Climate Change: Proposed G8 Initiatives

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1. Emissions to the atmosphere of greenhouse gases from industrial activity and land clearing far exceed those amounts that can be removed from the atmosphere through natural processes. This imbalance in turn alters the energy balance of the planet and results in global warming, although because of the intricacies of the climate system, this warming is not uniform or linear. The IPCC projects a variety of climatic effects including the potential for sudden, discontinuous changes in climate that would be catastrophic to rich and poor alike.
2. Even relatively incremental change in climate will alter weather patterns and cross thresholds that risk economic well being in both developed and developing nations. Developing countries are much more vulnerable to negative effects of climate change for two reasons: a) a higher percentage of their populations are engaged in subsistence activities that are very sensitive to fluctuations in climate; and b) they have fewer human and financial capital resources to invest in adaptation measures. Climate change is already making attainment of the UN Millennium Development Goals more difficult, and it will over time further widen the gap in well being between rich and poor nations if nothing is done to both assist adaptation to changing climate and mitigation of emissions.
3. Emissions of greenhouse gases are projected to increase dramatically because of the projected growth in energy demand and use in developing countries. It is thus essential to embark on policies that will enable developing countries to "leapfrog" developed countries so that economic development and emissions growth are decoupled. Developed countries have a responsibility to assist developing countries in leapfrogging because of their historical responsibility for emissions that have already altered global climate.
4. Many emissions-efficient technologies remain "on the shelf" instead of being deployed in the economy for related reasons including entrenched special interests, fossil fuel energy subsidies, and higher initial or operating costs resulting from the failure of current pricing to internalize external environmental costs and benefits of production and consumption.
5. An international political stalemate exists on designing a regime to more rapidly reduce greenhouse emissions before we are irreversibly committed to a climate change disaster of potentially immense proportions. While some developed countries have taken small initial steps to reduce emissions through the Kyoto Protocol, others such as the United States have failed to enact policies that will address the problem, arguing that until developing countries also agree to participate, anything the United States agrees to do will be overwhelmed by increasing emissions from the developing world.
6. With the science now "unequivocal," the G8 must act with urgency and determination to:
   - Decouple economic growth and GHG emissions, and to begin rapidly to reduce GHG emissions progressively over time; and

- Break the global impasse between developed and developing countries so that each group can act on their "common but differentiated responsibilities" to avoid dangerous interference in the climate system.

Decoupling economic growth and GHG emissions

Carbon dioxide emissions are determined by the following identity:
CO_2 = population x (GDP per person) x (energy use / GDP) x (C emitted / energy use)

Many measures that are identified as a part of the UN Millennium Development Goals are attempting to bring about progress that would also have the benefit of reducing population growth in developing countries, where population growth is highest. These proposed initiatives for the G8 focus on the second and third terms of the carbon dioxide emissions identity.

Improving energy efficiency

Substantial economically-feasible energy efficiency improvements of 10 - 40% remain to be achieved in many sectors and countries. Only if the world's leading economies take urgent, serious, and verifiable action to improve energy productivity can environmental and economic values be preserved with equity. G8 leaders should:

- Adopt a global efficiency improvement objective to cut energy demand growth in half by 2020.
- Set national efficiency targets in key sectors and prepare national efficiency action plans that detail the policies and technical measures appropriate to each G8 nation's energy system and economy. The most important sectors to address are: buildings and equipment; industry; and transportation.
- Convene an energy efficiency summit during late 2007 to announce details of national implementation commitments and to engage the private sector.
- Establish an international organization (or modify the mandate and resources of an existing organization such as the IEA) to review annually the national efficiency action plans described above. Include sanctions for non-attainment of objectives.
- Provide additional foreign aid for ensuring that energy efficient technologies are deployed in development assistance efforts and supporting licensing of efficient appliances, equipment, and processes in industry and consumer markets to enable developing countries to leapfrog over developed countries in their energy consumption patterns.

Reducing carbon dioxide emissions in energy resources

There are several options for reducing the carbon content of energy. Of these, there are several that require urgent attention from G8 leaders this year.

