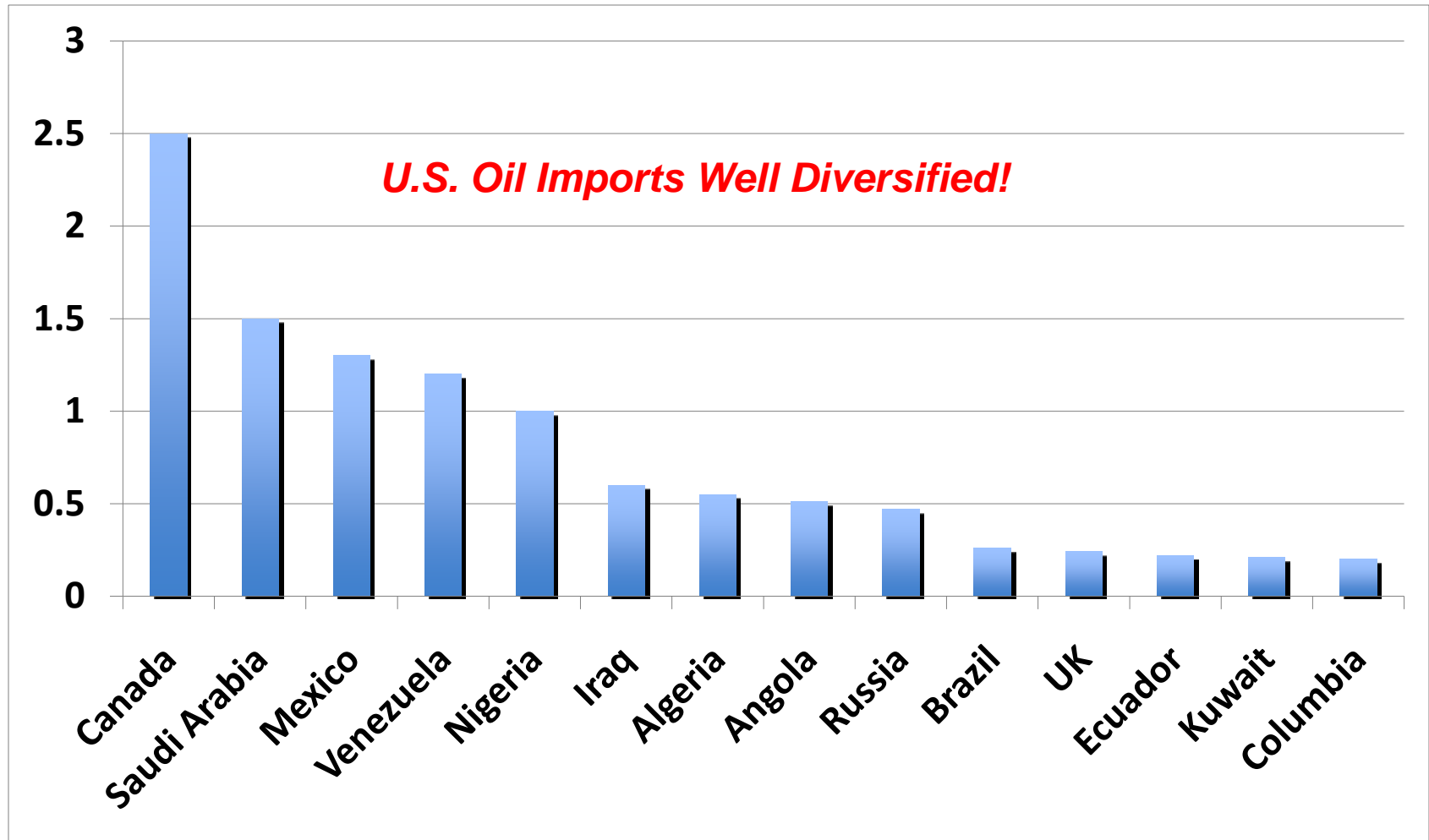
Shipping routes

Main producers

Main consumers

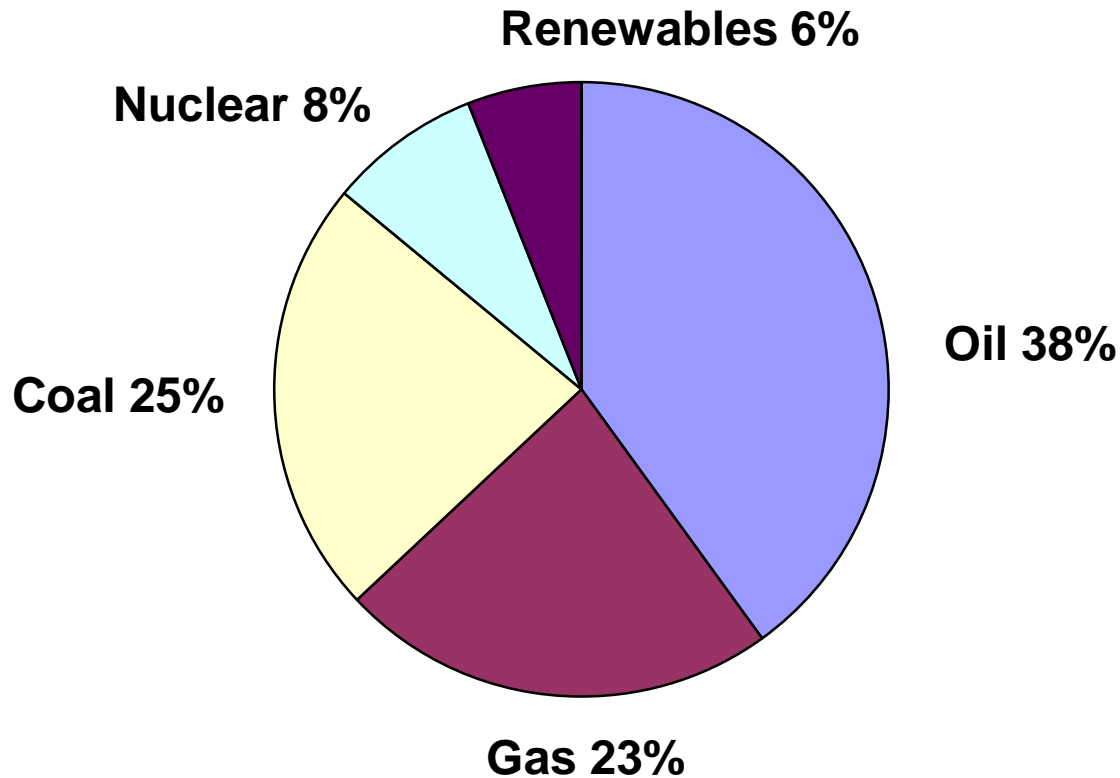
Major U.S. Oil Imports (MBD - 2008)

by Country of Origin



Source: DOE EIA

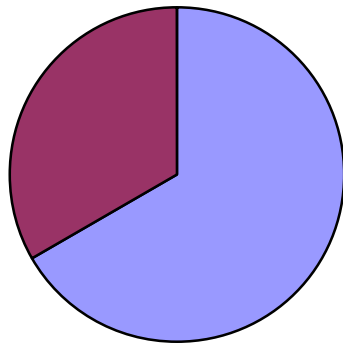
Sources of U.S. Energy Consumption



U.S. Oil Usage

Total Oil Usage

Industrial,
Other
1/3

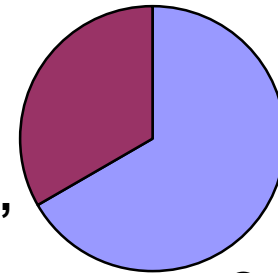


Transportation
2/3



Transportation Uses

Heavy Trucks,
Aircraft
1/3



Cars, Light
Trucks, SUVs
2/3

Oil as a Strategic Issue



“...The dependency upon oil also puts us at the mercy of terrorists. If there's tight supply and demand, all it requires is one terrorist disruption of oil and the price goes even higher. It's in our interests to end our dependency on oil because -- that dependency presents a challenge to our national security. In 1985, 20 percent of America's oil came from abroad. Today that number is nearly 60 percent.”

