

**Adaptive Capacity, Climate Change & Development Equity: A Critical Analysis  
of Canada's Approach to International Climate Cooperation**

By:

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**Canada**

## **ABSTRACT**

*Adaptive Capacity, Climate Change & Development Equity:  
A Critical Analysis of Canada's Approach to International Climate Cooperation  
By: Brennan Vogel, BES (University of Waterloo, 2003)*

Canada has responsibilities to mitigate climate-changing greenhouse gases that will disproportionately affect the developing world. This research comprehensively considers differential adaptive capacity to climate change and adaptation as a Canadian development equity issue, generally finding that much more could be done to support action on climate change through Canadian government development cooperation and international diplomacy efforts.

It is absolutely imperative that Canadian development cooperation: 1. Work to decrease vulnerability to climate change impacts and enhance the adaptive capacity and resilience of vulnerable populations in the developing world to the inevitable impacts of global climate change, while, 2. Supporting the need for alternative development trajectories, in the form of 'green' growth and sustainable prosperity in rapidly industrializing nations. Moral, international and inter-generational development equity dimensions of the climate change issue must inspire Canadian leaders and policy-makers to rise to the occasion of a new era of integrated, adaptive development cooperation.

*Date Submitted: November 23, 2010*

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*I wish to thank you for your interest in thinking about and holistically considering the equitable pathways required for Canadian development cooperation and diplomacy to support and strengthen adaptive capacity in low-income societies, in light of unavoidable impacts in a climate changed world. Canada has development equity obligations given historic greenhouse gas contributions and development benefits of industrialization. Inter-generational and international equity and justice dimensions require that Canada, as a country, do much more to address the interconnected issues of domestic climate change mitigation and adaptation financing for developing countries vulnerable to climate impacts.*

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I wish to thank my parents Paul and Joan Vogel for instilling in me the values and virtues of knowledge, wisdom, discipline, equity, fairness and education and generously supporting me over the years throughout my educational endeavors and global pursuits of lifelong learning. I could not have done it without you! Thank you to my life-partner and best friend Myriam Hammami for your loving support, patience and good sense of humor over the past four years. Thank you my children Téo Kahlil & Aneya Rumi Vogel for giving me hope and inspiration every day that things can and will get better if we are focused and work at it, together, with the long-term in mind. *I love, appreciate and graciously thank you all for being my personal foundation.* I wish to also thank Dr. Anthony O'Malley in the Department of International Development Studies at Saint Mary's University for serving as my academic supervisor and mentor throughout the thesis writing process. Your insight and experience has helped me through the thick of it. I also wish to thank Peter Croal, Strategic Environment Assessment Policy Specialist at CIDA and current Chair of the OECD-Development Assistance Committee Strategic Environmental Assessment Task Team as well as John Carter, freelance International Development Consultant for acting as second readers and providing feedback on my thesis research. Your professional expertise, knowledge of policy and support is greatly appreciated. I wish to thank Saint Mary's University for supporting my academic research through a graduate entry scholarship, a SSHRC fellowship, as well as through an international mobility bursary to support my attendance at UNFCCC COP-13.



