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on the
Geopolitical Implications of Rising Oil Dependence and Global Warming

before the
Select Committee on Energy Independence and Global Warming
U.S. House of Representatives

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Mr. Chairman:

Let me begin by congratulating you and your colleagues on establishing this new select committee. The issues in your purview are among the most important facing this country and the world.

This is underscored by the topic of today, your first hearing. The geopolitical implications of rising oil dependence and global climate change for the United States are great and likely to become even greater with time.

Let me address each of the questions you have posed to me and my fellow witnesses.

I will begin with how ever-increasing dependence on imported oil affects U.S. national security. The short answer is that it does, in many and important ways. Four stand out:

First, American and global dependence on the Middle East for oil artificially increases the importance of this part of the world. This is not to say it would not be important even if there were no oil in the region or if the United States and the world were not dependent upon the region's oil. The United States would still have important, even vital concerns relating to terrorism, non-proliferation, conflict resolution, Israel, and so on. But there is no denying that energy makes this part of the world far more vital than it would otherwise be and reduces American willingness and ability to tolerate developments that were they to occur in other regions would provoke less of a response. And just to be clear, let me stress that this concern for oil and gas is not tied to protecting the interests of the large oil companies but rather to maintaining adequate access on acceptable terms to a vital raw material.

Second, the fact that the United States imports roughly 60% of the oil it consumes leaves the U.S. economy vulnerable to supply interruptions that even in small amounts can cause price increases and in larger amounts cause not only price increases but economic disruption. The United States would be vulnerable economically to supply interruptions (and price spikes) even if it imported far less oil given the extent to which others are vulnerable and the degree to which U.S. economic fortunes are tied to those of others.

Third, the need to pay for oil imports exacerbates the already considerable current account deficit, which in turn further weakens the dollar and makes the United States more dependent on (and vulnerable to) the decisions of other governments. Approximately one-third of the annual current account deficit, or some $250 billion, is attributable to oil imports.

Fourth, American demand for oil contributes to upward pressures on prices and provides massive revenues to producers. One of the top five oil exporters to the United States is Venezuela, whose foreign policy is anti-American in large measure. The top two foreign sources of oil, Saudi Arabia and Russia, carry out policies at home and abroad that at times run counter to American values and interests. Iran, the world's forth largest exporter of oil, is in large part able to conduct the problematic foreign policy it does because of high oil revenues. In addition, massive inflows of oil revenues can be as much a liability as a windfall in another way in that they often work against efforts to promote market economies and the rule of law.

The second question posed asks whether it is urgent that the United States do something about this state of affairs. It is. It is also a national failure, a bi-partisan failure, that this country is consuming and importing as much oil as it is today, more than three decades after the first oil shock that accompanied the October 1973 Middle East conflict. It is a matter of some debate as to whether U.S. energy security has actually deteriorated despite that and subsequent crises: the United States is more dependent than ever on imports, but U.S. energy intensity is down and international markets seem better able to weather disruptions. But whatever the relative judgment on energy security, it is not what it needs to be in absolute terms. That said, it has taken us decades to get to where we are today, and will take decades for the situation to change fundamentally. There is, however, no reason to delay. Every day we as a country wait to act only increases the price we pay for the current state of affairs and makes it that much more difficult and costly for us to change them.

Should climate change be treated as a national security matter? The short and clear answer is "yes." Countries are unlikely to go to war over levels of greenhouse gas emissions, but they may well go to war over the results of climate change, including water shortages and large-scale human migration. Climate change, by contributing to disease, extreme weather, challenges from insects that attack both food production and people, water shortages, and the loss of arable land, will also contribute to state failure, which in turn provides opportunities for activities such as terrorism, illegal drugs, and slavery that exploit "sovereignty deficits." Development, democracy, and life itself will not thrive amidst such conditions.

The last two questions can best be answered together, as they ask for recommendations for reducing oil dependence and greenhouse gas emissions and addressing both climate change and energy security.