- Commit to design and deploy only coal-fired power plants that will be capable of cost-effective and environmentally sound retrofits for capture and sequestration of their carbon emissions. This should first be implemented in G8 countries, who will then hold the moral ground to be able to work with China, India, and other developing countries with significant coal resources and unmet energy demand to undertake similar bans. Increases in funding for research, development, and deployment of capture and sequestration technology is urgently needed.
- Increase support for bio-energy in developing countries for local energy needs, and eventually for trade. About one-third of the world's population lacks access to modern energy services. Energy development in poor and transitioning countries is critical to combating poverty, improving public health, and advancing prospects for peace and security. Bioenergy is a practical vehicle for addressing these needs, but that is not all – bioenergy can unlock the door to new trade opportunities, new markets, and new jobs and provide a clean, sustainable source for modern energy services (see discussion below on ways to link bioenergy development and breaking the impasse in the Doha round).
- Encourage improvements in efficiency and reliability of natural gas supplies, (especially in Russia), by reducing leaks, eliminating flaring, pricing gas at levels related to near substitutes such as heating oil to discourage waste, and creating common carrier access to pipelines and distribution systems. This will also require addressing geopolitical issues related to security of energy supply and thus is likely to be sensitive and difficult. Nonetheless, the benefits could be tremendous.
- Reform electric utility regulatory schemes to break the current relationship between utility profits and sales of kilowatts and instead compensate utilities for providing energy services with less energy. Measures can also be taken to double the efficiency rate of current electricity generation and distribution systems. Development of a "smart grid" would reduce the risks of economically-costly blackouts and also permit power generated through renewables and combined heat and power to be sold back to the grid.

These specific technology-oriented measures would be in addition to a number of cross-cutting measures that would contribute to setting prices that reflect external environmental costs, such as:

- Reduce or eliminate subsidies for fossil fuel use
- Place tariffs on goods produced inefficiently
- Levy taxes on carbon-intensive fossil fuel use

Reaching out to developing countries

As is eloquently described in the draft communiqué prepared by Joe Stiglitz, a more responsible world order needs to make trade more open and fair for developing countries. Part of the reason for the collapse of the Doha Round, as I understand it (I am not a trade expert by any means) is that developed countries have refused to reduce subsidies on agricultural products. The subsidies are needed because supply exceeds demand. The resulting depressed prices hurt farmers and incomes in developing countries, where

governments do not subsidize agriculture. At the time the last GATT was agreed, agriculture represented about half of world trade. More recently it amounts to something around 8 percent of trade.

If the problem is protecting farm incomes in developed countries because of oversupply, why not look for ways to drive up demand that could also address other problems? Perhaps there is a way to link the need to rethink the global energy paradigm to rely less on carbon intensive fuels with the need to increase agricultural demand and thus provide markets that could make it unnecessary to subsidize developed country farmers. Indeed there appear to be a number of opportunities for doing so in the field of bio-energy.

Even overlooking the trade implications, bioenergy for developing countries could have a number of benefits, including:

- enable developing countries to grow fuel crops that would increase access to modern energy services for the roughly 2 billion people who currently lack such resources
- create employment and income in rural areas producing energy crops
- enable developing countries to reduce imported oil for transportation fuels with indigenously-produced transportation fuels

Domestic production of fuels from home-grown biological feedstocks must be done carefully so that it does not lead to shortages or increased prices of important food crops.

Biofuels, a subset of the broader category of bioenergy that replace petroleum-based transportation fuels, hold the potential to play a major role in reducing the carbon intensity in the transport sector if we adopted policies that advance the development of second generation fuels, and develop some type of market premium on fuels that meet a lower carbon threshold in terms of their production and use (e.g. just as we pay higher premiums for low sulfur petroleum). We need to combine this with development and trade policies that create opportunities for developing countries with lower cost production opportunities to develop sustainable biofuel production as a part of low carbon national energy plans. Such policies would take into account the rural development and job creation potential of a domestic biofuel industry and open markets to countries with comparative advantages.

Bio-energy development is no panacea. Current corn and sugar-based technologies can be applied in some settings, but their input requirements are such that they do not result in large emissions reductions. And technology mandates are driving up international prices for corn and sugar to levels that make production of fuels from these feedstocks to be uneconomical in most settings (Brazil is a major exception to this). But other crops and feedstocks such as jatropha and switchgrass have more desirable environmental and climate characteristics and are coming on line.

If one also considers establishing conditions that would for a time favor development of a more diverse set of energy resources including more extensive use of biofuels, trade benefits could result by increasing agricultural demand and thus reducing the need for

agricultural subsidies that are blocking progress in the Doha Round. Is there a set of policies that could move us in this direction?

In addition to attempting to promote bioenergy production and trade in ways that can benefit developing countries (and provide for greater energy security), the G8 should also seek to enter into a dialogue with developing countries on ways to encourage investment in energy efficient technologies for buildings, appliances, industry, and transportation.

It is not productive, in my view, to demand that developing countries accept emissions caps until developed countries have begun to seriously reduce their own emissions and enter into discussion of ways that will enable developing economies to leapfrog over a standard energy and emissions intensive development pathway.