

Post-Kyoto: Options for Engaging Large Emitting Developing Countries

A paper prepared for the National Round Table on the Environment and the Economy

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July 18, 2005

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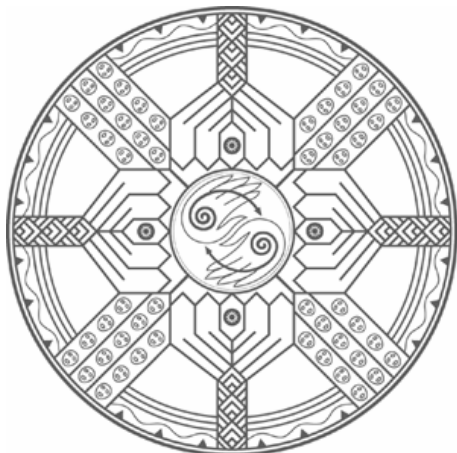


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List of Acronyms

CCS	Carbon Capture and Storage
CDM	Clean Development Mechanism
COP	Conference of the Parties
G8	Group of Eight Nations
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse gas
IEA	International Energy Agency
IISD	International Institute for Sustainable Development
MOP	Meeting of the Parties
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
SCCF	Special Climate Change Fund
SOGE	Seminar of Government Experts
UNFCCC	United Nations Framework Convention on Climate Change

Executive Summary

China, India, Brazil, South Africa and Mexico are home to more than two-fifths of global population and some of the fastest growing economies in the world. Their significant and rapidly increasing greenhouse gas (GHG) emissions are a major reason why emissions from developing countries are likely to exceed those of developed countries in a few decades.

China's economy grew at 8.5 per cent annually between 2000 and 2004. Coal currently dominates primary energy supply at 67 per cent, and China will likely continue to rely on its vast coal reserves for future power generation. If these trends continue China will soon become the world's largest GHG emitter.

India has an expanding population of one-billion people and one of the 10 fastest growing economies in the world. Energy demand is presently outstripping economic growth at seven per cent per year. Non-commercial biomass and coal are the main sources of domestic energy. While renewables are expanding, coal will likely be the mainstay over the near-term.

Brazil is also experiencing significant growth, but not at the same rate as China and India. Brazil's large renewable energy base makes it unique among large emitting developing countries – Brazil is a major ethanol producer and 90 per cent of the country's electricity is generated from hydro. Emissions from land use, land use change and forestry practices account for approximately three quarters of total GHG emissions in Brazil, but forestry management raises important sovereignty issues.

South Africa is the most industrialized country in Africa and is the world's 16th largest energy consumer. South Africa is also the sixth largest coal producer in the world and is heavily reliant on coal for its energy needs – 74 per cent of energy demand was met from coal in 2002. Reliance on coal has resulted in high GHG emissions as South Africa's CO₂ intensity per dollar of gross domestic product exceeds that of many industrialized countries, including the US.

Mexico's status as a non-Annex I Party and an OECD (Organization for Economic Cooperation and Development) member has led it to taking a proactive approach to post-Kyoto discussions. Mexico has suggested that further differentiation among commitment parties is appropriate, and that inaction or non-compliance is no excuse for other countries not making their own best efforts. Diversification and reformation of its energy sectors is a pressing concern to Mexico.

Engaging these countries in action on climate change will require addressing their interests, priorities and preferences through a variety of multilateral and bilateral forums and processes. While there are important differences between these countries, they all share a common interest in development, poverty eradication, clean technology, adaptation, and the integration of climate change objectives with other main development policies. These countries also have a common need to build institutional and other capacity, to participate effectively in global climate change efforts.

The main multilateral process for engaging developing countries will continue to be the United Nations Framework Convention on Climate Change (UNFCCC). As host of the upcoming eleventh Conference of the Parties and first Meeting of the Parties (COP/MOP1) in Montreal, Canada has an immediate opportunity to lay the groundwork for engaging large emitting developing countries on the future of the international climate change regime after 2012. Four main opportunities exist within the UNFCCC (and Kyoto Protocol) negotiations for engaging developing countries:

- Enhancement of the **Clean Development Mechanism** – by lowering transaction costs, addressing the treatment of additionality, and exploring broader sectoral and policy-based options.
- More effective **Technology Transfer** – possibly through a shift in focus to encouraging private sector participation, collaborative projects between developed and developing countries, and public-private partnerships.

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- **Capacity Building** – to address a key barrier to developing country action on climate change. The capacity building framework for developing countries agreed to at COP7 provides a basis for action that could be promoted by Canada.
- **Adaptation Funding Mechanisms** for developing countries – including the Special Climate Change Fund and the Kyoto Protocol's Adaptation Fund. Canada can support resolution of outstanding issues at COP/MOP1 by encouraging a more flexible approach.

Other important multilateral forums include the Group of Eight Industrialized Nations and a variety of international energy, technology and scientific initiatives. While Canadian participation in these initiatives is important, Canadian leverage and actual impact in these forums is realistically limited.

Bilateral initiatives between Canada and key developing countries also provide important opportunities to support technology transfer, capacity-building for emission trading, and adaptation, and can also provide significant long-term benefits to Canada through the export of Canadian technology and expertise. The most promising areas for bilateral initiatives are in clean energy technology.

Multilateral and bilateral approaches for engaging key developing countries will need to address the widely varying priorities and interests of these countries. While there is broad support for the UNFCCC as the forum for global climate change efforts, views on the appropriate role for developing countries differ considerably. South Africa and Mexico may be open to a dialogue on the possible form of future developing country commitments; Brazil, India and China will be much more cautious. The Clean Development Mechanism will continue to be a key focus. Bilateral initiatives between Canada and developing countries provide an important opportunity to address specific priorities, for example carbon capture and storage in China, India and South Africa.

1.0 Introduction

The UNFCCC recognizes the common but differentiated responsibilities of countries and the obligation of industrialized countries to take the first steps to reduce emissions. Nevertheless, achieving the stabilization of atmospheric greenhouse gas (GHG) concentrations at a safe level will also depend largely on the future emissions paths of developing countries. In particular, the active participation of five key developing countries – China, India, Brazil, South Africa and Mexico – in managing emissions growth will be critical to long-term global efforts to address the risk of climate change.

This paper focuses on options for engaging China, India, Brazil, South Africa and Mexico in multilateral and bilateral climate change initiatives, particularly those in support of mitigation of GHG emissions, in anticipation of a new multilateral regime after 2012.

Section 2 reviews the circumstances and priorities of the five countries, and identifies possible approaches and elements of a post-Kyoto climate regime that might address the interests of these countries. This section also identifies major climate change-related bilateral initiatives between the five developing countries and Canada, the United States (US) and the European Union (EU).

Section 3 briefly summarizes the interests and priorities of the US, Canada and other key industrialized countries, and compares these with the interests of the five developing countries.

Section 4 identifies potential strategies for engaging these five countries within the multilateral climate change negotiations and on a bilateral basis.

A summary and some key conclusions are provided in Section 5.

2.0 Overview of Large Emitting Developing Countries

China, India, Brazil, South Africa and Mexico collectively comprise more than two-fifths of the world's population, significant portions of the land mass of four different continents, and feature some of the fastest growing economies in the world. They are also significant GHG emitters because of their industrial activity, expanding transportation sectors and (particularly in the case of Brazil) the rates in converting land from forest to agriculture. Emissions from these countries are rapidly increasing and expected to surpass those of developed countries within decades (Chandler *et al* 2002). Recognizing this, developed countries are indicating an expectation that newly or nearly industrialized developing countries take on a more significant role in mitigating climate change during the post-Kyoto timeframe.

Successfully broadening engagement in the post-Kyoto period will require recognition of the interests and priorities of the countries to be engaged. As seen in Table 1, developing country profiles differ considerably from those of developed/OECD countries, particularly with respect to emissions per capita. Reconciling these differences requires identifying areas of mutual interest and ensuring that addressing climate change provides some sort of inherent value for each country involved. An analytical look at each country helps to identify the means of engagement, whether through multilateral or bilateral avenues.

