The Geopolitics of Energy into the 21st Century

*Executive Summary**

Introduction

The Center for Strategic and International Studies launched its Strategic Energy Initiative eighteen months ago on the premise that the benign global energy situation that has prevailed since the late 1980s masks two dangers.

- First, it obscures significant forthcoming geopolitical shifts that could affect future global energy security, supply and demand;
- Second, it leads to complacency among policymakers and the public about the need to incorporate long-term global energy concerns into near-term foreign policy decisions.

This report assesses the international energy supply and demand relationships likely to prevail in the next two decades. It highlights the different ways that geopolitical developments may affect global energy markets between now and 2020. In light of the world's future energy needs, it points out the contradictions inherent in some of the foreign policies pursued by the United States and other Western governments. Finally, the report offers policy considerations that could help ensure that adequate energy supplies are available to meet projected worldwide demand; that these supplies are not excessively vulnerable to major interruptions; and that they are produced in ways that minimize damage to the environment.

Energy Outlook to 2020

During the next twenty years, providing there is no extended global economic dislocation, *energy demand* is projected to grow by over 50 percent. This growth will be unevenly distributed, increasing in the industrialized world by some 25 percent while doubling, from a much lower base, in the developing world, with Asia accounting for the bulk of this increase.

This growing energy demand will be met over the next two decades in essentially the same ways as it is met now. *Fossil fuels* will provide the bulk of global energy consumption, rising from an 86 percent share in 2000 to 88 percent in 2020. Although *crude oil* will dominate global energy use and *coal* will retain its central role in electricity generation, *gas* use will increase noticeably. *Nuclear power* will decline, while *hydropower* will plateau. *Renewables* and *alternative energy* sources, while growing in absolute terms, will not capture a greater relative share of the market.

The most noticeable trend in the *relationship between energy exporters and importers* during this period will be the growing mutual dependencies between energy suppliers and consumers. Key aspects of this trend are as follows:

- The Persian Gulf will remain the key supplier of oil to the world market, with Saudi Arabia in the unchallenged lead.
- While the Gulf share of world oil production continues to expand, that of North America and Europe, the world's most stable regions, is projected to decline.
- The share of world oil production from the former Soviet Union is projected to increase, from 9 percent to almost 12 percent.
- Asian dependence on Gulf oil will rise significantly.
- European dependence on Gulf oil will remain significant, and U.S. dependence on imported oil will continue its steady growth.
- The European need for natural gas will be covered by a small handful of suppliers, Russia being the most significant.
- Anticipated growth in the use of natural gas must be accompanied by massive investments in this sector's infrastructure.

Geopolitics and Energy: A Symbiotic Relationship

How Might Geopolitics Affect Energy?

Four main geopolitical trends are likely to influence energy during the years ahead.

1 The behavior of world powers: In a world that has one superpower but is not unipolar, the potential for armed conflict in energy-producing regions will remain high. As a result, changes in U.S. alliance relationships in Europe, the Gulf, or Asia could have major impacts on global energy security. U.S. concerns over the proliferation of weapons of mass destruction and the desire to promote democratization and market liberalization around the world will also have a significant effect on key energy exporters. The future viability of the energy-producing states in the Caucasus will be shaped by the competing interests of Russia, the United States, and other regional powers. The rising dependence of China on Gulf oil could well alter political relationships within and outside the region.

2 The continuing domestic fragility of key energy-producing states: The world has been drawing its energy supplies from unstable countries and regions throughout the Twentieth Century. By 2020, however, fully 50 percent of estimated total global oil demand will be met from countries that have a high risk of internal instability. A crisis in one or more of the world's key energy–producing countries is highly likely in the next twenty years.

3 Globalization: Economic globalization will impose new competitive and political pressures on many of the world's leading energy producers. It will serve as a spur for growth in global energy demand. It could also lead to serious swings in energy demand since country-specific or regional recessions can now be quickly transmitted around the world.

4 The growing impact of non-state actors: Using new information technologies, NGOs will play a growing role in defining the ways that energy is produced and consumed. Terrorist groups, with access to the same technologies, will be in a position to inflict greater damage on increasingly complex energy infrastructures.

How Might Energy Affect Geopolitics?