## TABLE OF CONTENTS

ABSTRACT.....	ii
ACKNOWLEDGEMENTS.....	iii
TABLE OF CONTENTS .....	iv
LIST OF TABLES .....	vii
LIST OF FIGURES.....	vii
Chapter One: Introduction .....	1
Problem.....	1
Thesis Statement.....	6
Thesis Argument .....	7
Structure and Approach .....	10
Results and General Conclusions .....	11
Chapter Two: Literature Review.....	14
Introduction.....	14
Key Scientific Concepts of Climate Change.....	15
Ecological Impacts .....	17
Climate Variability, Sensitivity, Impacts and Extremes.....	18
Committed Climate Change.....	19
Dangerous Climate Change.....	21
Avoiding Dangerous Climate Change .....	22
Adaptation, Vulnerability & Adaptive Capacity.....	25
Vulnerability.....	26
Adaptation .....	36
Adaptive Capacity .....	55
Development in Climate Policy: UNFCCC & the Kyoto Protocol.....	70
Climate Change & Development .....	75
Climate Change, Adaptation & Development: In Context .....	79
Sustainable Development & Climate Change.....	88
Critical Perspectives on Climate Change & Development .....	95
Chapter Three: Evidence & Empirical Data .....	102
Overview.....	102
Rationale .....	104
UNFCCC: Present Context .....	105
Canada's Domestic Policy Context For Adaptation And International Cooperation .....	108
Recent High Level Events.....	108
Historic Context: Canadian Development Policies, Strategies & Priorities .....	116
Present Context: Canadian ODA & Climate Change .....	122
Adaptation in Canadian Aid.....	127
Multi-lateral Assistance & Departments other than CIDA.....	127
Case Studies: Canadian Bilateral Aid with an Adaptation Focus .....	130
Summary & Next Steps .....	133
Chapter Four: Discussion .....	135
Introduction.....	135

Strengthening Adaptive Capacity: Analytic Approaches .....	137
Strengthening Adaptive Capacity through Development .....	140
Adaptation and Development: High-Level Policy Benchmarks .....	148
Multi-lateral Analysis .....	153
Bilateral Analysis .....	156
Methodology & Rationale.....	156
OECD Lens .....	161
Key Findings .....	168
Overview .....	168
Summary .....	206
Chapter Five: Conclusions and Recommendations.....	211
High-Level Policy Recommendations.....	220
Key Findings & Recommendations: Bilateral Co-operation .....	224
Canada's Fair Share: Time for Domestic Action on GHGs .....	229
Recommendations For Future Research.....	232
Recommendations for Canadian Government and Development Policy .....	234
Bibliography .....	239
APPENDICES .....	257
Appendix 2A: Carbon co-relations to warming temperatures. (UNFCCC, 2007 & UNDP-HDR, 2007). .....	258
Appendix 2B: Climate Impacts - Global and Continental Temperature Change. (IPCC, 2007). .....	261
Appendix 2C: Dangerous Anthropogenic Interference Climate Thresholds. (UNDP, 2007). .....	262
Appendix 2D: Projected Regional Impacts of Climate Change for 2020 and 2050. (OECD, 2008). .....	264
Appendix 2E: Linking Adaptation/Development. (Schipper, 2007). .....	266
Appendix 2F: Perspectives on Sustainable Development and Climate Change Initiatives. (Grist, 2008). .....	267
Appendix 2G: Co-Evolution of Climate Change and Development. (Huq et al. 2006) .....	268
Appendix 2H: Key Actors in Climate Change and Development. (Huq et al. 2006). .....	269
Appendix 2I: Co-Evolution of Climate Change and Development. (Huq et al. 2006). .....	270
Appendix 2J: Adaptation: Supply and Demand & Nairobi Work Plan..... (UNFCCC, 2005).....	271
Appendix 2K: Time & Scale Issues of Climate Development Responses. (Huq et al. 2003). .....	272
Chapter Three Appendices.....	273
Appendix 3A: Letter re: Canada's Fair Share. (Pembina et al. April 2010).....	273
Appendix 3B: Government of Canada Baseline Analysis .....	277
Chapter Four Appendices .....	281
Appendix 4A: OECD Climate Lens Toolkit.....	281

Appendix 4B: Canada's International Record on Climate Change.....	284
(World Bank Little Green Data Book, 2010).....	284
Appendix 4C: Findings Critiques, Recommendations. (Vogel, 2010).....	287
Appendix 4D: Sustainable Economic Growth Strategy Adaptation Analysis. (Vogel, 2010).....	293
DATA ANNEX.....	298

## **LIST OF TABLES**

Table 2.1: Adaptation and Development Issues. (p.44).