Table 1: Statistical profile of large emitting developing countries

Country	Population in 2002 (in millions)	Total Primary Energy Supply per capita (tonnes oil equivalent/capita)	CO ₂ emissions per capita (tonnes CO ₂ /capita)	CO ₂ /GDP (kg CO ₂ /95 US\$ purchasing power parity)
Brazil	174.49	1.09	1.77	0.27
China	1,280.40	0.96	2.55	0.63
India	1,048.64	0.51	0.97	0.41
Mexico	100.44	1.57	3.64	0.45
South Africa	45.35	2.50	6.65	0.75
World	6,195.66	1.65	3.89	0.68
OECD	1,145.06	4.76	10.96	0.49
Canada	31.41	7.96	16.93	0.63

Note: CO₂ emissions are from fuel combustion only. Emissions calculated using the IEA's energy balances and the Revised 1996 IPCC Guidelines. (IEA 2004)

2.1 China

China is becoming increasingly influential internationally due to its status as the most populous country worldwide, home to the fourth largest landmass, and having maintained one of the highest economic growth rates of the past two decades. Between 2000 and 2004 GDP grew 8.5 per cent annually (The Economist 2005), which has put increasing pressure on China's resource and infrastructure limitations and driven up energy demand.

Industrial production dominates the economy, accounting for 51.1 per cent of GDP in 2002; agriculture accounted for another 15.4 per cent (The Economist 2005). The growth of these energy intensive sectors is causing resource demands that are driving market trends worldwide. As a result China is accessing whatever energy it can through international markets, and expanding domestic capacity for hydroelectricity, nuclear, natural gas, oil, wind and biomass. Coal currently dominates primary energy supply at 67 per cent, and China will continue to rely on vast domestic coal reserves for new power generation (Government of China 2004). Despite the new capacity, China remains energy constrained (especially for oil and gas) and energy security is driving China's involvement in many technology agreements worldwide.

Despite growing demand, policies and measures have resulted in average annual energy efficiency improvements of 5.32 per cent from 1980 to 2000 (Government of China 2004). This has meant similar GHG intensity improvements, however, absolute emissions are rising and China may someday become the world's largest GHG emitter. 1994 emissions were 3.7 billion tonnes of carbon dioxide equivalent (CO₂e) (Government of China 2004). Depending on the scenario, this may increase by 1.5 to 2.8 billion tonnes per year by 2030 just from energy use alone (Chandler *et al* 2002).

Top priorities in China's *National Strategy in Dealing with Climate Change* include continued economic growth, poverty eradication and developing energy resources (Jiang 2005). China's focus is on energy efficiency to mitigate GHG emissions (Jiang 2005). While vulnerability to climate change is a concern, regional environment issues like air, land and water pollution are more pressing, and efforts made on these fronts may end up producing more GHG benefits than targeted actions on climate change.

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China has been skeptical of the Kyoto Mechanisms in the past, and has so far refused discussion on emissions limits for developing countries. Chinese officials state that prior to developing countries making any emissions reduction commitments developed countries should first fulfill their Kyoto obligations and secondly specify new targets for the post-Kyoto period (Quan 2005).

China is increasingly seen as a future world superpower, which is increasing pressure on the country to act more as a global leader. This may have implications for future Chinese leadership on issues like climate change.

Favoured Policy Positions

The Chinese propose that any post-Kyoto climate change regime should provide a development pathway for developing countries; one that supports environmental objectives and allows for economic expansion and poverty eradication. This is characterized by the proposal called *Human Development Goals with Low Emissions* (Bodansky *et al* 2004). The Chinese may support an integrated approach, which means combining climate change goals like technology transfer and adaptation with priorities like energy security, air quality, natural resource management and urban planning.

China is unlikely to support binding commitments for developing countries; rather, they might support a flexible regime of voluntary or conditional commitments (that depend on the country's state of human development), and domestic policies and measures that address both climate change and development objectives (e.g., economic growth and energy security). They may support a different type of commitment, for instance an international sectoral commitment or perhaps a large city commitment for centres like Shanghai. Some in China support binding commitments to restrict 'luxury' emissions from developed countries (such as excess emissions from large cars or excessive heating and cooling) by supporting a progressive tax regime (Pan 2003). China is very active in signing multilateral and bilateral science and technology and research and development agreements with partners around the world, including the US-led *Carbon Sequestration Leadership Forum*, *International Partnership for a Hydrogen Economy* and *Methane to Markets Partnership*. Clean Development Mechanism (CDM) is dealt with a very bureaucratic hand which has made China unattractive for this type of investment.

Lately there seems to be a shift in China's engagement in the climate change process, possibly a result of its rising status as an economic power or because of the environmental impacts of rapid industrialization (IISD 2005d). Recently at the Seminar of Government Experts (SOGE) in Bonn, China expressed its interest in a successful eleventh Conference of the Parties and initial Meeting of the Parties (COP/MOP1) in Montreal, and in developing a mandate for future discussion on climate change. China has stated that as long as energy security, economic development and life quality are taken into account China is willing to work towards future international responses to climate change (Jiang 2005).

Bilateral initiatives

Trade and investment ties between China and Canada have strengthened in recent years. These relations could open the door to deeper agreements on climate change, along the same vein as the Canada-China Cooperation in Climate Change (C5) Agreement, the Joint Statement on Cooperation on Climate Change, or the two Memorandums of Understanding (MOU) on Environmental Cooperation and Science and Technology (Environment Canada 2005). C5 is intended to mitigate climate change by building capacity in CDM, awareness and outreach, national communications and adaptation and impacts. The Joint Statement reaffirms both countries' commitment to the UNFCCC and Kyoto Protocol, and confirms mutual interests in policy dialogue, CDM, clean technology, public awareness, energy efficiency and renewable energy, capacity building, climate science, and impacts and adaptation. The MOUs provide frameworks for cooperation: on environmental issues like transboundary air, smart growth and sustainable development, environmental management policies and regulations and technology transfer; and in sciences like meteorology, hydrology and climate change.

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China and the US have a formal bilateral partnership on climate change focusing on climate sciences. In 2004 the UK and China released a Joint Statement on their plans for collaboration on climate change, technology and energy with an emphasis on low carbon economy initiatives.

2.2 India

India is taking an increasingly prominent position on the world stage. With one of the 10 fastest growing economies in the world (Government of India 2004), India experienced an annual average GDP growth rate of 5.8 per cent between 1999 and 2003 (The Economist 2005a). Still, about one-quarter of Indians continue to live below the poverty line (Parikh 2004) and most of India's wealth is concentrated in the hands of a few. India's population of over one billion people is expanding annually by 1.5 per cent (Chandler *et al* 2002), and it is expected to surpass China by 2040 at 1.5 billion people (Parikh 2004).

Improving living standards requires a significant increase in energy provision for household and industrial consumption. Energy demand is presently outstripping economic growth in India, growing at 7 per cent per year (Government of India 2004). One-third of energy consumed is currently derived from non-commercial biomass sources such as wood and animal dung (Chandler *et al* 2002). Coal is the country's other primary source of domestic energy, which provides 47 per cent of total commercial energy (Government of India 2004) and 80 per cent of electricity (Globe & Mail 2005). Petroleum is mostly imported from the Middle East.

Improving energy security is a primary Government of India concern. The country is becoming a world leader in the development of renewable energy sources, is supporting efforts to improve energy efficiency and has reformed parts of its power sector (Government of India 2005). However, coal is expected to remain the mainstay of India's energy system over the near-term due to its abundance (approximately 221 billion tonnes in reserve), low cost and availability (Government of India 2004).