Bush Speech - Washington International Renewable Energy Conference, 3/5/08

“...The well-being of the global economy is contingent on ready access to energy resources. Notwithstanding national efforts to reduce dependence on oil, current trends indicate an increasing reliance on petroleum products from areas of instability in the coming years, not reduced reliance. The [US] will continue to foster access to and flow of energy resources vital to the world economy.”

National Defense Strategy, June 2008



An Attack on Oil and the Economy?

- **What if... A few Major Mid East Oil Processing Facilities or ports were successfully attacked?**
- **What if... 5-10% of the worlds oil was taken off the market for a period of 6 months when world wide demand is high and supplies are tight?**
- **What if follow-on attacks were threatened?**
- **What if attacks on ports and choke points were also threatened?**



Some of Bin Laden's Views

- **Late 2004, OBL described U.S. invasion of Iraq as effort to dominate Iraq's energy resources**
 - **“And Bush's hands are stained with the blood of all those killed on both sides [in Iraq]... all for the sake of oil, and keeping their [U.S.] private companies in business.”**
- **Steady / affordable oil supply crucial to well-being of US and allies, is focus for al-Qaeda, and is a target in its overall plan to force the United States out of the Middle East by severely damaging its economy**
- **Believes \$100-150+ barrel is proper price for crude, lower prices means stealing from Muslims**
- **Believes Mideast reserves are *“the treasure of our current and future generations’ and must be protected and preserved”***

Al-Qaeda's Plans

- **Dilemma**

- Attacks on the supplies of Muslim-produced oil on which the U.S. and Western economies depend are part of a strategy to bankrupt the U.S.
- Yet, permanent damage to oil reserves would cripple Islam's future economic power
 - *“Here we pause, and urge our brothers, the people and the mujahideen to reserve the [energy] wealth and not involve it in the battle [with the United States] because it is a great Islamic wealth and important economic power for the coming Islamic state”*

- **Solution:**

- Rules out attacks on oil wells and reserves
- Calls for attacks on infrastructure for refining and transporting oil: pipelines, refineries, executives of non-Muslim oil companies, ocean-going tankers and terminals/ports

Past Attacks

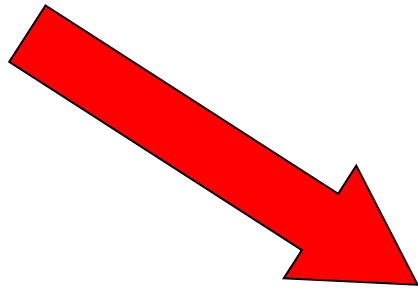
- French oil tanker *Limburg*, 2002
- Lethal Attacks on Western Oil Co Personnel in Dhahran, 2004
- Unsuccessful attack on World's largest oil production facility Abqaiq, 2006
 - Attacked with car bombs
 - Thwarted by Saudi ARAMCO Security
 - Al Qaeda-affiliated cleric Sheikh Abd-al-Aziz bin Rashid al-Anzi published al-Qaeda's doctrine and religious justification for attacking oil infrastructure
 - *“Targeting oil interests is lawful economic jihad. Economic jihad in this era is the best method to hurt the infidels”*