There are four main ways in which energy may affect geopolitical outcomes:

1 The Negative Externalities of Swings in Energy Demand: A dramatic decline in global energy consumption early in the next century, brought on by economic recession, could trigger instability in many of the world's major energy exporting countries. Conversely, continually encouraged by rising energy demand, would place more power in the

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* The results of this study were presented by Guy Caruso, Executive Director of the CSIS during its preparation, at the 23rd International Meeting of IAEE, June 7-10 in Sydney, Australia.

hands of the exporters.

2 Competition for energy in East Asia: As countries in Asia seek to secure growing levels of energy imports, two geopolitical risks emerge. First, historical enmities might boil over into armed conflict for control of specific energy reserves in the region. Second, China might seek to build political and military ties with energy exporters in the Gulf that would be of concern to the United States and its allies.

3 Energy and Regional Integration: Energy infrastructure projects could serve to strengthen bilateral economic and political ties in certain instances. In Asia, for example, energy networks, along with trade liberalization, could serve to reduce historical tensions and place Asian economic growth on a firmer footing. Similar forces might come into play in Europe (linking Russia to the European Union) and in South Asia (drawing Bangladesh and India closer together), and in the Far East, linking Russia and China.

4 Energy and the environment: Environmental concerns will exercise increasing influence on energy issues in the next decades. Because the process of industrialization is so crucially linked to the factors believed to cause climate change, a new political fault line could emerge between developed and developing countries if no consensus emerges on an international strategy for reducing carbon emissions.

Policy Contradictions and Considerations

The interplay of geopolitics and energy early in the next century is at the root of an array of complex policy challenges that governments around the world must confront today. The three interlocking policy challenges are to ensure that (1) in the long-term, there will be adequate supplies to meet the world's energy needs; (2) in the short-term, those supplies are reliable and not subject to serious interruptions; and (3) throughout, they are produced and consumed in ways that are environmentally acceptable.

Energy Availability

Western policy today contains a fundamental contradiction. On the one hand, oil and gas exports from "rogue" states are expected to play an increasingly important role in meeting growing global demand, especially to avoid increasing competition for energy with and within Asia. However, the lack of a coordinated Western approach toward three of these rogue states– Iran, Iraq, and Libya – may prevent them from building the necessary infrastructure to meet the upward curve in energy demand in time.

A similar contradiction exists in U.S. policy toward the Caucasus and Central Asia, where the United States is committed to reinforcing the newly independent states, but where contrasting U.S. policies toward Iran, Turkey, and Russia are likely to restrict the construction of commercially-viable pipelines to export Caspian oil and gas. A policy approach that ties exports primarily to one pipeline route before the market viability of that route is known may undercut the pace of energy development in the region.

If Western governments are to ensure adequacy of supply early in the next century, they will need to take a more forceful approach toward encouraging key energy-producing countries to open their energy sectors to greater foreign investment. Increased private investment must be made today in production facilities, especially in the Gulf, and in transportation infrastructure, especially in Asia, if the world's energy supplies are to reach markets in sufficient quantities in 2010-20.

Policy Considerations

- Given the continuing importance of a small group of energy-producing countries to the future health of the global economy, **it is vital that the United States and other Western governments place diplomatic relations, trade policies, and foreign assistance programs with each of these countries at or near the top of their list of policy priorities.**
- In cases where major energy-producing countries run the risk of sanctions, **Western governments should make every effort to ensure that the coverage of the sanctions is as targeted as possible.** This should include a cost-benefit analysis of whether curtailing investment in, or revenue from, energy production will genuinely dissuade the target government from the specific behavior that provoked the imposition of sanctions.
- Oil and gas exports from the Caucasus and central Asia in a East-West transportation corridor could be a valuable alternative source of energy supply in the next century. **Providing that a "western route" bypassing Russia and Iran is feasible, Western governments should not obstruct the development of alternative routes that would ultimately offer these countries a diverse set of options to transport oil and gas to market**.
- It is in the self-interest of the United States and other Western governments to encourage China to diversify its sources of energy imports and not rely excessively on the Gulf. **Western policy-makers should assess whether tax incentives and concessional credits might encourage Western energy companies to help develop an import infrastructure both into China and on to other countries in the Far East.**
- **Western governments must use whatever political leverage they possess within key energy-producing countries to encourage market reforms that will improve the performance of the energy sector, including openings for foreign investment.** This would include, inter alia, provisions for the enforcement of contracts, guarantees for private property, anti-corruption measures, and stable tax regimes.

Energy Reliability

In the early decades of the 21st Century, because burgeoning energy demand must be met largely by a small number of oil and gas suppliers, the *risk posed by supply interruptions will be greater* than is presently the case.