Although India's GHG emissions are expected to decline on an intensity basis, they will continue to rise over time as its population expands, incomes increase and households (at all socioeconomic levels) increase their use of energy dependent devices (Government of India 2004). Carbon emissions are projected to rise (by 459 million tonnes) to 753 million tonnes by 2020 (Weyant 2004).

Favoured Policy Positions

Officially, the Government of India has taken a hard line on the nature of a post-Kyoto climate change regime. At the recent SOGE, India expressed concerns that Annex I countries have not lived up to their emission reduction, financial and technology transfer commitments. India has also highlighted uncertainty in existing emission projection models, stating that present forecasts cannot be used to drive policy (Government of India 2005). India places addressing climate change firmly within the context of its sustainable development objectives, which, if achieved, will result in a cascade of effects including the reduction of GHG emissions and the adverse impacts of climate change (Government of India 2004). The government remains committed to equity of treatment and the setting of targets based on emissions per capita. Informally though, Indian Government representatives have expressed interest in a "strong outcome" for COP/MOP1, including the possibility of a Montreal Mandate that would launch the post-Kyoto process.

India has particular interests in the emerging carbon market and technology transfer. The country is highly engaged in CDM projects and an advocate for improving its future design. The government has taken a liberal approach to enabling CDM projects to increase investment in priority areas such as energy efficiency and renewable energy. India has called for further changes to the CDM, such as expansion to include sector-based and/or policy-based approaches, and reformation of the mechanism's current additionality requirements. Current uncertainty regarding the future of the CDM is seen as detrimental to India's interests and priorities.

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India expressed concerns at the SOGE regarding the slow pace of technology transfer into the public domain (IISD 2005b). Given its present and expected future dependence on coal, India is interested in commercially competitive carbon capture and storage technology. The government is also interested in technology to help it 'leapfrog' to a more sustainable future based on new technology, such as renewables.

Overall, India favours taking an intensity-based approach to future emission reductions (likely based on emissions per capita), voluntary commitments and long-term targets. It puts achieving its development goals first, viewing climate change as an issue to be addressed through development policies that result in mitigation and adaptation co-benefits (IISD 2005b). A top short-term priority is to address "technological and financial barriers to achieving identified energy initiatives" (Government of India 2005).

Bilateral Initiatives

Canada and India have entered into a range of bilateral climate change activities related to research, technology transfer, compliance mechanisms and capacity building (Environment Canada 2004). Environment Canada and the Indian Ministry of Environment and Forests collaborate on the Environmental Institutional Strengthening Project, which is intended to build institutional capacity of the Indian Ministry (Environment Canada 2005).

India and the US entered into a bilateral agreement on climate change in 2002; it includes over 18 climate change projects falling under two broad categories: energy and technology, and science and environment. The European Commission-India Working Group in Environment is a forum for promoting bilateral cooperation on climate change.

2.3 Brazil

Traditionally, Brazil's economy depended on primary resource industries like agriculture and forestry; only recently have manufacturing (of products like cement, aluminium, automobiles and chemicals) and services become prominent. Services dominate the economy today, at nearly 55 per cent of GDP in 2002 (MSTB 2004). Brazil hasn't experienced the same economic growth as China and India in recent decades.

Brazil's economy stands out because of its large renewable energy base – 90 per cent of electricity comes from hydro with most of the remainder coming from biomass (MSTB 2004). Brazil's ethanol industry is one of the largest worldwide (MSTB 2004). Another distinguishing feature is Brazil's relative energy independence as it is not terribly reliant on the mass importation of oil, gas or other fuels.

Because of the domestic situation Brazil has its own priorities on climate change. Brazil's economy is already 'low carbon', emitting only 225 million tonnes CO₂ in 1995 (Chandler *et al* 2002). Therefore, instead of CO₂ from energy use being the concern, emissions from land use, land use change and forestry (LULUCF) practices are front and centre having accounted for 75 per cent of the total 1995 emissions in Brazil (MSTB 2004).

Despite climate change not resonating with local citizens in the same way as air, land and water pollution, Brazil has contributed to international climate change efforts. It hosted the *Earth Summit* in 1992 and initiated the concept behind the CDM (Embassy of Brazil 2005). Brazil and India, the most active developing countries in the carbon market strongly support an effective CDM. Senior policy makers are engaged in finding ways to better integrate climate change policy with overall public policy. In 1997 a *Brazilian Proposal* for dealing with climate change was tabled, which still describes the Brazilian position today.

Favoured Policy Positions

Brazil continues to support the UNFCCC multilateral process as the most appropriate legal instrument for international efforts on global warming (Embassy of Brazil 2005). The *Brazilian Proposal* supports this

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by suggesting a multilateral burden-sharing agreement based on the historic responsibility for temperature change (Bodansky *et al* 2004). Specifics of the proposal include: increasingly stringent absolute targets for developed countries, no quantifiable commitments for developing countries, the use of market mechanisms like emissions trading and CDM, and funds from developed countries for technology transfer and dealing with adaptation. Brazil is involved in several (US-led) multilateral technology agreements such as the *Carbon Sequestration Leadership Forum*, *Generation IV (Nuclear Power) International Forum*, *International Partnership for a Hydrogen Economy* and the *Methane to Markets Partnership*.

Brazil might support voluntary developing country commitments in the form of domestic policies and measures, but these would need to be designed by developing countries using a bottom-up approach. In addition, the integration of climate change policy with other priority areas such as the *Millennium Development Goals* may be of interest.

Brazil has expressed concern regarding the recent tone of post-Kyoto talk, in particular the notion that Kyoto only extends to 2012 and its potential expiry after that. Brazil has stated that the international community must work for the success of the Convention, the Kyoto Protocol (for both the Kyoto timeframe and future commitment periods) and the CDM (Corea de Lago 2005). Brazil wants to see a successful mandate from COP/MOP1 on the framing of future post-Kyoto discussions.

Brazil strongly opposes LULUCF discussion if it in any way threatens sovereignty over natural resources like the Amazon basin.

Bilateral initiatives

The Canadian International Development Agency (CIDA) and Brazil are partners on several climate change initiatives, the main one being the Canada-Brazil Technology Transfer Fund under which the following programs fall: watershed management, electrical energy efficiency, capacity building in the voluntary sector and human resource development (CIDA 2005). In 1996 Canada and Brazil signed an MOU on Environmental and Sustainable Development Consultations and Cooperation (Environment Canada 2005). The MOU provides for senior officials' environmental policy consultations and for cooperative work on environmental technologies and their application.

In 2004 Brazil and the US announced their intent to enhance bilateral cooperation in the areas of climate science and modeling, energy and technology, LULUCF, agriculture, emissions inventories and modeling and impacts and adaptation. The UK and Brazil have a Joint Action Plan highlighting ten areas of cooperation, including science and technology, and the environment and sustainable development.

2.4 South Africa

South Africa is the most industrialized country in Africa and one of the most advanced of the developing world. In 2001 South Africa ranked 26th among all nations in terms of GDP and was the world's 16th largest energy consumer (Republic of South Africa 2005).

Coal is the primary fuel produced and consumed in South Africa. The country has the world's seventh largest recoverable coal reserves (54.6 billion short tons), approximately 5 per cent of the world total. South Africa is the world's sixth largest coal producer at 245.3 million short tons in 2002 (EIA 2005). In 2002, 74 per cent of total energy consumption came from coal. South Africa consumed 171.6 million short tonnes of coal in 2002, 90 per cent of which was used for electricity generation and in the synthetic fuel industry. South Africa has a highly developed synthetic fuels industry and Sasol is the world's largest manufacturer of oil from coal.

Reliance on coal has resulted in relatively high GHG emissions. In 2002 South Africa emitted 306.3 million tonnes CO₂e, amounting to 90.6 per cent of total African energy-related CO₂ emissions and approximately 1.4 per cent of global emissions. South Africa's CO₂ intensity was approximately 0.8 metric tonnes per thousand 1995 dollars, which is larger than many countries including the US.