Source: Schipper (UNDP, 2008)

Table 2.2: Differential Adaptive Capacity between North America and Latin America (p. 72)

Source: IPCC (2007)

Table 3.1: Bilateral Case Studies of Canadian Development Adaptation Focused Aid (p.135)

Source: Canadian International Development Agency, Government of Canada

Table 4.1: Canada's High Level Adaptation Commitments & Mechanisms (p.153)

Source: Various, Government of Canada

Table 4.2: Recent ODA Expenditures: Government of Canada (2008-09) (p.155)

Source: Government of Canada

## **LIST OF FIGURES**

Figure 1A: Development Equity Paradigm Shift Canadian Context. (p.15).

Source: Original (Vogel, 2010)

Figure 2A: Dangerous Climate Change Thresholds. (p.24).

Source: UNDP-HDR (2007), IPCC (2007)

Figure 2B: Nested Hierarchy of Differential Adaptive Capacity. (p.27).

Source: Original (Vogel, 2010)

Figure 2C: Spectrum of Vulnerability. (p.27).

Source: Original (Vogel, 2010)

Figure 2D: Adaptation Approaches. (p.39).

Source: Original (Vogel, 2010)

Figure 2E: Implementing Adaptation to Strengthen Adaptive Capacity (p.49)

Source: Various

Figure 2F: Sustainable Development, Paradigms, Ecological Thresholds & Climate Change. (p.93).

Source: Based on Grist, 2008

Fig 2G: Throughput Growth, Climate Change and the 21<sup>st</sup> Century. (p. 97)

Source: Based on Daly and Goodland (1996)

Figure 3A: Data Collection Strategy. (p.107).

Source: Original (Vogel, 2010)

Figure 4A: Nexus of Climate Change and Development Issues. (p.142).

Source: Original (Vogel, 2010)

Figure 4B: OECD Lens -- Options for intervention. (p. 148).

Source: Based on OECD (2008)

Figure 4C: Equity Dimensions of Climate Change for Canada. (p.183).

Source: Original (Vogel, 2010)

**LIST OF ACRONYMS AND ABBREVIATIONS**

AF: Adaptation Fund  
AWG-LCA: Ad-hoc Working Group on Long-term Co-operative Action  
CDM: Clean Development Mechanism  
CESD: Commissioner on Environment and Sustainable Development  
CER: Certified Emissions Reductions  
CIDA: Canadian International Development Agency  
COP: Conference of the Parties  
EA: Environmental Assessment  
GEF: Global Environment Facility  
GHG: Greenhouse Gases  
IAE: International Assistance Envelope  
IFI: International Financial Institution  
IPCC: Intergovernmental Panel on Climate Change  
LDC: Least Developed Countries  
LDCF: Least Developed Countries Fund  
MDB: Multi-lateral Development Bank  
NAPA: National Adaptation Programs for Action  
NWP: Nairobi Work Programme  
OAG: Office of the Auditor General of Canada  
ODA: Overseas Development Assistance  
OECD: Organization for Economic Development and Cooperation  
RBM: Results Based Management  
SBI: Subsidiary Body for Implementation  
SBSTA: Subsidiary Body for Scientific and Technological Advice  
SCCF: Special Climate Change Fund  
SEA: Strategic Environmental Assessment  
SIDS: Small Island Developing States  
UNFCCC: United Nations Framework Convention on Climate Change

## **Chapter One: Introduction**

### **Problem**

Climate change poses a significant threat to the prospects of sustainable development and prosperity world-wide, but particularly so in low-income societies in developing regions of South and Central America and the Caribbean, Africa, South-east and Central Asia and the South Pacific, as well as the low-income countries of Eastern Europe. Simultaneously, climate change is a complex development-equity issue involving questions of historic responsibility for the climate change problem, and, the just and equitable solutions that are required from responsible stakeholders in the developed, industrialized world to aid vulnerable populations in adapting to the inevitable impacts of an increasingly warmer and more hostile world.

After decades of observation, the overwhelming consensus of international scientists is that climate change is a phenomenon anthropogenic in nature. Climate change is due to an increase in heat-trapping greenhouse gases (GHG) emissions in the global atmosphere – most importantly, increasing concentrations of carbon dioxide. Already average global temperatures have warmed by over 0.7 degrees in the past 150 years (IPCC, 2007, p.5).

