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Energy Use and Climate Change: Western Hemisphere Partnership

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INTRODUCTION

The United States should change its medium-term objective from energy “independence” to energy “cooperation.” This would set the framework for encouraging imports of sugarcane-based ethanol from Brazil, other hemispheric countries with this potential, and even globally. Cooperation would also encompass greater research and technology- sharing to develop non-food materials, such as cellulose, as the base for ethanol production. The greater supply of low-polluting biofuels, both ethanol and biodiesel, from hemispheric countries will reduce our reliance on oil for transportation and improve energy security from the diversity of energy sources.

Other than in North America, there is little energy cooperation among countries in the Western Hemisphere. Cooperation is limited by inadequate infrastructure, such as oil and gas pipelines and oil refining capacity, outside of North America. Historical grievances, such as between Bolivia and Chile; current conflicts, as between Venezuela and Colombia; and the growth of resource nationalism, as in Ecuador—also make energy cooperation difficult. Recent presidential elections in South America have led to leftist or center-leftist governments. It has become fashionable to speak of a market-oriented left (Presidents Lula of Brazil, Bachelet of Chile, Vázquez of Uruguay, and García of Peru) and a radical populist left (Presidents Chávez of Venezuela, Morales of Bolivia, Correa of Ecuador, and Ortega of Nicaragua). In seeking cooperation with the countries of the hemisphere, the U.S. government, must take these political developments into account.

Hemispheric countries have different endowments for electricity generation. The United States relies on coal for 50 percent of its electricity generation while the Brazilian reliance on coal is 5 percent. Hydropower makes up about 60 percent of electricity generation in Canada, whereas Mexico relies on conventional thermal sources for more than 80 percent of its power generation. Nuclear power comprises 20 percent of U.S. electricity generation, about 1 percent in Brazil, Mexico, and Argentina, and is nil elsewhere in Latin America and the Caribbean. There can be no generalization on the best technique for electricity generation; rather these decisions have to be made in each country based on its situation.

The United States has not been a participant in the global discussions for reducing greenhouse gases, but U.S. leadership would be welcome in the Western Hemisphere as in other regions of the world. Public opinion throughout the hemisphere accepts the reality of marriage between the level of a country’s energy consumption from fossil fuels and its carbon and other greenhouse gas emissions. A U.S. initiative for a hemisphere-wide cap-and-trade system for carbon emissions would be most welcome in that the movement of capital would from the United States to the developing countries of Latin America and the Caribbean and help defray some of the latter’s environmental costs.

Key Recommendations:

- The United States should remove its barriers against ethanol and biodiesel imports.

- Technology that is developed in the United States for the production of nonfood-based biofuels, such as cellulosic materials for ethanol, should be widely shared with hemispheric countries.
- The United States should encourage greater use of non-polluting alternatives—solar power, wind power, more efficient batteries, nuclear power—to fossil fuels for electricity generation and should work with hemispheric countries to augment their use of these alternatives when suitable for their situations (such as solar power in tropical countries).
- In order to encourage private investment in these alternatives, a floor price should be set for gasoline, coal, and other fossil fuels so as not to undercut the investments made in low- or non-polluting alternatives.
- A cap-and-trade system covering the Western Hemisphere should be instituted for carbon dioxide emissions.

Energy Use and Climate Change: Western Hemisphere Partnership

The objective most often used in political discussions of the U.S. energy goal is to achieve energy “independence.” The ability to accomplish this in the foreseeable future is nil and its constant repetition confuses both the U.S. public and potential foreign suppliers whose cooperation is needed by the United States. Even more importantly, the idea of energy independence is the rationale for the U.S. policy of subsidizing corn for domestic ethanol production and for imposing a high tariff on the import of sugar-based ethanol from Brazil. A change in official language of the U.S. energy objective from independence to “cooperation”, particularly in the Western Hemisphere, should be a priority for the incoming administration.