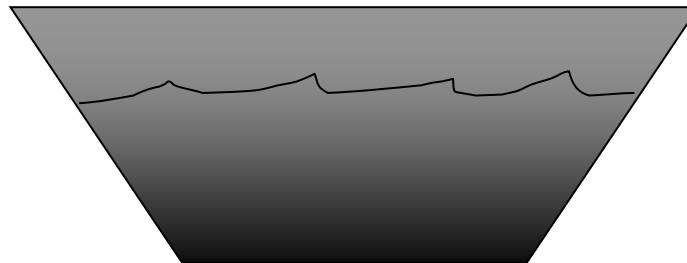
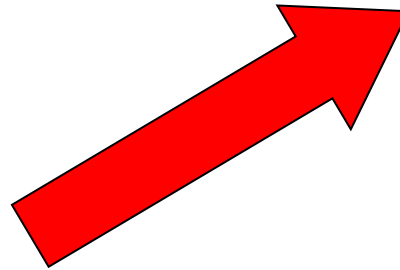
Petroleum Market

- **Price is determined in a global market**
- **Oil is a world wide commodity**

**Global
Supply**



**Global
Demand**



Past Oil Disruptions

- **1956 – Suez Canal Crisis**
 - Nasser takes control of canal, temporarily disrupting oil supplies
- **1967 – Six Day War and Closure of the Suez Canal**
 - Tripled freight costs
- **1970 – Closure of TAP line which transported Saudi oil to Mediterranean**
 - Again drove up freight costs
- **1973 – Yom Kippur War and Arab oil embargo against the U.S.**
 - Drove up cost of oil by 4X from \$2.90 to \$11.65 /barrel - depressed global economy

