

TESTIMONY BY DR. GAL LUFT
EXECUTIVE DIRECTOR, INSTITUTE FOR THE ANALYSIS OF GLOBAL SECURITY (IAGS)
ADVISER, UNITED STATES ENERGY SECURITY COUNCIL

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Subcommittee on Terrorism, Nonproliferation, and Trade

Changing Energy Markets and U.S. National Security

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Mr. Chairman, members of the Committee, I'm honored to represent a group of 25 distinguished Americans called the United States Energy Security Council. The group includes former Secretaries of Defense, State, Interior, Transportation, Homeland Security, Agriculture, Navy and Air Force, Former Chairman of the Fed, three former National Security Advisors, Directors of Central Intelligence and National Reconnaissance Office, U.S. Senators, flag officers, prominent CEOs and a Nobel Laureate all of them concerned about the toxic influence oil's status as a strategic commodity has on U.S. national security and economic well-being. The Council holds that the current changes in energy markets present great challenges to the U.S. but at the same time open unique opportunities that, if correctly exploited, could significantly strengthen America's strategic posture and bring about a fundamental and favorable shift in the world's economic balance of power.

Three major factors frame our current energy security environment:

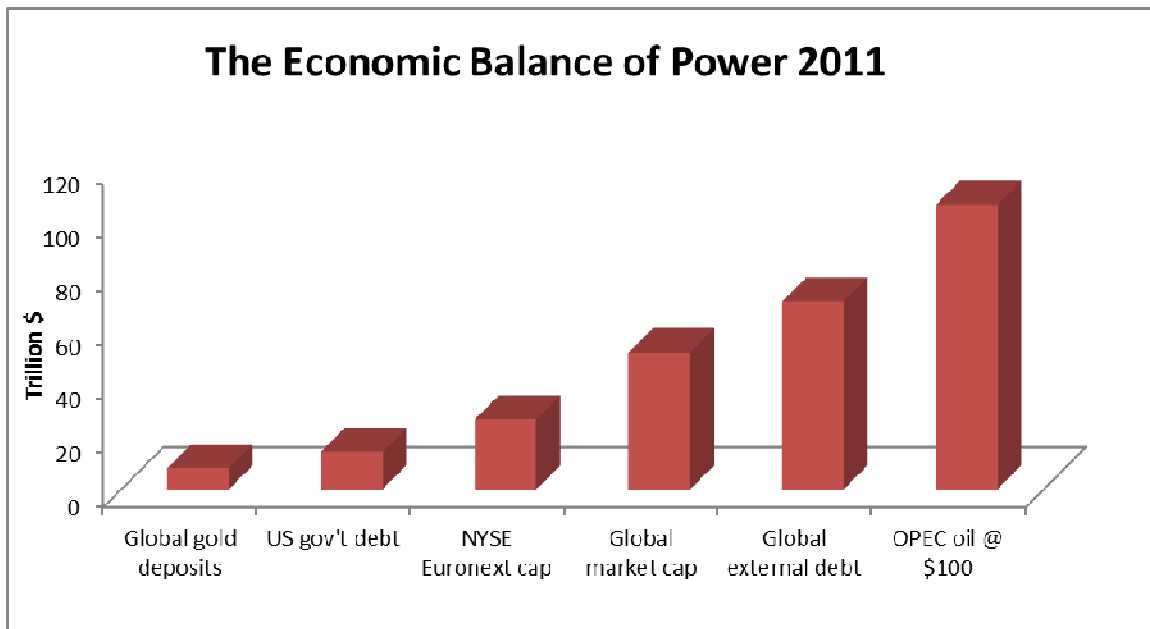
1. Oil's inordinate strategic importance

The vulnerabilities associated with oil dependency do not stem from the magnitude of petroleum imports or consumption but rather from oil's status as a strategic commodity. Oil's strategic status does not stem from the electricity sector – today only 1% of U.S. electricity is generated from oil and only 1% of U.S. oil demand is due to electricity generation – but from its virtual monopoly over transportation fuel. Transportation underlies the global economy and for the most part, our automobiles are blocked to fuels not made from oil. As long as this remains the case, those who control oil will enjoy inordinate power over global commerce and by extension the global economy. Petroleum today occupies the strategic ground that salt did many years ago when it dominated food preservation. Salt deposits conferred national power and wars were even fought over their control. Salt's status as a strategic commodity ended with the invention of alternative ways to preserve food like canning and refrigeration.