We will return to the issue of cooperation for a Western Hemisphere partnership because this is the centerpiece of our recommendations on energy use and environmental safeguards. Cooperation between partners means that all willing parties must contribute to reduce the use of fossil fuels in favor of less-polluting alternatives. The contributions of the individual countries of the Western Hemisphere will vary depending on their economic situations and their domestic resource endowments. The United States should not try to dictate what must be done in each country, nor should the partner countries assume that policy changes are required only from the United States.

Energy Cooperation in the Western Hemisphere

Energy cooperation among countries in the Western Hemisphere is less than glorious, other than between the United States and Canada. Bolivia will not ship natural gas to Chile, or to countries that might eventually reship this gas to Chile, because of the loss of its access to the sea at the end of the War of the Pacific in 1884. Peru would have misgivings about shipping its natural gas to Chile because of its loss of territory in the same war, but does not yet produce enough gas to add Chile as an export destination. Peru’s foreseeable future supply is already committed as exports to Mexico and the West coast of the United States. Argentina curtailed shipments of natural gas to Chile despite a bilateral contract because of shortages in the domestic market starting in 2004. Bolivia nationalized oil and gas holdings of foreign companies, including those of

Petrobras, the Brazilian national oil company (NOC) in 2006. Since early 2008, Brazil and Argentina have been squabbling about how the gas that Bolivia has available for export should be shared between them. In 2007 Ecuador increased royalties on what it call windfall profits to a ridiculous level (99 percent) on production by foreign oil companies, but then showed that it was amenable to negotiation to attract investment. Ecuador also took over the operations of Occidental, the U.S.'s fourth largest oil and gas company, ostensibly because Oxy did not live up to its contract. Colombia has been shipping natural gas to Venezuela through a new pipeline since the end of 2007, but otherwise the two countries are feuding with each other.

Because of the unreliability of supplies from neighboring countries, Chile and Brazil, as insurance against shortfalls of gas shipments from neighbors, are building installations to regasify LNG from distant locations. Chile's first LNG plant at Quintero Bay will be operational toward the end of 2008, while a second one is expected to be built in the north, on the Mejillones peninsula, and could be operational by 2010. Chile will import the bulk of its LNG from Indonesia. In turn, Brazil bought in 2007 two floating re-gasification and storage units (FRSU) that will be delivered and operational in 2008 and 2009 off the coast of Rio in the south and Ceará in the northeast. Brazil will import the bulk of its LNG from Nigeria. The fact that two countries from South America have to resort to extra-continental trade to obtain natural gas, when a capital poor but energy-rich neighbor like Bolivia is next door and trade would benefit all parties is a sad corollary to some of the thus far insurmountable historical and political economy conflicts which block the possibility of more cooperation in the region.

Venezuela, currently joined philosophically by Bolivia, Ecuador, and Nicaragua, and to a lesser extent by Argentina, has a view different from that of the United States and its allies such as Colombia and Mexico about how hemispheric cooperation should be configured. The former support the so-called ALBA, a hemispheric integration strategy that prioritizes redistribution while the latter support the FTAA, which prioritizes not only free trade, but also freedom of movement of capital but not labor, a position that even U.S. allies like Mexico question in the face of recent hardening immigration rhetoric and state actions.

Although not the only factor, the failure of the "Washington Consensus" to deliver equitable growth has been an important political factor in Latin America since the early 2000s). However, the oil price boom since 2003 is the main reason for the sharply different views in the hemisphere (ALBA vs. FTAA) about energy and other forms of cooperation. On the one hand, Venezuela has used its oil windfalls to subsidize the supply of oil for energy-dependent nations in Central America and the Caribbean; to buy sovereign debt from allies such as Argentina and Ecuador; and to promote social initiatives on health and education around the region. The United States, in contrast, has not changed its version of cooperation for more than one and half decades, continuing to proclaim the mantra of free trade despite repeated rejection of this in many hemispheric countries. It has become fashionable to speak about the rise of "the two Lefts" in Latin America, a moderate, pro-market variety (i.e. Presidents Lula, Bachelet, Vázquez, and García) and a radical populist one (i.e. Presidents Chávez, Morales, Correa, and Ortega). This perspective has some consistency, but it fails to take into account that what the United States should be looking at is that out of fifteen presidential contests in Latin America in the last three years, with the exception of Colombia, El Salvador, Honduras, and Mexico (where the populist alternative lost by less than 250,000 votes out of close to 42 million votes cast), all countries now have governments of the center

left or left. And the return of redistribution politics in Latin America – moderate and radical - has been intimately connected with the natural resource and commodity boom that the world has experienced since 2004. When the new U.S. government takes office in January 2009, it has to be aware that the energy and climate change policies it formulates for Latin America will influence the way redistribution politics are fought over and settled in the region's countries.