The Intergovernmental Panel on Climate Change (IPCC) concludes that:

*Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures,*

*widespread melting of snow and ice, and rising global average sea level*  
[emphasis added].

Projections vary, but the scientific evidence suggests that the global atmosphere will continue along this warming trend with unpredictable ecological results. Such an environmental phenomenon on a global scale is not to be without consequences, and scientists are reasonably assured that considerable climate impacts will be felt, and indeed in some locations are already observable.

Arising primarily from modern fossil fuel driven industrialization, climate change is a complex anthropogenic environmental issue with deep socio-economic and cultural roots. It is also an issue with significant development implications. The equity paradox of the climate change problem is that those populations who are historically responsible for increasing GHG emissions are also those same populations who have historically benefited from increasing standards of living brought about through a model of fossil-fuel based economic growth and development. This includes First World, industrialized nations of the world, like Canada. Similarly, it is projected that the impacts of climate change, at least in the shorter-term, are not likely to be as devastating for many developed countries, by virtues of geographic latitude and the theoretical predication of increased capabilities to adapt. However, Canada is neither exempt nor immune to climate impacts, as recent telltale examples of potential Canadian climate impacts indicate. Potential signs of changing weather patterns include: Atlantic hurricanes

moving ever northward in record warm oceans thereby adversely affecting Maritime coastal areas, the Great Lakes water levels falling and shrinking glaciers in the Rockies threatening urban water supplies and agriculture throughout central and Western Canada, or perhaps the dramatic visibility of the warming Arctic compromising Inuit ways of life. All of these 'warming warning' signs indicate there is no guarantee that countries like Canada will not be adversely affected by climate change and it is in our best national and international interests to quickly respond to the dangerous threat to national security that the climate change issue poses to our country.

However, as this research will primarily focus on, the paradox of climate change is that those populations most vulnerable to the impacts of climate change and with the least capacity to adapt, are to be found mostly within the developing world, the low-income societies. It is in these same places that development pathways have been hindered by historical inequities of colonization, exploitation and environmental degradation. Despite having contributed little to the precipitating climate crisis, or having benefited little from fossil fuel driven industrialization and modernization of the past century, these countries stand to bear the significant brunt of inevitable climate impacts. There is no shortage of need when it comes to building developing countries technical and capital infrastructural capacities to overcome vulnerability to climate impacts, while simultaneously building post-carbon based models of economic development and growth that are fundamentally based on principles of ecological sustainability and climate resilience. In some cases where climate impacts are unavoidable, the prospect of 'climate refugees' presents issues



of interest to the study of immigration policy. It is plausible that in the not-so-distant future, well endowed, resource-rich, under-populated nations like Canada will become the destination of choice for many populations adversely affected by climate change. Granted this understanding, let us now return to the primary focus of this study: climate change adaptation and development cooperation.

Uncertainties of a changing climate that face developing countries include: increasing frequency of extreme weather events such as floods, droughts and storms, as well as longer-term changes to climatic conditions that will affect the viability of natural resources such as forests, fisheries, agriculture and water resources. Frighteningly, arctic sea-ice melting is contributing to higher global sea levels and warmer ocean temperatures. This phenomenon doubly raises the vulnerability of coastal regions to the risks of inundation from increasing frequencies of hurricanes, particularly for Small Island Developing States (SIDS) and coastal areas.

These sorts of climatic change impacts threaten the sustainability of primary resource dependent livelihoods of much of the world's poor farmers, fishers and foresters. In some cases like Tuvalu or the Maldives, rising sea levels threaten the very existence of these low-lying small island states. In other cases like the Sahel region of Africa, rising temperatures and climate impacts threaten the environmental and socio-economic sustainability of already marginalized communities dependent on resource-based activities in fragile ecosystems. In yet other cases, climate change exacerbates the

deplorable poverty and vulnerability of millions of people clinging to existence on the edges of the world's increasingly over-crowded urban slums in cities like La Paz, Bolivia or Jakarta, Indonesia. Rising temperatures contributes to the spread of vector-borne diseases such as malaria, while extreme weather events threaten the haphazard infrastructure that is often found on the margins of rapidly expanding cities in the developing world. There exists a delicate social balance that holds many of these fragile states together, and natural disasters quickly can become the precipitating agent of social unrest – a situation often exacerbated by related food shortages, energy crises, health epidemics and the like.