Energy security is not easy to define. It is a relative concept, in the sense that it is impossible to achieve total energy security – just as it is impossible to achieve full security (or complete invulnerability) in any realm. A traditional definition of energy security would be one that emphasized minimizing U.S. vulnerability to supply interruptions and price increases. This "reliability and affordability" approach to energy security is inadequate, as it does not capture the additional rationales for reducing consumption of oil (imported or otherwise) in order to curtail the flow of resources to unfriendly governments and to reduce the adverse impact on the world's climate. As a result, we need to adopt a broader definition of the concept. Energy security is directly related to the ability to manage the form and amount of energy produced, consumed, and imported so that the United States reduces its vulnerability to supply and price fluctuations, the flows of resources to unfriendly producer countries, and the adverse impact on the global climate.

A range of prescriptions, some familiar, some not, flows from this broader approach to energy security. One is the desirability of diversifying sources of oil and other energy supplies. Such diversification reduces the impact of losing for whatever reason access to the output of any single producer. The United States has done this in the oil realm, as only Canada provides the United States in the range of 20% of its total oil imports. 90% of U.S. crude oil imports are distributed to more than ten countries.

The United States can also help reduce its vulnerability to supply interruptions through contingency planning, including the maintenance of the strategic petroleum reserve (SPR) and various stand-by international sharing arrangements. Congress would be well-advised to assess both the adequacy and guidelines for use of the SPR. Also in need of overhaul is the International Energy Agency, which needs to be amended (or complemented by the International Energy Forum) so that major countries such as India and China are fully included in global planning.

The entire energy infrastructure – production areas, pipelines, pumps, refineries, terminals, power plants, and so on – needs to be made more robust and made more resilient. This involves better intelligence and law-enforcement cooperation, enhanced protection of critical sites, and provision for the redundancy of critical components. There is also no substitute for the ability to protect and clear critical transitways.

Supply diversification and related measures have their limits, however. The price of oil reflects global supply and demand, so the price of oil will rise if more than a negligible amount of oil is taken off the market. In addition, the United States is in principle more vulnerable to supply interruptions given the rise in terrorism and the increased role of national oil companies, who are more likely to reflect government policy when it comes to making decisions about production and sales.

Another way to increase diversification of supply is to increase domestic production, which is now below 7 million barrels a day. Expressed differently, the United States now imports some 2/3 of the oil it consumes. It is doubtful new drilling (even with new technologies that increase recovery rates) could appreciably affect this number given the falling output of many mature wells and fields and the growing domestic demand for oil. Still, the United States ought to increase the amount of exploration and development that it allows, especially in coastal areas. Again, though, no combination of diversification of external oil supplies and increased domestic production can satisfy the demands of a comprehensive energy security posture.

Alternative forms of energy, including coal, natural gas, nuclear, solar, wind, geothermal, and biofuels, are also central to any discussion of energy security. One reality to contend with though is the fact that most of the oil produced and imported is used in the transport sector—and that most of what fuels the transport sector is oil. Massive substitution is not a near-term option. In the medium and long-term, fuel-efficient "pluggable" hybrids that use electrical power appear promising. So as well does cellulosic biomass, which can substitute in significant quantities for gasoline without disrupting food supplies or requiring anything near the amount of energy to produce corn-based ethanol. One short-term step that should be taken is the removal of the tariff on ethanol imports.

Coal is and will remain the principal fuel for electricity generation. It generates half the electricity in the United States. Coal is readily available in the United States as well as in both China and India. It is also relatively inexpensive. China is building large coal-fueled plants at the rate of two per week; India is building them at a rate closer to two per month. The problem is that coal is a major contributor to greenhouse gas emissions. As the recently-released MIT study *The Future of Coal* makes readily apparent, the climate change problem will continue to worsen unless something can be done about coal. The reality, though, is that there is no realistic alternative to coal; the principal question is whether technology can be developed, proven and introduced with sufficient speed and on a sufficient scale to capture and then sequester the massive amounts of carbon dioxide existing and planned plants will produce. Governments ought to work with industry in creating an investment and regulatory environment that accelerates the emergence, testing, and fielding of such technology in the United States and around the world. In the meantime, the government should only authorize the construction of coal plants that use the most advanced, efficient and clean technologies and that are designed to incorporate emerging technologies designed to capture carbon.