For example, it is obvious that oil exporting countries, Venezuela in particular, but potentially also other countries that have energy rich regions in sensitive ecological areas (Ecuador, Peru, and potentially Colombia and Mexico) will look more skeptically at proposals for substituting cleaner, renewable energy for fossil fuels than will oil importing countries. The same applies for natural-gas rich countries like Bolivia, Peru, Trinidad and Tobago, and Venezuela (if it managed to put in place the infrastructure to exploit its great gas reserves). Politicians and the public in general in these countries have recognized their acute development needs, and the return of redistribution politics in Latin America is but a symptom of this. As a result, it is not hard to understand the popular impetus behind the spreading resource nationalism throughout the region. What Latin American governments with populist bents have been promising is short-term redress in what is officially the most unequal region of the world. It should not surprise us to observe growing swaths of the electorates in Latin American countries expressing political support for such promises.

The mechanism that governments and politicians have been pushing currently to promote redistribution in Latin America has similarities with the one invoked and implemented when the region embraced import-substitution-industrialization (ISI) in the 1940s and '50s: higher state resources through nationalization or higher taxation of, first and foremost, energy and commodity companies. During the early years of ISI what was promised was the modernization of agrarian societies and smoothing of business cycles through fiscal and monetary fine-tuning. Today's promises are partly negative - a promise to undo the "Washington Consensus" policy basket, even if this means also getting rid of some of the real improvements brought about by orthodoxy, such as taming inflation and improving fiscal and current account balances. Next, the new expansionary perspective promises to bring about short-term redress in income and wealth inequality through the use of national resources. Therefore, the first element that the next U.S. government has to take into account when it formulates energy and climate change policy in the hemisphere is the return of resource nationalism. We believe that rather than disqualifying and attacking such a strategy, the new U.S. government should engage it by promoting cooperation in energy and climate change policies.

If the dilemma for energy exporters in the Western Hemisphere has become what to do with the massive windfalls derived from the latest oil shocks while at the same time keeping a high oil replacement rate to maintain high proved reserves, the situation is different for importing countries, top of which by a long way is the United States. Other oil importers in the hemisphere include also all Central American countries and all of the Caribbean except for Trinidad & Tobago; plus, in South America, Argentina, Chile, Peru, Paraguay, and Uruguay. All countries, but particularly energy importers, should make it a priority to pursue a national campaign to inform their publics about the true costs of current energy consumption and its consequences (economic in terms of higher energy prices, which put downward pressure on economic activity, and domestic politics in terms of harsh fights for rents internationally and in terms of

diplomatic and perhaps even military conflicts between the overwhelming need of nation-states to ensure future energy supplies).

Energy cooperation among hemispheric countries is not completely absent. Venezuela subsidizes the price of oil sold to countries in Central America and the Caribbean. So does Mexico, although not as extensively. The pipelines for shipping natural gas from Bolivia to Brazil and Argentina are being upgraded. Other cross-country infrastructure projects are regularly undertaken. There is a region-wide Latin American energy organization, OLADE (Organización Latinoamericana de Energía) that provides useful data to its member countries. And, of course, cross-country energy deals are made. However, the level of energy and climate change cooperation in the region remains far and away from realizing its potential, which is considerable.