*Whatever and wherever the impacts, the phenomenon of climate change threatens to undo decades of development efforts to raise standards of living in the developing world while threatening the sustainability of low-income societies, and, the longevity and durability of current and future Canadian development assistance investments in sustainable development and poverty reduction [emphasis added].*

Clearly international development cooperation has a role to play, both in redressing the issues of inevitable climate impacts disproportionately affecting populations in the developing world, but also in simultaneously addressing the longer-term equity dimensions of historic responsibility for the climate problem, and, the clear need for developed countries to take greater ownership, responsibility and leadership for the required policy solutions. In many ways, the dimensions and scale of climate change

make it a crosscutting theme within the discourse around sustainable development and eradication of poverty that has pre-dominated development studies and practice over recent decades, and that will continue to be an important cornerstone of the development discourse in the early 21<sup>st</sup> century. I will argue that development cooperation and climate change are inseparably linked and enhancing technical capacities to adapt and be resilient to inevitable climate impacts while building post-carbon development pathways to reduce long-term rises in GHG emissions should absolutely be the underlying paradigms of modern development study and practice.

A study of the crosscutting issues of climate change adaptation and strengthening adaptive capacity through international development cooperation presents timely opportunities to reflect on the domestic and international roles and responsibilities for countries such as Canada in international climate diplomacy forums, such as the United Nations Framework Convention on Climate Change (UNFCCC).

### **Thesis Statement**

In this study, I will assess the differential adaptive capacities of developing societies to cope with and adjust to the impacts of climate change. I will then carry out a critical analysis of Canadian international development co-operation and domestic policy approaches to international cooperation in matters of climate change. The aim is to analyze the long-term prospects of Canadian development assistance to enhance support

for climate change adaptation and strengthened adaptive capacity in low-income societies. Within the scope of this research, the credibility of Canadian domestic policy approaches to climate change and the role for Canadian domestic GHG mitigation to reduce the long-term risks of catastrophic climate change will be taken into consideration. Within the context of international efforts on climate change, I will argue that fundamentally these are the long-term, required development cooperation measures that a new Canadian ‘equitable climate change in development’ paradigm must support in global efforts to avert catastrophic climate change, while support development studies and practice in adapting to the realities of inevitable global ecological changes that will be brought about by climate change.

### **Thesis Argument**

At the nexus of the South’s developmental vulnerability and differential adaptive capacity to climate impacts and the North’s historical responsibility for greenhouse gas emissions, there is clearly a role for international development cooperation to play in addressing the complex and inter-connected issues of development and equity<sup>1</sup>. Integrated domestic and international approaches are required from developed nations

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<sup>1</sup> Within the praxis of this research analysis, development equity means the dynamic relationship between historic responsibility for greenhouse gas emissions from carbon-intensive development pathways in developed countries, and, developed countries enhanced abilities to support adaptation through development cooperation. This is leveraged against developing countries lack of responsibility for greenhouse gases, lack of development gains from carbon-intensive development pathways, and, increased vulnerability and differential adaptive capacities to cope with the differentiated impacts of climate change. In this context I argue there are two clear roles for developed countries to address development equity: 1. rapid domestic mitigation of climate changing greenhouse gases and, 2. support for adaptation in developing countries through development cooperation.

like Canada in order to minimize the long-term impacts of climate change. In particular, Canada must accept its historic responsibilities and obligations by both domestically mitigating its fair and legally binding share of global GHGs under the Kyoto Protocol, while supporting international development cooperation activities that strengthen adaptive capacity to inevitable climate change impacts in the developing world.