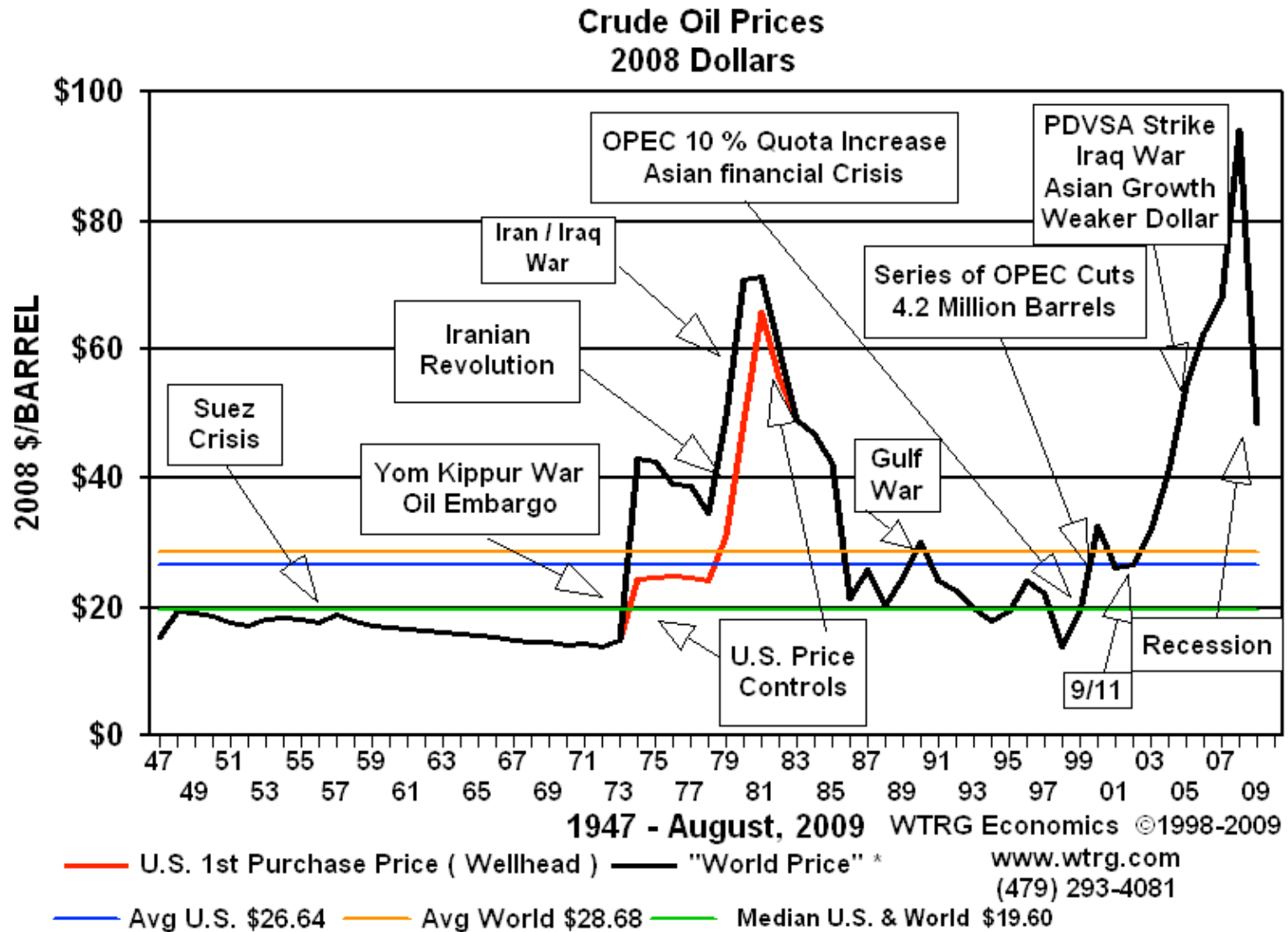


Past Oil Disruptions

- **1979 – Iranian Revolution**
 - oil prices to surged from \$13 to \$40 / bbl
- **1990 – Iraq invades Kuwait**
 - 1991 Gulf War disrupted oil flow from Middle East
 - Very dangerous for Tankers to enter Arabian Gulf
 - OPEC increased production to help stabilize supply shortfall
- **2003 – U.S. led coalition invades Iraq**
 - Iraq oil production drops from 2.5M to 1.3M bbl/day



Historical Price of Crude Oil: 1947-2009



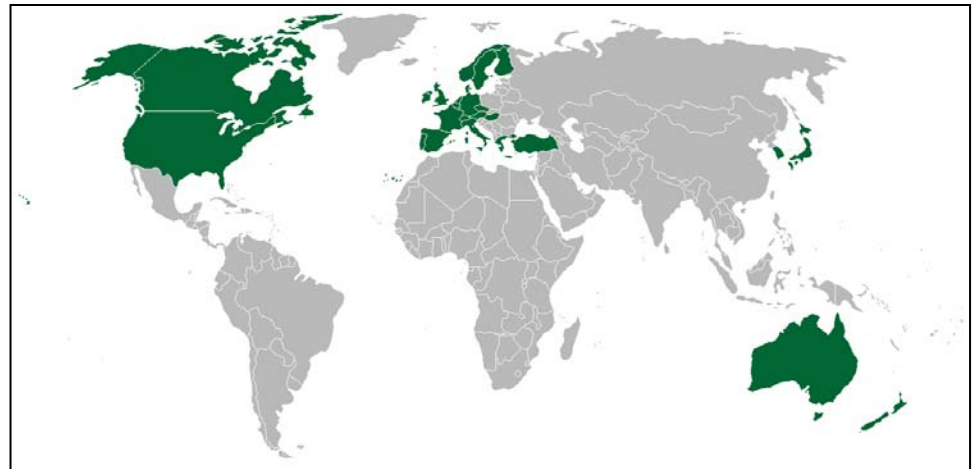
U.S. Strategic Petroleum Reserve

- **Established by Congress in 1975 in response to the Arab oil embargo**
- **Authorized for storage of 1B Barrels**
 - **Original Storage Target = 90 Days of U.S. imports – assumed 11 MBD imports**
 - **Current Inventory 727 M Barrels (at capacity)**
 - **Current capacity = ~ 60 days at 12 MBD imports**
 - **Draw down capacity ~ 4.4 MBD (about 1/3 of US imports)**
- **Centralized in Louisiana and Texas**
 - **Port of entry for 75% of U.S. oil imports**
 - **Major refining, pipeline and marine distribution concentration**
 - **Low cost salt dome storage**
- **Recent Releases**
 - **2008 Hurricane Gustav 5.4 M Barrels**
 - **2005 Hurricane Katrina 20.8 M Barrels**