The Different Energy Situations in Hemispheric Countries

Most countries in the hemisphere should be able to agree on some variation of the following points:

- Improving energy efficiency—reducing the amount of energy needed for generating any given level of economic output;
- Reaching agreement that greenhouse gas emissions should be reduced, even if agreement on how or the extent to which each country does this will require a complex negotiation;
- When specific cross-country trade in oil, natural gas, or electricity is needed, the countries involved recognize the need for adequate infrastructure, such as oil and gas pipelines and electricity transmission lines. As trade in liquefied natural gas increases, something that seems inevitable, prior agreement globally as well as in the hemisphere is needed on building gas liquefaction facilities and corresponding regasification facilities at the importing end;
- Each country will likely agree to provide accurate figures on oil and gas production and reserves to permit forward planning by all the others;
- Providing time for commentary by other hemispheric countries, and perhaps non-hemispheric countries as well although this will be harder, is needed when national oil and gas regulations are written or altered. This is a sensitive area in many countries given the independence of regulatory agencies, but permitting commentary does not mean acceptance of what is suggested;
- Cooperation is needed to define standards for measuring greenhouse gases and other reporting of emissions and to arrange for institutionalized consultations on environmental policies.

Most of the foregoing kinds of cooperative activities are well developed between Canada and the United States, and to a large extent between Mexico and the other two countries of North America, but they are less solid in the rest of the hemisphere.

Achieving the types of cooperation presented above is less sensitive than finding the areas of compatibility between countries with difference resource endowments. For example, coal is used for about 50 percent of U.S. electricity generation, while Brazil's reliance on coal for this purpose is only 5 percent. Consequently, the views of the two most populous countries in the hemisphere will differ radically on reducing the use of

coal for generating electricity, or on financing the enormous cost of carbon sequestration to capture the carbon released into the atmosphere from burning coal. The same asymmetry applies in biofuels. Brazil meets about 40 percent of its vehicular transportation needs from cane-sugar-based ethanol, and the U.S. figure is less than 3% percent using mostly corn-based ethanol. Hydropower is Chile's single largest power source comprising about 25 percent of electricity generation. For Canada, hydropower makes up almost 60 percent of electricity generation. About 80 to 85 percent of Mexico's electricity generating capacity comes from conventional thermal sources. Nuclear power stations account for about 20 percent of U.S. electricity generating capacity, about 15 percent in Canada, whereas nuclear accounts for only 1 percent in Brazil's power generation, about the same in Mexico and Argentina, and absent anywhere else in the hemisphere. These differences must play a large role in any policy recommendations made for an energy partnership of the Americas.

Negotiating the elements of a hemispheric partnership will require taking these differences into account. Put differently, hemispheric uniformity on all energy and environmental policy details will be impossible and it may be wiser to think of compatibility in negotiating key aspects of the partnership.

Because the United States is such an important oil importer, some data are shown below. Figure 1 shows the sources of U.S. oil imports by global region. Figure 2 shows U.S. oil imports from countries in the hemisphere. Of the five most important countries from which the United States imported oil in 2007, three are in the Western Hemisphere: Canada, Mexico, and Venezuela. Canada is a reliable source of oil if environmental concerns can be dealt with. Mexico, unless it enacts policy changes, is an uncertain source over the medium term. Venezuela is a reluctant source. Brazil is now a marginal source for U.S. oil imports, but a potentially promising one if recent deep-water discoveries, Tupi and Carioca, pan out in the medium term.