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Although South African energy and electricity consumption is high it is largely due to industrial demand. One-third of households do not have access to the electricity supply grid (Chandler *et al* 2002). Therefore, a major development priority for South Africa is increasing this access. The energy sector is also restructuring, which will create opportunities for lower-carbon energy resources. Production of synthetic fuels from coal is being phased out.

South Africa ratified the UNFCCC in 1997 and the Kyoto Protocol in 2002. South Africa submitted its First National Communication in 2000 and in the fall of 2004 released *A National Climate Change Response Strategy for South Africa*. The government's 2005 *Energy Efficiency Strategy of the Republic of South Africa* established a national 12 per cent energy efficiency improvement target for 2014. South Africa also has a voluntary target of 10,000 GWh of new renewable energy supply.

Favoured Policy Positions

South Africa acknowledges that at some point it will need to take on reduction commitments, and at the SOGE in May 2005 indicated its willingness to talk about future actions. At the meeting they indicated support for a strengthened Kyoto Protocol that includes all countries, while recognizing the common but differentiated principle. South Africa called for a 'roadmap' for negotiations to be developed at COP/MOP-1 in Montreal in late 2005.

Given South Africa's heavy reliance on coal, it is likely to support future climate regimes that provide incentives for clean coal technology, and especially for CO₂ capture and storage. South Africa has been a strong supporter of the CDM. At the latest SOGE they emphasized that markets need certainty that there will be a second commitment period.

Bilateral initiatives

In 2003 Canada and South Africa signed a Joint Declaration of Intent to strengthen bilateral cooperation (Privy Council Office 2003). This declaration included commitments to enhance co-operation on climate change, through policy dialogue, co-operation on capacity building, and by seeking expansion of CDM projects in South Africa.

Bilateral activities between South Africa and the US are being pursued in renewable energy, energy efficiency, carbon sequestration, clean energy technology, impact assessment and adaptation, carbon cycle monitoring and economic modeling. German/South African bilateral climate change activities focus on capacity building to ensure effective UNFCCC participation and on the exchange of information and expertise in the areas of climate change, energy efficiency and renewable energy.

2.5 Mexico

Mexico's modestly growing population of 105 million (The Economist 2005b) has undergone significant political and economic change over the past two decades. Since beginning economic liberalization and entering into the North American Free Trade Agreement (NAFTA), Mexico's GDP grew by 41 per cent between 1990 and 2001 was 41 per cent (OECD 2003). GDP in 2004 was US\$676.5-billion, two-thirds of which was derived from services and one-fifth from manufacturing (The Economist 2005b). However, 54-million Mexicans still live below the poverty line (Chandler *et al* 2002), making poverty alleviation a primary goal.

The publicly-owned Mexican Petroleum Company (PEMEX) continues to dominate the energy sector, and oil provides 37 per cent of federal financial revenues (Chandler *et al* 2002). Mexico's growing population and expanding economy are increasing energy demand. Combined with environmental concerns, this growth is pushing the need for energy sector reform to help develop cleaner energy sources, improve efficiency and increase the availability of revenue to address social concerns. Although there is significant potential to expand Mexico's renewable energy sectors (such as the solar industry), the availability of cheap fossil fuel limits investment in this area (Chandler *et al* 2002). Despite efforts,

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significant energy sector reform (including the creation of independent power producers) has been unsuccessful so far. Mexico's Constitution restricts foreign investment in the oil and gas sector, and it has been difficult to achieve the consensus required to make the amendments needed (The Economist 2005b).

The government has taken a proactive stance on addressing climate change, viewing its adverse impacts as a more serious threat in the long-term than the loss of revenue from oil exports. Mexico was the first large oil-exporting country to ratify the Kyoto Protocol, and the first non-Annex I country to submit its Second National Communication to the UNFCCC. It has established an internal, virtual emissions trading system within PEMEX, expanded the use of natural gas for fuel switching and made efforts to improve energy efficiency (Chandler *et al* 2002).

Favoured Policy Positions

The government is presently preparing: a law to support renewable energy, an inventory of emissions from all sectors, and its Third National Communication (Government of Mexico 2005). Despite these efforts, Mexico's GHG emissions are expected to grow, primary due to population growth, economic development, energy sector expansion, and land-use policies – especially those related to forest management. Deforestation in Mexico is occurring at the second highest rate worldwide (USAID 2005).

As one of three non-Annex I countries that are also OECD members, Mexico expects it will be asked to take on commitments in the post-Kyoto period and has therefore taken a proactive approach. As put forward at the SOGE, the government's perspective is that short-term action is needed along with framing a vision of what might be the medium/long-term evolution of the international regime (Government of Mexico 2005). Further differentiation among developing countries is thought appropriate, if the principle of 'common but differentiated' is respected. Inaction or non-compliance by countries should not be, in Mexico's view, an excuse for other countries not making their own best efforts, but may affect the nature and scope of the other's commitments. Mexico indicated that a flexible approach is needed to reflect national circumstances and to recognize differing needs. Mexico believes it is essential that equity concerns be addressed in whatever post-Kyoto regime emerges (Government of Mexico 2005).

Mexico has expressed interest in voluntary commitments, noting that progressive climate action is more significant than the adoption of legally binding commitments. Mexico opposes the use of strict compliance conditions, such as sanctions for non-compliance or requirements to purchase in the external carbon market. The Government favours an approach of flexible convergence on per capita emissions in the international regime.

Mexico is looking for changes to the CDM, having recently expressed concerns about high transaction costs, bias towards ensuring environmental integrity over effectiveness of the process, and an insufficient flow of approved methodologies (Government of Mexico 2005). The country has consistently expressed interest in sector-based approaches within the CDM, such as GHG efficiency standards for sectors like: cement, steel, thermal energy, road freight, agriculture and forestry.

A step-by-step process towards taking on commitments has been proposed, which first includes a strengthening of national capacities; second, the introduction of policies and measures; third, taking action; and finally, monitoring and evaluation (Government of Mexico 2005).

Given Mexico's stance on the need for developing countries to take action, the country may play a pivotal role in broadening participation in a post-Kyoto regime. Mexico has also expressed support for achieving a Montreal Mandate at COP/MOP1.

Bilateral Initiatives

The 2004 Canada-Mexico Letter of Intent on climate change initiatives is intended to help in information sharing and cooperation on climate change initiatives that reduce net GHG emissions. The letter encourages market-oriented deployment of GHG mitigation technologies, including energy efficient and

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renewable energy technologies (DFAIT 2005). It is hoped that the letter will help facilitate the development of CDM projects and therefore generate emission reduction credits for Canada.

The Mexico/US Bilateral Working Group on Climate Change focuses on seven areas of cooperation including emission inventories, economic and climatic models, energy, adaptation, agriculture and forestry, earth observations and carbon capture and storage. Germany and Mexico have a decade-long history of bilateral cooperation on environmental issues.

Mexico's relationship with the US and Canada (through NAFTA) may provide opportunities to explore tri-lateral options for mitigating climate change.