Being self-sufficient in oil does not shield an economy from oil shocks and supply disruptions. When the price of oil spikes, it spikes for everyone. In 2008, when oil prices reached a historical high, the UK produced most of the oil it needed, yet the price spike affected all consumers, including those in the UK, where it resulted in protests by frustrated truckers. Contrary to popular belief, only 9% of U.S. oil supply comes from the Persian Gulf. Yet, the U.S. economy has always been - and will continue to be - affected by spikes in oil prices when the Persian Gulf destabilizes.

2. The lion's share of global oil reserves are controlled by a cartel

Seventy-nine percent of global conventional oil reserves are controlled by the OPEC cartel which by its very nature as a cartel is engaged in a deliberate effort to manipulate production in order to maximize the revenue of its member regimes. In terms of control over assets, OPEC is second to none. At \$100 a barrel the value of its proven reserves is more than double the market capitalization of all the world's publically traded companies combined.



Incredibly, despite its control over the lion share of the world's conventional reserves and even though since 1980 the global GDP has more than doubled and non-OPEC production has grown 65%, OPEC's current production has increased by merely 19% and its share of world petroleum production has dropped from 43% to 36%. In other words, OPEC deliberately keeps production capacity much less than its reserves allow, creating a shortage designed to keep prices artificially high. OPEC's flush-with-petrodollars members seem unconcerned by the pain inflicted on the global economy by oil's meteoric price rises. All they have to do is adjust their definition of what is a "fair" price. According to the International Monetary Fund, OPEC's oil revenues in 2011 will exceed \$1 trillion.

The world economy grows, OPEC production barely

	1980	2011	Difference
World population	4.5 billion	7 billion	55%
Number of automobiles	400 million	1000 million	150%
World GDP	22 trillion	51 trillion	130%
Global oil demand	60 mbd	87 mbd	45%
OPEC production	26 mbd	31 mbd	19%
Non-OPEC production	34mbd	56 mbd	65%
Share of global supply	43%	36%	

The Arab Spring has exacerbated the situation. Hoping to avoid the fate of Egypt and Tunisia, Persian Gulf regimes of Saudi Arabia, Kuwait and the UAE showered their subjects with gifts and subsidies which increased their budget obligations significantly. Saudi Arabia alone almost doubled its \$154 billion 2011 budget, committing \$129 billion in salary hikes, subsidies and increase in pensions. Given that the primary income of these regimes is petrodollars, the bill for keeping the Persian Gulf monarchies in power is now being footed by every American. According to the Institute of International Finance, before the recent handouts were announced Saudi Arabia needed oil to sell for \$68.50 a barrel to keep its budget balanced. The expensive response to the protests increased the breakeven price the Saudis need in order to balance their budget to at least \$110 in 2015. The premium on the price of oil exacted by the increase in Gulf social spending has already added in 2011 about 35 cents to the price of a gallon of gasoline Americans had to pay at the pump or roughly \$6 per fill up. Since oil price affects everything we buy from food to plastics, saving the House of Saud added roughly \$1,500 annually to the expenditures of the average American family. At the very same time Americans are engaged in a heated debate about cutting entitlement programs at home, we are forced to fund more and more social programs aimed at keeping Middle Eastern dictators in power.