International Energy Agency

- Paris-based intergovernmental organization founded in 1974 in the wake of the early 1970s oil crisis
- Initially created to prevent disruptions in the supply of oil
- As of June 2007, combined stockpile ~ 4.1 billion barrels
 - 1.5 Billion barrels under government control representing 122 days of imports
- Max Draw rate = 12.9 MBD



IEA Member Countries

IEA Coordinated Emergency Response Measures (CERM)

- **Members have agreed on CERM – plans are on the shelf**
- **Provides a co-operative release of reserves in event of a supply disruption**
- **In consultation, IEA secretariat and members will assess situation and agree on the appropriate IEA volumetric response**
- **Once response volume is agreed to, response shares are apportioned to members according to individual member's share of total combined IEA consumption - (US share ~48%)**
- **Members select from mix of stock draw, demand restraint, and other actions**
- **Past releases**
 - **1991 Gulf War**
 - **Katrina 2005**



Gulf Rig Destroyed by Katrina

So What Would the Maritime Role be?

- **Do critical ports and terminals need to be guarded and who (DOD, allies, others) are recommended to do it?**
 - Yes, but tradeoffs with other DOD's missions (Iraq, Afghanistan)
 - Navy, Marine Corps, Coast Guard, SOF personnel in collaboration with allies
- **Would DOD guard ports, terminals, and production facilities?**
 - Yes - would take a regional cooperative approach
 - Title X issues complicate DOD protecting US infrastructure, but could use a “layered” approach with local port authorities, metropolitan police, National Guard, USCG, DOD
 - Navy can help a lot with ISR, missile defense
 - Effective prioritization would be key to success

Follow-on Attacks?

- **Two Categories**
 - **Follow-on, multi-dimensional attacks by Terrorists on the oil industry, related industries or major ports**
 - U.S. Homeland
 - Rest of the world
 - **Regional interstate war and internal upheavals spurred by a perceived crisis**
 - Disputes over oil producing areas
 - Vulnerable economies suffer instability that leads to repressive measures or conflicts
 - US alliance system and economic dependencies threatened
 - Opportunistic mischief

Worst Case for Follow-on Attacks?

- **Series of attacks against refineries and/or ports**
- **Key choke points (Hormuz, Malacca, Suez) threatened**
- **Current disputes over oil could worsen**
 - **Spratly and/or Paracel Islands**
 - **Other SEA oil facilities**
- **China could use the situation to increase leverage over Taiwan, Japan, other NIEs**
- **Middle East war could break out on suspicion of Nation State complicity in attacking another States assets**

DoD Helping To Stabilize The Global System?

- **Support Homeland Security to prevent follow-on attacks**
- **Provide or assist in security of ports, other critical infrastructure, LOC**
- **Mid East security (as appropriate)**
- **Train, equip national navies for anti-piracy**
- **Convey message that attempts to seize oil production facilities will not work**
- **Use deterrent measures to discourage opportunism**

A New Posture for Maritime Forces?

- **From Cold War to Post-Cold War to E2 Security**
- **Enemy has the intent to disrupt Western economic and energy flows**
- **Is it time to pay more attention to this potential threat?**