2.6 Shared Interests of Developing Countries

Drawing from the previous sections a number of common preferences exist among the five developing countries analyzed:

- The strong and shared sentiment continues that the developed countries must demonstrate their ability to take meaningful action on climate change without experiencing significant economic harm, prior to developing countries making commitments. If developing countries see progress as a direct result of climate change policies and measures (like the Kyoto Protocol), they may be willing to commit to measures like strengthening capacities, domestic policies, voluntary or conditional commitments, monitoring or evaluation.
- Support exists for the principle of “common but differentiated responsibilities”. This concept touches on equity, a sensitive issue for all countries. India, Brazil and Mexico have each noted a need for a contraction and convergence model (over the long-term) to address this issue. Graduating responsibility is another potential element for dealing with equity, with countries like Mexico and South Africa likely being some of the first to graduate. Mexico has responded positively to this concept, which will likely help in moving forward the post-Kyoto discussions.
- All countries back the continuation of multilateral efforts, with a common emphasis on the UNFCCC but mixed thoughts on the Kyoto Protocol. Generally, the countries with the highest level of CDM project activity (which include India, Brazil and Mexico) stand to gain the most from a successful Kyoto Protocol. A multilateral process for adaptation is also strongly supported, again with the UNFCCC as the favoured process but perhaps enabled by its own specific Protocol.
- There is a demonstrated desire for technology agreements on climate change, as long as they do not constrain developing countries in terms of their other priorities (like poverty eradication). The Chinese indicate that developed country promises of technology transfer would be a condition for any potential commitment by developing countries. All countries analyzed support initiatives on energy efficiency, clean energy development and new energy technology.
- There is general support for integrating climate change policy with other policy areas. A framework of ‘environmentally sustainable economic development’ (one that promotes economic growth, poverty eradication, human development, improved local air quality, and the protection of water and land) may have the potential to tie climate change goals with other objectives.
- All support achieving a successful Montreal Mandate, to provide momentum for launching the post-Kyoto process. There is a desire to change the tone of unconstructive dialogue on post-Kyoto, which has resulted in current uncertainty regarding carbon markets and the CDM, and in turn resulted in a barrier to project implementation in developing countries.

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Other important priorities to one or more developing countries include:

- The Chinese support a focus on ‘luxury’ emission restrictions for developed countries and the use of a progressive tax regime to deal with these luxuries.
- China, India and South Africa are extremely dependent on coal-fired power generation and therefore view new clean fossil-fuel technology as a critical priority.
- Brazil is concerned about the treatment of LULUCF in whatever post-Kyoto regime emerges. Brazil has argued strongest on this issue in the past but may receive more support from other developing countries (such as Mexico) as the issue becomes more urgent.
- Mexico has made the strong statement that inaction or non-compliance by countries shouldn’t be an excuse for other countries not making their own best efforts. This may indicate Mexico’s desire to play a pivotal role in post-Kyoto, having also indicated a willingness to consider a voluntary, intensity-based, short-term target. Broadening engagement to include Mexico (and perhaps South Africa) may play well to both developed and developing country desires.

3.0 Comparison to Developed Country Priorities

An acceptable agreement to address climate change post-Kyoto requires a clear understanding of the common interests and areas of disagreement among all countries. Any strategy to engage the large emitting developing countries in these discussions requires not only an understanding of developing country interests (as was developed in Section 2.0) but also a perspective on developed countries/blocs. Annex A provides an overview of some developed country/bloc interests and priorities (the European Union, United States, Japan, Australia and Canada) from which the following assessment of shared interests is drawn (see below).

This section concludes with an analysis of commonalities and differences between developed and developing countries on climate change priorities.

3.1 Shared Interests of Developed Countries

Drawing from Annex A, some common developed country priorities are:

- The continuation of economic growth and prosperity is critical to all countries analyzed, with many supporting the concept of augmenting the climate change approach to integrate more effectively with other issues (e.g., poverty alleviation, sustainable development, capacity building and stable economic institutions).
- A strong commitment to achieving the ultimate objective of the UNFCCC, meaning long-term stabilization of GHG concentrations in the earth’s atmosphere. Outstanding questions on this issue include: what is an appropriate stabilization level, or what degree of climate change is acceptable?
- All developed countries recognize a role for multilateral processes (like the UNFCCC) but also see a strong need for new approaches as well. For example, the UK recently used its G8 Presidency to focus on climate change. The US’s multilateral agreements on GHG mitigation technology provide other examples.
- All countries express the need for broader engagement of countries, including the US the large developing country emitters in particular, if another multilateral agreement is to be reached. Differences on this issue relate to the type of developing country commitments, which range from voluntary or conditional commitments to commitments to policies and measures.

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- Adaptation, especially in relation to the most vulnerable regions to climate change, is a priority to all developed countries. One potential source of conflict however is that most countries (developed and developing alike) tend to describe themselves as being particularly vulnerable to climate change.
- Technology agreements and research and development policy, especially in the energy sectors, is supported by all developed countries. And, as most are actively engaged, technology agreements might have already become an area where consensus and support is building for a new climate change agreement (one that may be acceptable to both developed and developing countries).
- Most developed countries support markets where appropriate. However, clear consensus on the exact role that markets should play doesn't seem to exist. Even overarching questions, like should markets serve as a bridging mechanism to the future, or should markets be the end game in and of themselves?, are not necessarily agreed to by each nation.

Specific priorities to one or more developed countries include:

- The US, Japan and Australia (and perhaps Canada) seem most willing to consider new approaches (both multilateral and bilateral) for international action on climate change.
- The EU seems most wed to an approach of extending Kyoto (with changes) and especially an extension of Kyoto's most successful aspects (e.g., emissions trading).
- The EU is one of the strongest proponents of a global emissions market and of the CDM.
- The US is the most active in initiating and rolling-out multilateral technology agreements, and the US may be the most active in international research on the science of climate change.

3.2 Commonalities/Differences between Developed/Developing Countries

Developing countries expect industrialized nations to demonstrate meaningful action on climate change. Although what actually constitutes as 'meaningful action' is debateable, developed countries likely agree that they should take the lead in addressing climate change. For non-Kyoto signatories like the US and Australia, demonstrating meaningful action may prove difficult to do, and therefore re-engaging these countries in a multilateral effort will be important for getting developing country buy-in.

Developed and developing countries both adhere to the principle of 'common but differentiated responsibilities'. Many also agree with the need for further differentiation of commitment groups (to more than just Annex I and non-Annex I) and for a clear process for graduating from group to group. Mexico's willingness to discuss its graduation to the 'commitments fold' may be crucial for post-Kyoto negotiations.

All countries studied have shown a great interest in technology agreements, as long as the agreements do not constrain countries in achieving other priorities. This sounds promising, but hasn't necessarily had the desired result. Issues with technology transfer have arisen as one group wants access to technology for economic development and the other wishes to protect its legal rights to the technology. The success of technology agreements being signed today may significantly influence how technology transfer actually plays out in the future.

Developed and developing countries support integrating climate change policy with other priority areas. However, agreement on an integration approach and on the exact priority areas may be an issue. Some common words/phrases being used by both groups when discussing integration include: climate change, sustainable development, adaptation, carbon markets and clean energy.

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Adaptation is a concern of all nations; however, it seems reasonable that the Least Developed Countries and Small Island States have the greatest cause for concern. Adaptation is therefore an effective avenue for engaging developing countries in a future international climate change regime, however more than just the large emitters would need to be involved. A separate approach to adaptation, one that is inclusive of the most vulnerable to climate change, may be supported by the countries analyzed here.

The developing countries studied all expressed optimism for a Montreal Mandate to provide a launch pad for a post-Kyoto process. They also expressed a common hope for the success of the UNFCCC, and many hope for a successful Kyoto Protocol including its market mechanisms. Reforming the CDM to make it more effective is a high priority. The G8 (which represents the developed countries/blocs analysed here) recently stated its support of the UNFCCC as the forum for negotiations on future climate change action (G8 2005), which may lend support for a constructive dialogue in Montreal.

4.0 Strategies for Engaging Large Emitting Developing Countries

Successfully engaging the large emitting developing countries requires action on a number of fronts and through a variety of multilateral and bilateral channels. The main multilateral process is the UNFCCC, and Canada has a key role to play over the next year as host of COP/MOP1. Other multilateral opportunities include the G8, and a number of joint ventures on energy, science and technology. Bilateral initiatives between Canada and developing countries provide opportunities to build lasting relationships, address joint priorities, and generate economic benefits for Canada and Canadian companies. By developing a strategic framework that encompasses the opportunities while addressing the interests and priorities of large emitting developing countries, Canada can effectively assist in encouraging these countries to take concrete actions to mitigate climate change during the post-Kyoto period.