Fundamental to this analysis is the understanding that mitigation of GHGs in developed countries underscores a long-term reduction in climate change vulnerability in developing countries, ultimately by reducing the risk of catastrophic interference with the global climate system. Canada must mitigate and reduce its global carbon footprint and greenhouse gases, and thereby reduce the long-term risks of catastrophic climate interference. This should be the ideal scenario: to mitigate carbon-intensive pathways, first and foremost, within the industrialized world while supporting developing countries in the efforts towards low-carbon pathways and adaptation.

With respect to Least Developed Countries (LDCs) and SIDS, my analysis will primarily focus on enhancing adaptation for most vulnerable populations through international development cooperation and best practices that support strengthening adaptive capacity. Comparing Canadian case study data, in contrast to an international best-practices tool developed by the Organization for Economic Development and Cooperation (OECD climate lens), I have found that, generally speaking, Canada could do much more to

bridge the gaps between political and bureaucratic rhetoric and the real and transformative actions that are required to support adaptation.

Within the broader scope of my findings and analysis, Canada must be held accountable to its domestic GHG mitigation obligations as the long-term pre-requisite to avert the global climate crisis, which, in turn, supports a coherent adaptation approach. Ultimately, I have found that strong domestic mitigation in Canada is a prerequisite to any adaptation strategy to help those less fortunate in the developing world, by reducing the long-term vulnerability associated with rising levels of greenhouse gases. I have found that best practices for development in the 21<sup>st</sup> century, at home and abroad, requires that the filter of climate change mitigation and adaptation be integrated into 'whole of government' policy approaches to dealing with the problems of climate change. Principle-based development practice can draw much benefit from a new, 'equitable climate change in development' paradigmatic approach. International and inter-generational equity absolutely and fundamentally demand that the paradigms and the institutional infrastructure of the Canadian government evolve to support strengthening adaptive capacity to climate change and low-carbon development pathways in the developing world. 'Whole of government' policy mechanisms must rapidly be developed, deployed and broadly integrated into development to adapt to, and hopefully avert, the longer-term prospects associated with catastrophic interference of the global atmosphere.

## **Structure and Approach**

This research begins with an examination of climate change and development by primarily assessing the literature pertaining to the science of climate change, differential adaptive capacities of developing societies to cope with and adjust to the impacts of climate change and the linkages of climate change to sustainable development. A thorough review of the literature in Chapter Two sets the context for subsequent analysis of a thin slice of the problem: Canada's role in strengthening adaptive capacity to climate change through international development cooperation and domestic climate policy responses. Through a review of a variety of Canadian domestic policy documents, and, the high level context of empirical data pertaining to: 1. Canada's policy approach to integrating climate change adaptation into development cooperation and, 2. Canada's record acting domestically on the issue of climate change mitigation, Chapter Three will set the framework for further discussion and analysis. Chapter Four presents an OECD 'climate-lens' analytical tool for use in the subsequent discussion of Canada's adaptation response in comparison to international best practices. In this chapter, the Canadian data set is subjected to a critical analysis, with key findings presented. Chapter Five includes high-level policy recommendations pertaining to improving Canadian development cooperation and domestic responses to climate change, based on the critical analysis and findings from the Canadian data. You will find References and Appendices in the final sections of this thesis.

## **Results and General Conclusions**

I have found that, generally speaking, Canada could do more to bridge the gaps between rhetoric and action when it comes to addressing the two sides of the climate change coin: domestic mitigation of GHGs and international cooperation in support of adaptation and strengthening adaptive capacity in the developing world. While Canada actively participates in various high-level policy dialogues, and, has shown promising signs on moving forward to support adaptation and adaptive capacity measures through development cooperation, there remain considerable gaps between political rhetoric and the type and scale of actions that are required to fundamentally redress the complex development equity issues associated with climate change mitigation and adaptation. An equitable distribution of responsibility for taking action on the global climate crisis requires that Canada play a much more constructive role as a principle agent of truly sustainable development. As Daly and Goodland (1996) conclude, economic development is a subsystem construct within the finite nature of the earth, and economic 'growth' and development must eventually adapt ecological realities.