The need for high oil prices is not unique to Saudi Arabia. As Russia's population dwindles, and the output of its newer fields fails to offset fast decline at mature deposits, Russia's economy will growingly depend on high prices to meet its budgetary obligations. Contrary to popular belief, Russia is much more of an oil exporter than a gas exporter. In 2010, Russia produced 10.2 million barrels a day (mbd) of oil, while consuming only 3.2 mbd. This means that 70% of its crude production was exported or processed into petroleum products, half of which were sent abroad. By contrast, when it comes to natural gas, most of Russia's production remains at home. In 2010, Russia consumed 414 billion cubic meters (bcm) of the 588 bcm it produced, leaving only 30% of total production for exports. This means that Russia will strengthen its engagement and coordination with OPEC with the aim of keeping prices sufficiently high.

Iran, Iraq, Kuwait, Venezuela and Nigeria will all need a higher per barrel oil price as they move toward a rocky future. With a population of 73 million in Iran and 30 million in Iraq and vast governmental sectors and social expenditures, the two countries need today a breakeven price of \$125. By 2025 their populations will stand at 88 million and 45 million respectively. Where will the money come from? There is a limit to the amount of money to be made from exporting carpets, dates and pistachio nuts. There is no limit to the amount of revenues to be made from oil exports.

3. Massive growth in demand emanating from developing Asia

This month seventy years ago a surprise attack against the U.S. Naval base in Pearl Harbor plunged America into a horrific war against Imperial Japan. In focusing on the intelligence failure that enabled the attack, we have ignored the root cause of the calamity: the strategic importance of oil. Oil has always been the bottleneck of Japan's industrialization. To satisfy its needs, Japan adopted an expansionist policy, attacking China in 1937 and French Indochina in 1940. The U.S., source of 80 percent of Japan's imported oil, responded with a total oil embargo. Japan decided to up the ante and seize the petroleum-rich Dutch East Indies. To do so it was necessary to neutralize the U.S. Pacific fleet and this paved the way to Pearl Harbor. One lesson from the war in the Pacific is that when countries become oil starved they tend to miscalculate and resort to assertive foreign policy. This is something worth remembering today as another Asian power, China, thirsts for oil.

China's economic growth is currently the life support mechanism of the world economy. Without it we would all be mired in a deep global recession. But this blistering growth creates challenges that need to be confronted head on today. China's annual vehicle sales jumped about 10-fold in the past decade making it the world's largest auto market. It is the world's second largest oil consumer, and according to the recently published 2011 outlook of the International Energy Agency, it is projected to surpass the U.S. as the world's number one importer by the end of the decade.

Beijing's commitment to "peaceful rise" may be genuine, but in a world competing over resources such good intentions might not be kept. Today, energy is already the main driver of China's international behavior. Its energy needs have brought Beijing to turn a blind eye to human rights violations in Sudan, Myanmar and Uzbekistan. China's pursuit of oil and gas resources in the East China Sea and the South China Sea has created tension in its relations with Japan and the members of the Association of East Asian Nations. In the energy rich Caspian Basin, China is strengthening its energy bonds with Turkmenistan, Uzbekistan and Kazakhstan while curbing U.S. influence in the region. In Africa and Latin America, the Sino-American relations may be heading toward a Fashoda moment as China's neo-colonialism takes root. Last but not least, in the tumultuous Persian Gulf, the U.S. and China are increasingly likely to step on each other toes as the 21st century progresses. China's energy deals with Iran have already brought Beijing to block U.S. attempts to get the UN Security Council to impose crippling sanctions against Tehran for continuing to develop nuclear weapons.

An oil thirsty China is likely to be one of America's most pressing international security concerns in the decades to come, and in all likelihood the next president of the U.S. may be called to lead the country during an international crisis sparked by China's oil pursuits.

Even if the scramble for resources can remain peaceful, the impact on energy markets would be profound. According to U.S. Energy Security Council member John Hofmeister, former President of Shell Oil North America, China's oil demand is projected to grow from 9 mbd today to 15 mbd by 2015. India's demand will grow from 4 to 7 mbd and the rest of the developing world would need another one mbd. In total, 10 million new barrels per day, equivalent to another Saudi Arabia, would have to come online in just a few years. No one can convincingly point out where this oil might come from.