4.1 Within the UNFCCC Process

As hosts of COP/MOP1, Canada has an immediate opportunity to lay the ground work for engaging China, India, Brazil, South Africa and Mexico on the future international climate change regime after 2012. In addition to discussion on the design of this regime a number of UNFCCC avenues exist through which Canada could address developing country interests and concerns. Constructive action on outstanding areas of agreement in the short-term may develop good faith and lay the groundwork for a future agreement. In light of the interests and priorities in section 2, four main opportunities exist within the UNFCCC and Kyoto Protocol for building strong relationships:

- ***Enhancement of the Clean Development Mechanism***

The CDM provides all five developing countries with considerable opportunity to increase foreign direct investment in their priority sectors. Despite this, concerns have been raised by Brazil, India, Mexico and South Africa, regarding the CDM's high transaction costs, treatment of additionality, and the slow approval process of the Executive Board. These countries have also expressed interest in including sector or policy-based CDM approaches.

Reformation of the CDM is a key issue Canada would like to address at COP/MOP1. This decision is in part a response to a number of concerns expressed by Parties and private sector investors. Part of the COP/MOP1 agenda is expected to address whether the current CDM infrastructure is sufficient to handle the hundreds of CDM projects expected to be generated over the next few years (IISD 2005b). These initial discussions could lead to concrete decisions being made at COP/MOP2. Enhancing the capacity of the CDM Executive Board (possibly making it a permanent, professional body) and addressing the issue of additionality may be critical to

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ensuring the success of the mechanism and its role in directly engaging developing countries in emissions trading and climate change mitigation.

▪ ***Technology Transfer***

The transfer of environmentally sustainable technologies is a key commitment of the Convention (Articles 4.1c and 4.5) and the Kyoto Protocol (Article 10c). Although discussed at each COP, there is a sense (particularly on the part of developing countries) that progress has been slow, sporadic and focused too narrowly on the transfer of hard technologies. At COP10, an overriding message was that countries need to dedicate more effort to technology transfer commitments to ensure the success of the climate change regime (IISD 2005c).

Enhanced development, deployment and diffusion of climate change technology are priorities for developed and developing countries alike, but progress is needed soon to demonstrate the potential for technological solutions. Doing so requires overcoming differing perspectives of technology transfer: developing countries seek increased financial and technical assistance from developed countries; developed countries wish to see commercial benefits from technology transfer and are seeking ways to engage the private sector which owns most of the technology. Recently the emphasis in technology transfer has been to encourage private sector participation, collaborative projects between developed and developing countries, and public-private partnerships (IISD 2005c). Concrete actions to encourage these efforts and act upon developing countries' Technology Needs Assessments could contribute to future engagement.

▪ ***Capacity Building***

Developing countries are only able to participate in the post-Kyoto regime to the extent that they have the human, technical and financial capacity needed to do so. As noted by Mexico at the SOGE, you can't control what you can't measure (Government of Mexico 2005). At COP10, Parties reviewed progress on implementing the capacity building framework for developing countries agreed to at COP7 and made the following recommendations: make institutional capacity building a priority for creating and strengthening basic institutional infrastructure; increase the involvement of national government organizations in capacity building activities; and ensure that sufficient financial and technical resources are available (UNFCCC 2004). Fostering action to build capacity in these areas could be pursued by Canada, by taking an integrated approach that encourages mainstreaming of mitigation and adaptation efforts in national sustainable development planning processes, energy sector reforms and institution building.

▪ ***Adaptation Funding***

Adapting to the impacts of climate change is becoming of greater importance to all countries, and particularly to developing countries. There are a number of outstanding issues related to adaptation that need to be addressed; the most pressing may be a decision on the priority areas for support through the Special Climate Change Fund (SCCF) and the modalities of the Kyoto Protocol's Adaptation Fund. Large developing countries will have access to both of these Funds. At COP10, discussion around the SCCF caused a divide between developed and developing countries and a more flexible approach and determined effort was called for to reach agreement at COP/MOP1 (IISD 2004).

As host and President of the COP Canada may help shape the outcomes on these and other issues; however, it is essential to realistically assess the degree of influence it will actually have. Canada's efforts to build confidence with developing countries could be quickly undermined by other more prominent Parties such as the US or EU. Therefore, to succeed in building bridges with the large emitting developing

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countries, it will be equally important for Canada to engage other Annex I Parties in constructive dialogue.

Canada (and other Annex I Parties) will also need to demonstrate their own commitment to mitigating GHG emissions and addressing the impacts of climate change. Most obviously, this would be accomplished by meeting their Kyoto targets. Doing so will concretely demonstrate the possibility of reducing GHG emissions while maintaining economic growth. As well, meeting Kyoto commitments will help provide developing countries with systematic approaches and models for reducing GHG emissions. It also builds Canadian capacity to transfer expertise and knowledge to developing countries and assist them in their own mitigation efforts. Canada can demonstrate commitment to the future of the CDM by supporting projects in China, India, Brazil, South Africa and Mexico that both reduce CO₂ emissions, and support sustainable development. Canada's Climate Fund could be important in this effort.

In addition, Canada can consistently convey a common message through other international forums and in bilateral discussions and agreements. This may require harmonizing existing policies and programs. Bringing climate change concerns into non-climate forums may draw new attention to the implications and opportunities associated with climate change, thus influencing financial and development planners who typically have a higher degree of influence over national decision-making than the individuals participating in UNFCCC negotiations.

Furthermore, Canada could consider combining the newly established position of Ambassador for Climate Change with that of the established Environment Ambassador to create a permanent Ambassador for Climate Change, Energy and Sustainable Development. Such a position would enable Canada to build upon the legacy of COP/MOP1, engage developing countries on a consistent basis and encourage greater coherence in Canadian government policy on climate change within developing countries.

In the longer term, Canada might wish to explore some existing proposed options for the post-Kyoto regime that specifically target the engagement of developing countries. While most of these options focus on adapting the current Kyoto framework, others take a more general approach.

Options that propose alternative approaches to setting emission targets for developing countries include:

- *Dual Intensity Targets* – one emission intensity target for compliance, another stricter target for selling excess allowances; targets defined on a GDP basis (Kim and Baumert 2002).
- *Growth Baselines* – emission intensity targets, also on a GDP basis, possibly defined for sectors (Hargrave *et al* 1998).
- *Human Development Goals with Low Emissions* – country specific targets developed on a bottom-up basis (Pan 2003).
- *Multistage/New Multistage* – three or four stages of targets for developing countries, differentiated on the basis of GDP per capita (RIVM website; Höhne *et al* 2003).
- *Soft Landing in Emissions Growth* – graduated targets that set different timetables for stabilization based on per capita income (Blanchard 2001).
- *Sectoral targets* – emission or performance targets for key sectors; for developing countries these could be non-binding (Bosi and Ellis 2005).

Other approaches avoid setting national targets entirely. *Sustainable Development Policies and Measures* – focuses instead on voluntary pledges of policies and measures that address both economic development and climate change (Winkler *et al* 2002). While it will be difficult to engage many developing countries, an approach that addresses individual country needs may gain broader support than one that focuses on target-setting.

4.2 Through other Multilateral Processes

Outside the UNFCCC, a number of other multilateral partnerships and processes are being used to move climate change action forward. Examples of these initiatives include the technology partnerships noted throughout this paper, such as the *Generation-IV International Forum*, the *Methane to Markets Partnership*, and the *International Partnership for the Hydrogen Economy*. China, India, Brazil and Mexico are involved in each of these initiatives. In addition China, India, Brazil and South Africa are part of the *Carbon Sequestration Leadership Forum*. Brazil, South Africa and Mexico are involved in the *Renewable Energy and Energy Efficiency Partnership*. All five countries participate in the *Group on Earth Observations* which focuses on climate change science, and vulnerability and adaptation.