In this context, the United States may seek relief from its self-imposed responsibility as the protector of the sea lanes around the world over which increasingly larger amounts of fuels will be transported. At the same time, there is no comparable protector for the increasingly important long-distance land-based energy transportation infrastructure in the next century.

Military conflict remains a threat to most energy-producing regions, particularly in the Middle East where almost two-thirds of the world's oil resources are located. In addition, domestic turmoil within key energy producing

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countries constitutes another threat to reliability of energy supplies. At least 10 of the 14 top oil-exporting countries are potentially unstable.

To meet these challenges to reliable supply, importing nations must engage in contingency planning. The practice of holding government-financed strategic petroleum reserves is one method of limiting the impact of supply interruptions, provided that the stocks held are truly reserved for the intended purpose. For the foreseeable future, however, it will be impractical and prohibitively expensive to hold strategic gas reserves.

Policy Considerations

- **The United States should retain as far as possible its ability to defend open access to the Gulf and international sea lanes.** At a time when the administration faces myriad competing demands for military and peace-keeping interventions, this mission should be considered a strategic priority and may call for greater emphasis on, and increased investment in, appropriate military capabilities.
- **U.S. allies in Europe and Asia should be prepared to shoulder a greater burden of the cost of sea lane protection** and should coordinate with the United States on the forces, capabilities, and deployments that would be least duplicative.
- As Western governments seek to defuse regional rivalries, they should place **special diplomatic emphasis on confidence building and other tension-reducing measures in areas that could threaten a serious interruption to oil and gas supplies**.
- In East Asia and the Gulf, **collaborative energy infrastructure projects could play an important role in lessening the risks of future conflict over energy resources.**
- **Governments must find new ways to protect critical energy infrastructure.** At a government-to-government level, international agreements to protect pipeline systems might have a deterrent effect. Governments must also find ways to work with the private sector to minimize the vulnerability of all energy infrastructures to sabotage or terrorist attack.
- **Governments should maintain and, where appropriate, expand government-financed and controlled strategic petroleum reserves.** This could include extending the IEA emergency preparedness program to non-members that will be major oil importers in the next century**.**
- The most feasible way in the near- to medium-term to mitigate the risks of interruptions to gas supply is to **encourage importing countries to promote a diversity of suppliers and pipeline routes.**

Energy and the Environment

The United States is unlikely to ratify the Kyoto Protocol in its present form, and, as a result, there is no coordinated global effort to reduce carbon emissions. Even as governments and NGO's continue to debate and negotiate the parameters of a ratifiable protocol and assess methods for implementation, they must also prepare for the eventuality that no effective agreement can be reached for an extended period. If they are to prevent the issue of global warming from growing into an increasingly contentious geopolitical issue, Western policymakers must prepare alternative policy initiatives in the interim.

There will be no easy solutions. "Clean coal" technology is beyond the economic reach of most developing countries. Switching from coal to natural gas will take time, since deliveries will be dependent on the construction of expensive natural gas pipelines and LNG liquefaction and regassification facilities. Nuclear power does not add carbon to the atmosphere but poses its own set of competing policy concerns, ranging from plant safety to waste disposal and nuclear weapons proliferation.

Policy Considerations

- **Western governments should design policies that will provide financial incentives for private voluntary action that has an immediate effect on reducing carbon emissions**.
- Governments in the developed world should also continue efforts to **gain developing country participation in an international program to reduce greenhouse gas emissions over the long-term.**
- As part of this process, **OECD governments should consider bilateral agreements with developing countries for joint reductions in greenhouse gas emissions.** These agreements could include a grant-aid component that would support institution-building and the transfer of technical knowledge to the developing country.
- At the same time, developed countries should **review the extent to which subsidies for domestic energy sectors are inconsistent with their global energy policies**.
- **OECD governments should sustain an up-stream research effort into new technologies that could make energy use more efficient, improve carbon capture and sequestration, and offer viable alternatives to fossil fuels**.
- **Policymakers should examine regulatory options to lessen the opportunity cost of bringing already demonstrated new technologies to market.**
- **Western governments should assess the conditions under which nuclear power could make a significant contribution to generating electricity in the developing world.** This would require, at a minimum, providing technical assistance to establish a culture of nuclear safety at the plants and strengthening measures to ensure against the diversion of fissile materials**.**