U.S. response thus far: More self-sufficiency, less prosperity

Historically, the U.S. has focused on policies that increase either the availability of petroleum or the efficiency of its use. These approaches, while useful, are tactical rather than strategic. Reducing oil demand through fuel economy absent competitive markets in transportation fuels serves to reduce the trade deficit but it is insufficient to change the strategic status of oil. When oil-consuming countries increase their domestic production or reduce net demand, OPEC responds by throttling down supply to drive prices back up. This is essentially what has happened in recent years.

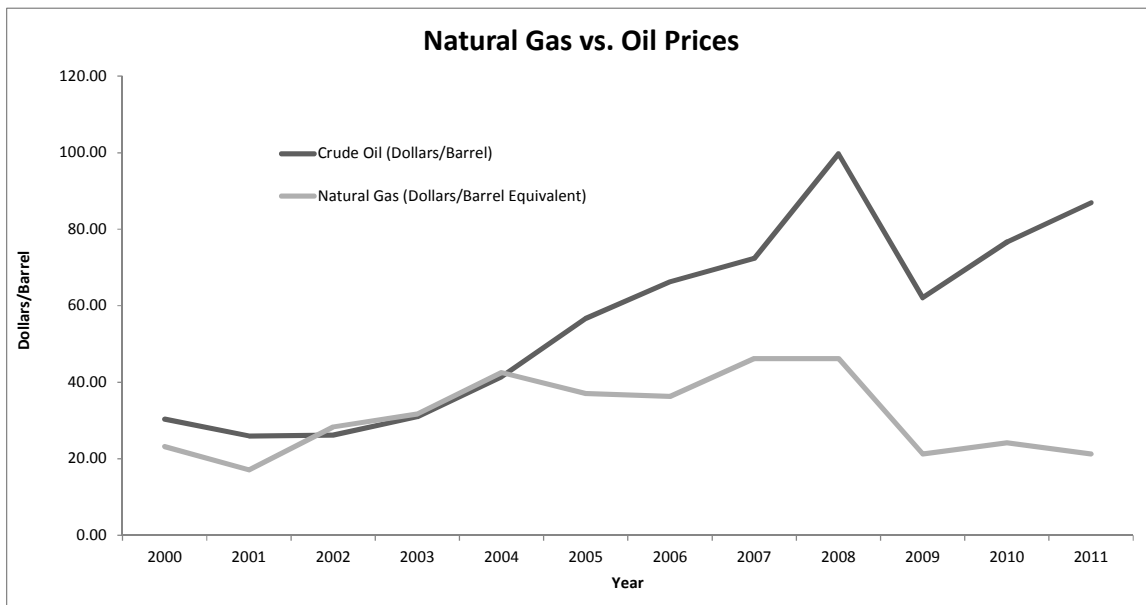
Since President George W. Bush's second term, the U.S. response to the undergoing changes has been mainly in the realm of increasing the fuel efficiency of cars and trucks as well as supply side solutions. Technologies to recover non-conventional oil and natural gas in various areas of the continental U.S. have not only matured but are also more economically feasible than ever due to the permanently high oil prices. Tight oil and shale oil have added an amount of oil production almost equivalent to Libya's oil output. Hydrofracking and horizontal drilling technologies have created a glut in the domestic natural gas market. As a result of these efforts, in May 2011 the Department of Energy announced that U.S. imports of petroleum and its products declined from 12.5mbd in 2005 to 8.6mbd in 2011. U.S. import dependency dropped to 46% of America's consumption down from 60% in 2005. A 31% reduction in our level of imports in just seven years is a non-trivial achievement. But the bottom line is that while during 2005-2011 America's oil imports dropped, its foreign oil expenditures climbed from \$247 billion in 2005 to \$367 billion in 2011. The share of oil imports in the overall trade deficit grew from 32% in 2005 to 51% in 2011. The price of a gallon of regular gasoline in 2005 was \$2.30; in 2011 it hovered around \$4. Despite the slowdown in demand, in 2011 American motorists paid more for fuel than in any other year.