Forums such as the Group of Eight Industrialized Nations (G8) and the Leaders of the Group of 20 Nations (L20) also provide a means for the exchange of ideas that build a mutual understanding of acceptable ways to moving forward on climate change. This was most recently demonstrated at the July 2005 G8 Summit, during which G8 leaders were joined by peers from China, India, Brazil, South Africa and Mexico to discuss climate change issues. The meetings were also attended by heads of the International Energy Agency, International Monetary Fund, United Nations, World Bank and World Trade Organization, to further advance the agenda through other opportunities (an example being the IEA's work with developing countries on clean coal and carbon capture and storage).

Subsequently, heads of the developing countries signed a joint declaration that includes familiar statements related to respecting common but differentiated responsibilities and the responsibility of the developed world to take the lead in tackling climate change. The statement also urges G8 leaders to devise innovative solutions for technology transfer and for the coming shift to a new paradigm of technology cooperation (Indian Embassy 2005).

At the Summit's end G8 leaders signed a *Communiqué* and *Plan of Action* on climate change that identifies a range of activities to promote research and cooperation on energy efficiency, renewable and other clean energy sources, adaptation to climate change and illegal logging (G8 2005). A subsequent and ongoing Dialogue on Climate Change, Energy and Sustainable Development is being planned for early November 2005 (G8 2005). The first Dialogue meeting may provide momentum for COP/MOP1 in Montreal.

The G8 noted that despite the usefulness of these multilateral avenues, the UNFCCC is "the forum for negotiations on future action" (G8 2005).

4.3 On a Bilateral Basis

Bilateral initiatives between Canada and key developing countries can also support technology transfer, and capacity-building for emission trading and adaptation. Bilateral initiatives also provide significant long-term benefits to Canada through the export of Canadian technology and expertise. A number of existing bilateral initiatives are summarized in section 2. The main mechanisms for bilateral cooperation are: development cooperation agreements; scientific and technological cooperation agreements; letters of intent; and joint programs.

The largest area for bilateral cooperation between Canada and key developing countries is in the area of energy technology. The rapidly growing demand for energy in developing countries will create many opportunities for Canadian clean energy technologies and expertise. Key opportunities are in:

- *Carbon capture and storage (CCS) and clean coal technologies* – China, India and South Africa, in particular, will continue to rely heavily on coal for energy and power. CCS will be critical to limiting emissions growth, and significant Canadian expertise has been developed in this area. Canada is currently providing expertise to China on coal-bed methane. Canada could work to involve these countries more directly in its initiatives in these areas.

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- *Nuclear* – although the future of nuclear power remains highly uncertain, several key developing countries have plans to expand their capacity. While there are challenges associated with accessing some of these markets, Canada may be able to provide technology, expertise and fuel for these countries.
- *Hydroelectricity* – Canadian technology and expertise can assist with the implementation of low-impact hydroelectricity projects.
- *Biofuels* – energy from biomass will be critical to a sustainable future in both the developed and developing world. Canada has world-leading biofuel and biotechnology industries.
- *Unconventional oil and gas* – Canada has world-class expertise in coal bed methane, frontier gas (far north and deep sea), gas hydrates and oil sands technologies.
- *Hydrogen and fuel cells* – in the long term, a shift towards a hydrogen economy is possible and may even allow some developing countries to leapfrog technologies. While the US and other countries are world leaders, Canada has niche expertise that may provide opportunities for technology partnerships.
- *Green buildings and sustainable communities* – developing countries are increasingly urbanized, and technologies and urban development strategies will be needed to limit environmental and social impacts.

Canadian firms will face competition in these markets by other industrialized countries, as well as by China, India and other developing countries that will produce lower-cost indigenous technologies over the longer term. Canada's international opportunities will depend on the competitiveness of domestic technology development vis-à-vis other countries that are investing in research and development. Strategies to identify and facilitate access to key markets for Canadian firms will be required. Trade missions that focus on climate change technology may be a particularly useful way to link up Canadian industry with opportunities in developing countries.

Bilateral initiatives can also address adaptation by providing assistance to developing countries for capacity-building and mainstreaming adaptation within economic and development policies. Capacity-building on all aspects of mitigation is also critical, including support for developing the institutions and processes required to participate in emission trading.

4.4 Potential to Engage

China has warmed to discussion of a post-Kyoto climate change regime that may include more direct involvement from large emitting developing countries, as recently indicated at events like the SOGE meetings in Bonn, lead-up meetings to the G8 Summit, and the Summit itself. However, China, like all high emitting developing countries, will need to see clear action on climate change from the developed countries prior to any formal commitment of its own. To gain China's interest there must be a focus on technology and knowledge transfer to the developing countries, especially for cleaner fossil-fuels, but also for other priority areas noted previously. Over the longer-term bilateral work on areas of common technology interest may benefit Canada.

China supports the UNFCCC as the ultimate multilateral forum for global climate change efforts, but may envision an entirely different future commitment mechanism from that of the Kyoto Protocol. Engaging China through the UNFCCC might be most achievable through efforts in technology transfer and capacity building.

India has a clear interest in seeing changes made to the CDM, to increase the flow of investment to priority areas such as renewable energy and energy efficiency. Canadian efforts to initiate discussion on this topic at COP/MOP1, and to encourage the development of CDM projects, will be welcomed. So too

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will any progress in resolving outstanding issues related to technology transfer. Support for clean coal technology, either on a bilateral or multilateral basis, would help India reduce emissions and bring incremental value to a vast domestic energy source. Biofuels are another area where India may appreciate support. By clearly demonstrating concrete reduction actions at home, Canada and other developed countries would help build the confidence that India and other developing countries seek regarding the current and future climate change regimes.

Brazil firmly states that formal post-Kyoto discussion must begin soon in order to alleviate market uncertainty over future commitment periods. Brazil maintains that the UNFCCC is the appropriate forum for such discussion. The country is likely to support a future regime that builds on the Kyoto mechanisms and that places the burden of emissions reductions on the shoulders of those most responsible. Therefore a focus on the UNFCCC and its processes may work best to engage Brazil. For instance improving the CDM, enhancing technology transfer or enabling capacity building may interest Brazil. Working with Brazil through other multilateral processes may help demonstrate the value of a more integrated approach to climate change, which Brazil supports. Canada's past and future bilateral relationships with Brazil may help build the good will needed for longer-term engagement.

South Africa is one of the most industrialized developing countries, and has acknowledged that at some point it will need to take on reduction commitments. Given South Africa's stated support for a strengthened Kyoto Protocol and its call for a 'roadmap' for negotiations to be developed in Montreal, South Africa could be encouraged to take a lead role in multilateral discussions through the UNFCCC. South Africa's heavy reliance on coal may also lead to a more narrow focus on clean coal technology (especially carbon capture and storage), which could be pursued through bilateral initiatives with Canada.

Mexico may be expected to take on commitments in the next climate change regime, and it has been open to this and to greater differentiation of commitment Parties within the regime. Its leadership role in this context should be encouraged. Along with improvements to the functionality of the CDM and greater transfer of technology, Mexico has expressly stated an interest in increasing its capacity to engage in GHG reduction activities. Bilateral assistance in this area would likely be welcomed.

5.0 Summary and Conclusions

China, India, Brazil, South Africa and Mexico are home to more than two-fifths of the global population and some of the fastest growing economies in the world. Their significant and rapidly increasing GHG emissions are a major reason why emissions from developing countries are likely to exceed those of developed countries within a few decades.

Engaging these countries in action on climate change will require addressing their interests, priorities and preferences through a variety of multilateral and bilateral forums and processes. While there are important differences between these countries, they all share a common interest in development, poverty eradication, clean technology, adaptation, and the integration of climate change objectives within main development policies. These countries also have a common need to build institutional and other capacity to participate effectively in global climate change efforts.