Figure 1

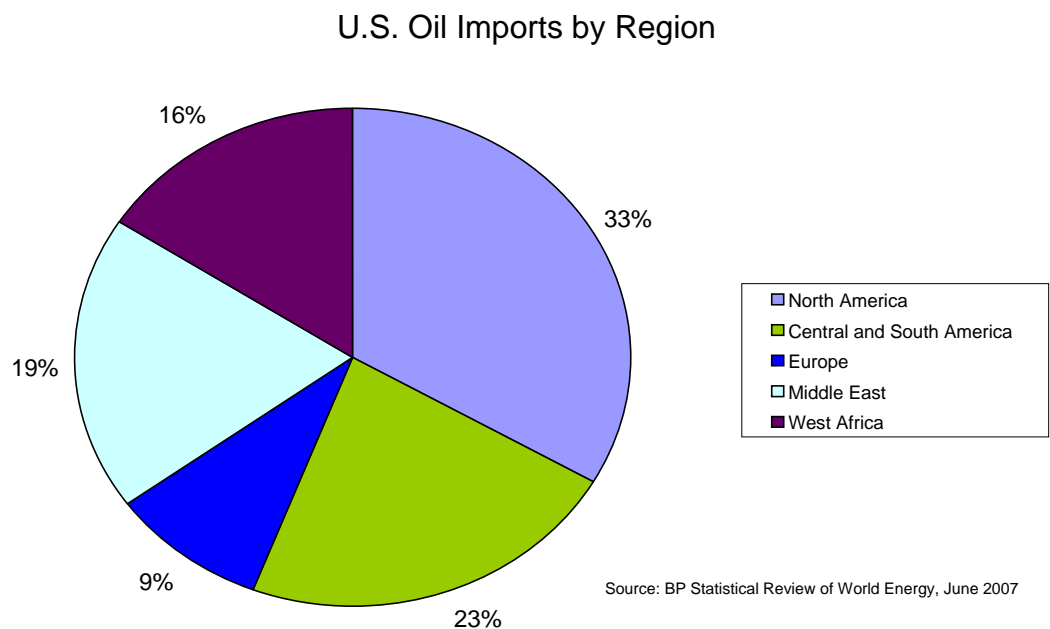
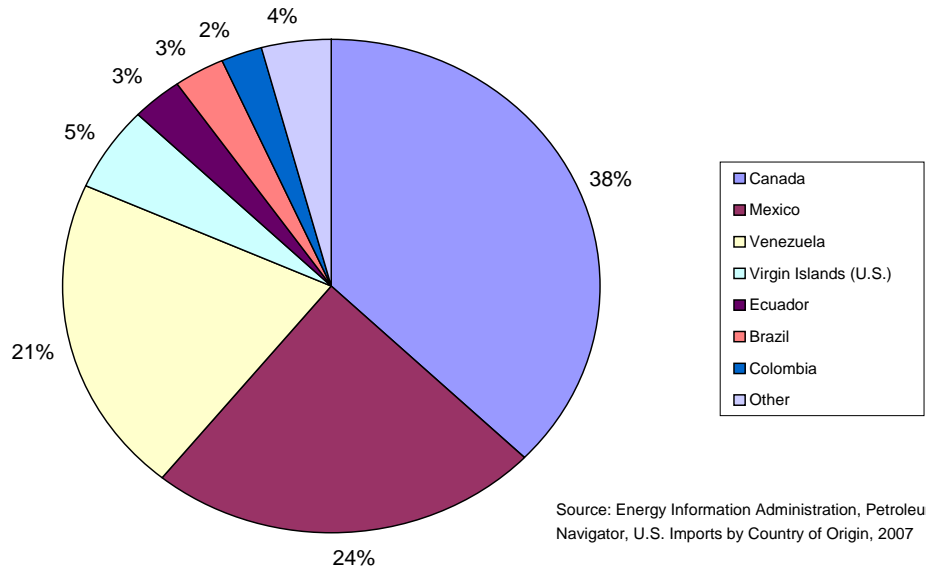