	2005	2011	Difference
Oil demand (mbd)	20.8	18.9	-9%
Number of barrels imported (mbd)	12.5	8.6	-31%
Import dependence	60%	46%	-14%
Cost of imports	\$247 billion	\$367 billion	48%
Price of gallon of gasoline	\$2.30	\$3.80	65%
Oil imports' share of trade deficit	32%	51%	60%

In other words, we learned how to become more efficient, and we have increased domestic production, but from an economic standpoint our efforts have proven futile: our national oil import bill grew by 48%, the cost per gallon at the pump increased by 65% and U.S. trade deficit grew by 60%. Clearly something is wrong with our method. Oil's strategic importance was not reduced by the increase in efficiency or by the expansion of domestic production. During the 2005-2011 period, nearly 100 million new petroleum-only vehicles rolled onto U.S. roads, each with a lifespan of nearly 15 years. In doing so, we extended oil's virtual monopoly over transportation fuel by nearly two decades.

Immediate goal: opening the fuel market to natural gas

Historically, natural gas prices have always tracked oil prices. But the recent shale gas revolution has disconnected prices of the two energy commodities. Since the collapse of the financial markets in 2008, oil prices have rebounded more or less to their pre-2009 level whereas natural gas prices remained suppressed. The price of natural gas has declined by about 70% between 2008 and 2011. The result: we are awash with cheap natural gas, and the utility and chemical industries, the two primary natural gas users, are unable to absorb much more of it. Shale gas is currently 34% of U.S. natural gas production and will reach 43% in 2015 and double by 2035 to 60%. But if prices remain low, the natural gas industry will have little incentive to invest in further growth and the gap between the price of oil and natural gas will rapidly close. However, sending a market signal that our vehicles are open to fuels made from natural gas would give the industry the certainty it needs to continue and grow this sector to the benefit of our economy.



A number of automotive technologies allow us to take advantage of natural gas' low cost. One obvious way to use natural gas in automobiles is to turn it into electricity and use it as stored electrons on board battery operated vehicles. Plug-in-hybrid and pure electric vehicles are entering the market slowly. They are clean, cheap to operate and quiet and in

many respects their performance is superior to that of gasoline cars. Furthermore, vehicle electrification offers great flexibility. If natural gas prices were to spike, there is always coal, nuclear or renewable power to rely upon for power generation. But due to the high cost of the automotive batteries, mass market penetration of plug-in-hybrid-electric vehicles and pure electric vehicles will take a very long time. For this reason, parallel to advancing the electrification of transportation, the U.S. needs to open the transportation fuel market to competition from a variety of fuels that are commercial and economic today.

Projections for battery powered vehicles market penetration

Study	Projection
U.S. National Academy of Sciences (2010)	3% of sales by 2015 and 15% by 2035
Credit Suisse (2009)	7.9% of sales by 2030
U.S. Energy Information Administration (2011)	1.8% of sales in 2020 and 3.8% by 2035
IHS Global Insight (2010)	20% of sales in 2030
Roland Berger Strategy Consultants (2011)	8-10% of sales by 2020
The Boston Consulting Group, (2010)	5% of sales by 2020
Deloitte, (2010)	3.1% of sales by 2020

Another way to run cars on natural gas is to convert them to run on compressed natural gas (CNG). CNG vehicles have a dedicated fuel line and a large gas canister in the trunk. Ready-made CNG cars are barely manufactured by the OEMs. The cost of converting a light-duty vehicle to CNG is expensive - roughly \$10,000-\$15,000. At such a high incremental cost, the payback period for most Americans, even with current low natural gas prices, would be longer than the expected lifetime of the car. Payback period would only be reasonable in high mileage users (over 35,000 miles per year) such as taxis, buses, garbage trucks, etc.