The main multilateral process for engaging developing countries will continue to be the UNFCCC. As host of COP/MOP1, Canada has an immediate opportunity to lay the groundwork for engaging China, India, Brazil, South Africa and Mexico on the future of the international climate change regime after 2012. Four main opportunities exist within the UNFCCC (and Kyoto Protocol) negotiations for engaging developing countries:

- Enhancement of the Clean Development Mechanism is critical for engaging developing countries directly in emissions trading and climate change mitigation. COP/MOP1 provides an opportunity

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to make the CDM more successful and effective by lowering transaction costs, addressing treatment of additionality, and exploring broader options like sectoral or policy-based CDM.

- Technology Transfer is a key element of the Convention and the Kyoto Protocol but progress has been slow. Canada can encourage a shift in focus to encouraging private sector participation, collaborative projects between developed and developing countries, and public-private partnerships.
- Capacity Building is important as a lack of institutional and other capacity is a significant barrier to developing country action on climate change. The capacity building framework for developing countries agreed to at COP7 provides a basis for action that could be promoted by Canada.
- Adaptation Funding Mechanisms for developing countries include the Special Climate Change Fund and the Kyoto Protocol's Adaptation Fund. Canada can support resolution of outstanding issues at COP/MOP1 by encouraging a more flexible approach.

Other important multilateral forums include the G8, a potential L20, and a variety of international energy, technology and scientific initiatives. While Canadian participation in these initiatives is important, Canadian leverage and impact is realistically limited.

Bilateral initiatives between Canada and key developing countries also provide important opportunities to support technology transfer, capacity-building for emission trading and adaptation. Bilateral initiatives also provide significant long-term benefits to Canada through the export of Canadian technology and expertise. The most promising areas for bilateral initiatives are in clean energy technology.

Multilateral and bilateral approaches for engaging key developing countries will need to address the widely varying priorities and interests of these countries. While there is broad support for the UNFCCC as the forum for global climate change efforts, views on the appropriate role for developing countries differ considerably. South Africa and Mexico may be open to a dialogue on the possible form of future developing country commitments; Brazil, India and China will be much more cautious. The CDM will continue to be a key focus. Bilateral initiatives between Canada and developing countries provide an important opportunity to address specific priorities, for example carbon capture and storage in China, India and South Africa.

Annex A: Interests and Priorities of Developed Countries

This annex provides a summary of the interests and priorities of some developed countries related to a post-Kyoto international climate change regime. This is an up-to-date synopsis of previous work completed by the International Institute for Sustainable Development for the National Round Table on the Environment and the Economy in a June 2005 paper entitled: *Post-Kyoto Climate Change Background* (IISD 2005).

A.1 European Union

Common interests among EU-members on climate change post-Kyoto include the following. Economic prosperity through ensuring European competitiveness in industry, human resources and innovation is a top priority and a driver behind the opening of European marketplaces. Energy security applies increasing pressure on a continent that is supply constrained. Environmental integrity highly valued by many EU nations, and because individuals in government, industry and society believe strongly in the potential impacts of climate change, vulnerability and adaptation are prominent issues. A theme that plays to each of these priorities is eco-efficiency and many EU nations are already the most eco-efficient worldwide.

The EU strongly champions post-Kyoto discussion and generally supports an approach of extending a Kyoto-type regime (with changes) to future commitment periods. The EU invested heavily in Kyoto and its mechanisms (e.g., emissions trading) and wishes to see the benefits of these ventures in future periods.

At recent SOGE meetings the EU held presentations on six key questions (on science, technology innovation, investment, policy integration, adaptation and policies and measures to implement Kyoto) for future climate change policy, which indicates an openness to discuss future options. The EU and specific member-countries continue to frame international discussion on post-Kyoto both through the UNFCCC and other influential processes such as this year's G8 Summit.

A.2 United States

US priorities on climate change are influenced by its natural endowment of fossil-based energy resources and the current energy-consuming North American lifestyle. While having an abundance of coal, the US imports more oil and gas with each coming year, increasing its economic dependence (and therefore future growth and prosperity) on external markets. Meanwhile, the current Administration and Congress both indicate they cannot sign multilateral agreements that unduly put the American economy at risk. The US reiterates that the major developing country emitters must be part of any new agreement. At the same time the US remains committed to achieving the ultimate objective of the UNFCCC, and state-level action is progressing. These factors have resulted in the strong focus on multilateral agreements on technology and research and development between the US and international partners. In recent years the US has signed multi-billion dollar agreements with countries that represent 80 per cent of global GHG emissions (Watson 2005).

Another more recent US priority is the science of climate change, as demonstrated domestically through the *Climate Change Research Initiative* and internationally through *Earth Observation* (Watson, 2005).

Thus far the US is reluctant to discuss post-Kyoto, perhaps for fear of reduction commitments entering the talks. The US states that until the international community has a better understanding of its current handling of climate change any new commitments would be "premature". The current Administration is likely to focus on the three part domestic response of: first, focusing on domestic policies and measures to slow GHG emissions growth; second, laying the groundwork for major investments in technology; and third, promoting international cooperation through partnerships (Watson 2005).

A.3 Japan

A high priority for Japan is to invigorate and grow its stagnant economy. Fiscal and market reform is a common theme, with global energy supply being important because of a domestic shortage. Japanese policymakers are tapping domestic strengths (in particular industrial and manufacturing capabilities) to address these priorities by developing GHG mitigation technology for domestic applications and export.

On post-Kyoto, Japan is a proponent of mainstreaming climate change with other country objectives (such as economic development and energy conservation). As well, Japan believes that engaging the large emitting developing countries and (most importantly) re-engaging the US should be the main focus of a new policy regime. Recognizing that the US may never sign a constraints-oriented agreement (like the Kyoto Protocol) Japan opts for a “less dogmatic and more pragmatic” approach, with the end goal being a low carbon economy (Nishimura 2005). Japan supports reframing the climate change discussion to one of a “whole new society of carbon free sustainability” and to be positive, encouraging and enabling, rather than negative, discouraging and constraining (Nishimura 2005). Japan may see value in parallel initiatives outside the UNFCCC, particularly on bilateral issues like technology transfer or sector agreements.

A.4 Australia

Australia’s geographic location and trade dependence necessitates it being competitive with neighbouring countries that are not Party to Kyoto (except for Japan and New Zealand). This, along with US non-ratification, is a major reason for Australia’s opting out of Kyoto. Further, a carbon-constrained world presents a challenge for Australia because of its fossil-fuel based economy. Adaptation is a priority given that Australia could experience some of the greatest developed world impacts from climate change.

Australian issues are familiar to Canadians, including its export oriented economy, its vast endowment of fossil-fuels, the relative size of the country (both have large landmasses and small populations), and many others. Australia has expressed interest in rejoining a multilateral agreement if all major GHG-emitting countries partake. Australia supports a strong technology focus for post-Kyoto.

A.5 Canada

Canada will continue to develop its export oriented natural resource industries including its energy sectors. A top trade priority has and will continue to be the US which imports more energy (and other resources) from Canada with each new year. Policymakers in the US see Canada and Mexico as part of a ‘friendly’ solution to its domestic energy constraint. For Canada this means developing heavier oil resources like the oil sands and new gas supplies from frontier or northern plays or from coal bed methane, with each of these resources implying a higher GHG penalty for the export country. Therefore, technology and innovation that targets long-term emission reductions is critical. The federal government shares climate change responsibility with other jurisdictions, and so it needs the flexibility to develop plans that take local circumstances into account. Adaptation is a top priority in regions that face extreme vulnerability to climate change impacts such as Canada’s far north.

As host of COP/MOP1, Canada has begun international dialogue to lay the foundation for effective and inclusive international cooperation on climate change for the long-term (Smith 2005). Canada has stated its objectives for post-Kyoto as being: broadening participation with fair goals; including all industrialized and key emerging countries; generating outcomes that result in real progress over the longer-term; providing incentives to invest in developing and sharing transformative environmental technologies; maximizing the deployment of existing clean technologies; support for a streamlined and efficient global carbon market; and, addressing adaptation as well as mitigation (Prime Minister’s Office 2005).

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