Nuclear power is the ideal form of fuel for electricity production given that it adds hardly at all to climate change. Nuclear power stations now provide some 20% of U.S. electricity. There will be hurdles to maintaining, much less increasing, this percentage. Politics is one problem. The last reactor to be completed was ordered nearly four decades ago and became operational in 1996. There are currently 103 reactors operating. Even with 20 year extensions of their planned lifespan all existing reactors will be decommissioned by the middle of this century. Just replacing them will require building two reactors a year for the next fifty years. It is not clear this rate of construction in the

United States (coupled with ambitious building programs elsewhere) is sustainable. Indeed, a forthcoming study (*Nuclear Energy: Balancing Benefits and Risks*) written by Charles D. Ferguson of the Council on Foreign Relations concludes that "Nuclear energy is not a major part of the solution to further countering global warming or energy insecurity. Expanding nuclear energy use to make a relatively modest contribution to combating climate change would require constructing nuclear power plants at a rate so rapid as to create shortages in building materials, trained personnel, and safety controls." Other analysts are more bullish about the prospects for nuclear power, although even if they are correct it will not prove transformational for decades if then. In addition, a greater emphasis on nuclear power will raise security challenges as well as demands for safe storage of spent fuel.

In short, developing alternatives will over time make a difference. But no energy security policy can be considered comprehensive without a significant emphasis on reducing the consumption of oil and oil products. The United States daily consumes some 21 million barrels of oil and oil products. The policy question is how best to slow or better yet reverse this growth.

Increasing the tax on gasoline would have the most immediate impact. U.S. taxes (18.4 cents per gallon at the federal level) are low by world standards. If politics required, an increase in the federal fuel tax could be offset by reductions or rebates in other taxes or in designating revenues for energy-related investments.

Tightening fuel efficiency standards is a good mid-term approach given the time it will take for more efficient cars and trucks to be built and to replace the existing fleet. One area deserving exploration is what might be done to accelerate the replacement of low-mileage vehicles with hybrids and relatively fuel-efficient cars and trucks.

All of the above would affect climate change. Climate change policy, however, is something different. Congress and the administration should start developing guidelines for the post-Kyoto Protocol, post-2012 world. They should work with state governments, business, and academic experts. It is essential that the United States be a full participant in any negotiations and in any resulting regime – and that it approach such negotiations with a national policy in place. Developing countries need to be a central (although not necessarily equal) participant in a post-Kyoto framework. Some sort of carbon tax or cap and trade system will likely work best. Factored into any plan should be a positive credit for forested areas that absorb carbon dioxide. Even before then, U.S. aid policy should be adjusted to provide financial incentives to discourage deforestation and encourage reforestation.

We will also need to consider whether and how future trade negotiations and the WTO process itself address climate change. Many of the innovations that will reduce emissions (such as nuclear power stations and cleaner coal plants and capture and sequestration technology) are costly. Questions such as how to treat subsidies and the role (if any) of tariffs to deal with producers who give short shrift to climate concerns require study.

I want to close with a few thoughts on this subject. Despite the formal name of this select committee, "energy independence" is beyond reach if by independence is meant an ability to do without imports of oil and gas. A recent Task Force (*National Security Consequences of U.S. Oil Dependency*) sponsored by the Council on Foreign Relations concluded "During the next twenty years (and quite probably beyond) it is infeasible to eliminate the nation's dependence on foreign energy sources." A more useful and realistic task is how to manage energy dependence or, better yet, how best to promote energy security.

Similarly, energy security cannot be promoted through any single policy or breakthrough. Rather, what is required is a family of policies. The U.S. government will need to adjust to help bring this about. The creation of this select committee is a step in the right direction; so, too, would be a directorate in the National Security council staff devoted to energy security and the inclusion of the secretary of energy more regularly and centrally in national security meetings. Energy security properly defined is now too intimately a part of overall security to be left out of the most important deliberations of our country.