This leaves one realistic way of opening cars to natural gas without adding thousands of dollars to the cost of the vehicle. A recent Massachusetts Institute of Technology study entitled *The Future of Natural Gas* determined the most economic way to utilize natural gas in transportation is to convert it to the liquid fuel methanol (wood alcohol) due to low cost, mature production and vehicle technology. Our transportation system is based on liquid fuels. A flex fuel vehicle that can run on methanol (and ethanol) in addition to gasoline costs automakers about \$100 more to make than a gasoline-only car. Today about 90% of the worldwide production of methanol is derived from natural gas. The wholesale price for natural gas-derived methanol is \$1.13 a gallon — without any subsidies. As methanol packs less energy per gallon than gasoline, a consumer would pay about \$3 including taxes, distribution, and retail markup to travel the same distance on methanol as on a gallon of gasoline, well below the current national average for gasoline. The MIT report points out that the production cost of natural gas conversion to methanol is 30 percent cheaper on an energy equivalent basis than conversion to diesel fuel. China is already blending 15% methanol – in China primarily made from coal – in its automotive fuel, and 26 of its mainland 30 provinces have carried out testing and demonstrations of methanol fuel and methanol fuel vehicles. Methanol is so economically attractive that illegal blending is rampant in China.

The Open Fuel Standard

The only way to reduce the strategic importance of oil is to eliminate its monopoly status. For this to happen, the market must have viable choices that enable consumers to respond quickly to changes in oil prices by substituting for oil. Drivers can't rapidly change the fuel economy of their vehicles, but, with vehicles that enable fuel competition they could quickly change what fuel their vehicles use. This cannot be done as long as the new cars rolling onto our roads can run on nothing but petroleum. If we allow all those cars to block fuel competition, we are locking our future to petroleum for decades to come. I cannot think of something more detrimental to America's security than Congress allowing this to happen. Congress can break oil's virtual monopoly over transportation fuel by enacting an Open Fuel Standard, ensuring that every new car put on the road is open to some sort of fuel competition. The cheapest way to enable fuel competition is the flex fuel car, which looks and operates exactly like a gasoline car but has a \$100 feature which enables it to run on any combination of gasoline and a variety of alcohol fuels made from natural gas, coal and biomass.

The bipartisan Open Fuel Standard Act (HR 1687), introduced in the 112th Congress by Reps. John Shimkus, Eliot Engel, Roscoe Bartlett and Steve Israel, would ensure that cars sold in the U.S. are open to fuel competition so drivers can compare prices per mile and make on-the-fly choices between gasoline or diesel and non-petroleum fuels. This in my view is the most important piece of legislation that could knock oil off its strategic pedestal. The technology neutral Open Fuel Standard would ensure that 50% of new automobiles in 2014, 80% in 2016, and 95% in 2017, would be warranted to operate on at least some non-petroleum fuels in addition to or instead of petroleum based fuels. The Open Fuel Standard would provide certainty to investors to expand non-petroleum fuel production capacity and fueling stations to install pumps supplying economically competitive non-petroleum fuels.

Mr. Chairman, a new economic and geopolitical order is shaping up right before our eyes increasingly invalidating much of the strategic paradigm to which we have been accustomed. For America, a continuation of the petroleum standard guarantees economic decline and perpetual economic and political enslavement to the OPEC cartel and its associates. To bring down the price of oil before it hits a critical point beyond which economic collapse and sovereignty loss become inevitable, we must replace the petroleum standard with an open and competition transportation fuel market. Without such action, if prices of oil were to climb to well over \$200 a barrel due to the fall of the House of Saud, war in the Persian Gulf or a civil war in Algeria or Nigeria – all of those are not unlikely scenarios – the petroleum-only vehicle would force us to pay exorbitant fuel prices in order to get to our workplace - if we still have one.

Failure to strip oil of its strategic status would seriously jeopardize America's ability to remain the great power of the 21st century and could expose Americans to an economic crisis which would make the current one a fond memory.



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