Two Schools of Thought on Future Maritime Forces

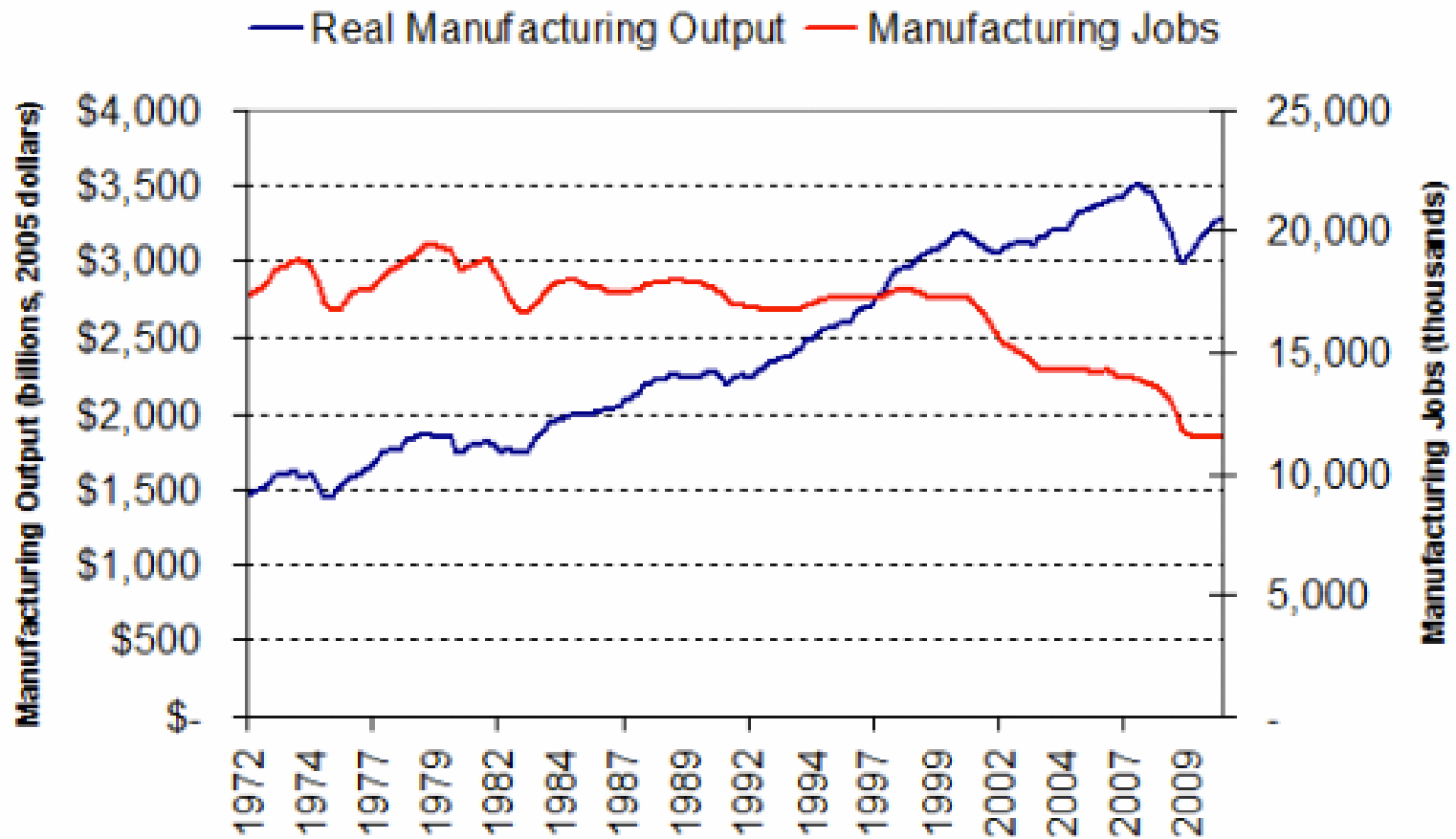
- **Get ready to fight the big one**
 - Power projection, sea control, etc
- **Do other things (also)**
 - E2 Security
 - Anti piracy, humanitarian relief, etc



Where Should the Relative Emphasis be?

Backups

US Manufacturing Trends



Gold Reserves

World official gold holding (December 2010)^[10]

Rank	Country/Organization	Gold (tonnes)
-	 Euro Area	10,792.6
1	 United States	8,133.5
2	 Germany	3,401.8
3	IMF	2,846.7
4	 Italy	2,451.8
5	 France	2,435.4
6	 China	1,054.1
7	 Switzerland	1,040.1
8	 Russia	775.2
9	 Japan	765.2
10	 Netherlands	612.5
11	 India	557.7