The time for such adaptation, in all countries, is now. A new Canadian 'equitable climate change in development paradigm' that holistically integrates climate change mitigation and adaptation at home and abroad, including broader definition of 'sustainable economic growth' and the aggressive integration of ecological indicators into decision-making and regulation, could do much to bridge gaps between rhetoric and action. Such



a Canadian approach could show global leadership and could assist with correcting the course of misguided domestic and international development policy approaches that continue to be premised on fundamentally unsustainable concepts of 'limitless' economic growth based on fossil-fuel, resource-intensive driven trade, economic liberalization and globalization. Such approaches do not adequately consider the implications of increasing atmospheric concentrations of carbon and the long-term development and security threats presented by catastrophic climate change. Going forward, rapid, holistic 'whole-of-government' policy corrections to paradigms and institutional infrastructure are required to bridge gaps between rhetoric and action, and, to ensure that sustainability and development equity between and across generations and countries are not compromised by political and bureaucratic neglect of these decisive opportune moments for Canadians to show bold leadership on these issues of the global climate change crises.

Figure 1A: Development Equity Paradigm Shift: Canadian Context

<b>'EQUITABLE CLIMATE CHANGE IN DEVELOPMENT' PARADIGM SHIFT &amp; INFRASTRUCTURAL REFORM FOR CANADA</b>	
<b>DOMESTIC</b>	<b>ABROAD</b>
<i><b>Mitigate and reduce domestic GHGs through better regulating oil and gas industries etc.</b></i>	<b>1. Support and increased GHG mitigation efforts in rapidly industrializing countries such as China and India</b>  <b>2. Support and increase adaptation and adaptive capacity in developing countries such as LDCs and SIDS</b>

**= DEVELOPMENT EQUITY**

## **Chapter Two: Literature Review**

### **Introduction**

The Intergovernmental Panel on Climate Change (IPCC) observed in the 2007 Fourth Assessment Report (FAR) that at current rates, the global average temperature will increase between 1.4 and 5.8 degrees Celsius by the year 2100 (IPCC, 2007c, pp.1-989). Climate change is a cumulative environmental issue arising from the historic accumulation of greenhouse gases in the Earth's atmosphere. The IPCC FAR notes that, the evidence suggest that most of observable climate change over the last 50 years has been attributable to human activities (IPCC, 2007a).<sup>2</sup>

Additionally, it is increasingly evident and recognizable that climate change is a long-term, common, global environmental problem that can only be addressed through global actions with wide participation (Halsnæs & Shukla, 2008). Even with stabilization of greenhouse gas emissions in the near future, there may be continuing climate effects well beyond the twenty-first century (IPCC, 2007a). These temperature changes will have significant consequences for the stability of the Earth's climate system and the dependent natural and human systems, particularly for those ecosystems and populations most marginalized, vulnerable or fragile.

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<sup>2</sup> [http://www.ipcc.ch/publications\\_and\\_data/ar4/wg1/en/contents.html](http://www.ipcc.ch/publications_and_data/ar4/wg1/en/contents.html)

Although there is some limited opinion to the contrary (Singer & Avery, 2007; Solomon, 2008), the overwhelming scientific opinion is that current trends of increasing global temperatures and the subsequent ecological impacts have been largely attributable to anthropogenic forcing of the global climate system through increased levels of greenhouse gases (IPCC 2001, 2007). Generally speaking, historic and continuing carbon-intensive development pathways based on the exploitation of non-renewable fossil fuel resources, combined with rampant deforestation that decrease global carbon sinks are understood to be main factors exacerbating global climate change.