Figure 2

U.S. Western Hemisphere Oil Imports by Country of Origin

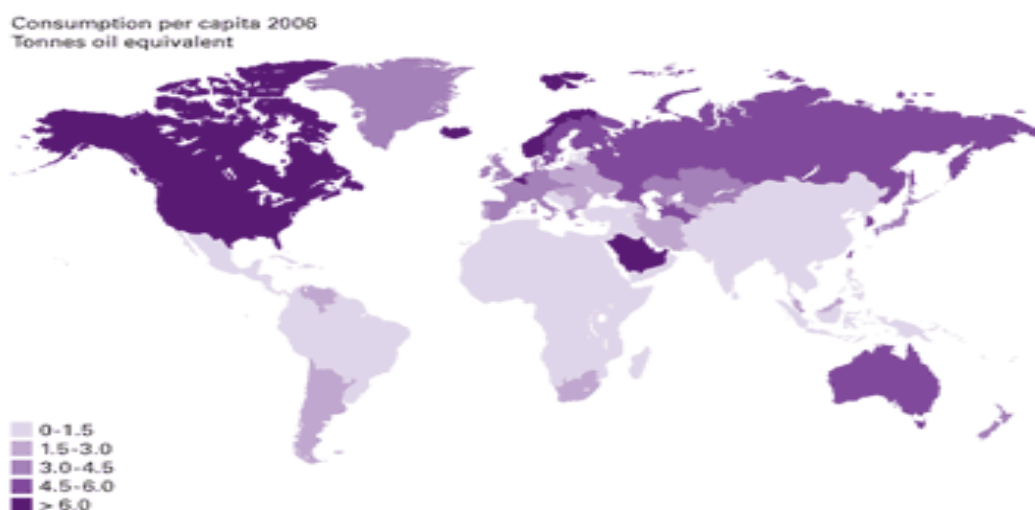


It is worth re-emphasizing the energy security and sustainability challenges that the U.S. faces in the next two decades given that it will remain by far the largest world consumer of fossil fuels. The latest data shows that despite comprising only 5 percent of the world’s population, in 2006-07 the U.S. used 24 percent and 22 percent of daily global oil and natural gas, respectively. Moreover, China’s and India’s staggering economic growth has greatly increased these countries’ proportions of world energy consumption and analysts now believe that China’s oil consumption levels could overtake the U.S.’s sometime in the next decade.

This long-term rise in world energy demand will lead to a structural transformation of the global energy system, and has raised deep concerns about climate change. Public opinion around the world – backed by the vast majority of scientific studies undertaken - now supports the belief that there is a chain of causation linking energy consumption-carbon emissions-climate change. The corollary of the energy/climate “marriage” is that energy and climate change policies will have to be formulated by making sure that the way they interact will promote synergies (i.e. more energy use efficiency translated into lower carbon emissions) rather than antagonisms (i.e. prioritizing greater energy supply at the risk of increased emissions).

This is an area where cooperation in the Western Hemisphere makes much sense. Canada plus the United States as compared to the rest of the Americas show that there are trade complementarities that can be exploited in the carbon-emissions-climate change spheres. For example, figure 3 illustrates current primary energy per capita consumption in the world.

Figure 3. Primary Energy Consumption in the World, 2006



Source: BP Statistical Review of World Energy 2007, Consulted May 20, 2008.

Latin American per capita primary energy consumption is less than 15 percent that of the U.S. and Canada. If carbon emissions are measured as a proxy of how much oil, gas and carbon is consumed on a per capita basis in the Americas then there is a dramatic difference between the U.S./Canada and the rest of the hemisphere. If carbon were taxed and traded, Latin America would be a big creditor and the U.S./Canada would be great debtors. In effect, if such tax were implemented capital would flow from the richer north to the poorer south (high carbon emitters in the U.S. and Canada would buy permits from low carbon emitters in Latin America), while at the same time it would spur innovation in carbon-saving technologies and promote more investment in renewable sources. For example, it would be highly desirable if the rich north could promote investment in solar power generation in energy-poor sub-tropical regions like Central America and the Caribbean..

Thus far, cap-and-trade has a mixed record. While the first time a system like this was implemented in Europe in the 1990s to cut sulphur-dioxide emissions from power stations it worked, the subsequent adoption of a general cap-and-trade system by the European Union in 2005 has been largely unsuccessful. This has been due mainly to an over-supply of permits by governments to companies (no government is thus far willing to compromise its country's economic activity given potentially added costs on the climate change side). Bidding for permits is the mechanism that economists have suggested to make the carbon emissions' market work. Even if it is too early to settle on a specific mechanism to make this market work, the next U.S. government should make it a priority to emulate the European Union in declaring its willingness to contemplate a cap-and-trade carbon emissions system. Framing such willingness in terms of the Americas would not only create much needed goodwill in Latin America, but if such markets were to actually take-off and work efficiently, the region would receive much needed capital for its great development needs.

RECOMENDATIONS

1. The United States should remove all barriers (quantitative, fees, and tariffs) on imports of ethanol from Brazil and other countries in the hemisphere and globally.

This recommendation conforms to the idea of hemispheric (and global) cooperation rather than U.S. energy independence. Brazil is a more efficient producer of ethanol than the United States. If access to the U.S. market were open to sugar-cane-based ethanol, many other countries would contribute to U.S. ethanol supplies.

2. Funding for research on cellulosic materials as the base for producing ethanol should be given the highest priority.

The important benefit of using cellulosic material is that this would remove the competition between food and energy in producing ethanol. Technology for efficient use of cellulosic materials to produce ethanol should be shared with other countries in the hemisphere (and the world) to maximize its use.

3. The United States should encourage much greater use of nonpolluting alternatives to fossil fuels both for transportation and electricity generation. Encouragement should involve direct research by the U.S. government and subsidized funds for private research.

Decisions in the United States on the most promising alternatives should be made in consultation with the scientific community. As examples, solar power and wind power can be generated on a much larger scale than is now the case for electricity generation. The recommendation for more research on the use of cellulosic materials to produce ethanol fits into this thinking. The cost of large solar and wind power generation may be high in absolute terms but should be compared with the financial outlays for oil and gas imports year-in and year-out.

4. The most appropriate alternative to fossil fuels for electricity generation should be decided within each country.

There is much interest in the United States in constructing new versions of nuclear generating plants. Other countries in the hemisphere may opt for other non-polluting options, such as hydropower, geothermal, solar in areas where there is much sunshine. If the United States continues to use large amounts of coal for generating electricity, it will probably be necessary to spend vast amounts of money on carbon sequestration techniques. Other coal-using countries may not have resources of this magnitude.

5. In order to encourage large investment in ethanol production from cellulose, U.S. legislation should be enacted to set a floor price for gasoline and other fossil fuels prevent possible undercutting of ethanol at some future date. Price undercutting could be prevented by a flexible tax on oil and/or gasoline to raise their prices to refiners and consumers to a level higher than the floor set for to keep cellulosic-based ethanol competitive. A similar flexible tax can be used to prevent power generated from fossil fuels, such as coal, to fall below those for such alternatives as solar and wind power in order to encourage investment in cleaner power-generating technologies.

It is hard at the moment to contemplate drastic reductions in the prices of oil and natural gas, but commodity price variations are the norm in world history. It is wiser to act now when prices for these contaminating fossil fuels are high because interest in the subject would diminish if there were a drastic reduction in oil prices. (We were reminded of the need for a floor price on oil and other fossil fuels in order to encourage investment in cleaner alternatives by Ricardo Lagos, ex-president of Chile.)

6. Some limit or cap is needed on the level of carbon dioxide emissions into the atmosphere. This can be done using a cap-and-trade system or a straight carbon tax.

We accept the scientific community's view of global warming and this is the basis for many of the environmental positions taken in this paper. The merit of a cap-and-trade system is that it gives flexibility to producers whose products generate large CO₂ emissions and to developing countries that wish to make environmental improvements. It is hard to establish a price for pollution credits. The merit of cap-and-trade over a pure carbon tax is that it can reward positive steps to reduce environmental degradation. A carbon tax could be part of the arrangement proposed in the previous recommendation for a flexible tax to keep the price of fossil fuels higher than for less-polluting alternatives.

7. We suggest that there be a public debate on whether it is desirable to allow China or other countries to lock up specific levels of oil and natural gas production in third countries in exchange for investment by their public corporations.

The conventional view has been that the United States should be indifferent to the countries to which oil is sent as long as it enters the world market. This argument may no longer be valid because supplies of oil may not satisfy growing demand *ex ante*; they will *ex post*, as oil prices rise. If foreign oil production is dedicated to specific importers, this sets up complex maneuvering by countries bidding up prices to get the oil supplies they believe they need. We make no recommendation, but we do encourage more public debate on this issue.