### **Key Scientific Concepts of Climate Change**

This literature review will begin with a brief review of the scientific basis climate change. Through decades of observational data collection and analysis by the Intergovernmental Panel on Climate Change (IPCC), it has been well established that anthropogenic increases in greenhouse gases (GHGs) from historic global processes of industrialization and land use change have contributed to the process of global climate change <sup>3</sup>. According the IPCC FAR atmospheric concentrations of carbon dioxide, methane and nitrous oxide have increased dramatically at the global level. This has been as a result of human activities since the dawn of the industrial revolution (1750), and the

---

<sup>3</sup> Global climate change refers to “A change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings [caused by human activity], or to persistent anthropogenic changes in the composition of the atmosphere or in land use.” (IPCC a, 2007)

evidence shows that atmospheric concentrations far exceed previous data taken from ice-core samples (IPCC, 2007c) [emphasis added]. See also *Appendix 2A: Carbon in the Atmosphere Over Time: Past, Present, Future*). Specifically, the IPCC (2007a) has found that increasing concentrations of carbon dioxide in the Earth's atmosphere (from the pre-industrial value of 280ppm to 379ppm in 2005) far exceeds the natural range of carbon dioxide (between 180-300ppm) found at any time in the Earth's atmosphere in the past 650,000 years. Similar findings have been recorded for increasing atmospheric concentrations of other GHGs such as methane and nitrous oxide.

The IPCC suggests that a 450-490 ppm level of atmospheric concentrations of carbon dioxide is associated with a 2 – 2.4-degree rise. The IPCC postulates that reducing global GHG concentrations by at least 50-80% by 2050, with GHG emissions peaking in the next 10 years, is a necessary pre-requisite to keeping the global climate from warming by more than 2 degrees and thus preventing 'catastrophic' interference with the global climate system (IPCC, 2007b). Stabilizing the carbon dioxide in the atmosphere at this target would require cutting emissions by 50 - 80%+ by 2050 (Trainer, 2008).

Stern (2007) notes that atmospheric carbon is rising at more than 2ppm each year. Clearly mitigation is a problem of global importance, given the predictive science associated with long-term climate impacts.

The IPCC concludes with that, “*warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level*” (IPCCc, 2007, p.1) [emphasis added]. See also *Appendix 2A & Appendix 2B: Climate Impacts – Global and Continental Temperature Change*.

### **Ecological Impacts**

Climate impacts are the effects that climate change will have on natural and human systems (IPCCc, 2007). In the IPCC Third Assessment Report (TAR) in 2001, it was estimated that by 2100, global average surface temperatures would rise by 1.4 to 5.8°C relative to the 1990 level (IPCC, 2001). In 2007, The IPCC FAR notes that global average surface temperatures have have increased by about 0.74C over the past 100 years. Other observable correlations over the same time period include decreases in the length of river and lake ice seasons, reduction in glacial mass and extent in the 20th century, melting of the Greenland Ice Sheet, decreasing snow cover in the Northern Hemisphere, decreasing sea ice thickness and extent in the Arctic in all regions, particularly in the spring and summer, warming oceans and rising sea levels (due to thermal expansion of the oceans and melting of land ice) (IPCC a, 2007).

At present time, the IPCC FAR concludes with ‘high confidence’ (8 times out of 10) that regional climate changes, notably from temperature increases, are related to the human

activities adversely affecting the global environment (IPCC c, 2007, see *Appendix 2A & 2B*). The IPCC adds further that impacts will vary by region and by the sensitivity of human and ecological systems, but that future impacts will continue to increase as temperatures continue to increase.

### **Climate Variability, Sensitivity, Impacts and Extremes**

The degree to which systems – such as a communities - can cope with changing conditions that deviate from the average (outside the range of certain ‘normal’ conditions and/or surpassing the coping/vulnerability threshold of the system) will affect the level of severity of impacts. For example, prolonged drought or flooding would eventually lead to famine. Smit and Pilifosova (2003) the OECD (DAC/EPC, 2008) and Brooks and Adger (in Lim et al. (ed.), 2005) advocate that climate change will affect the frequency and magnitude of extreme conditions, even if there is no change in variability. While most systems are capable of coping with changes in mean conditions, they observe that frequency and magnitude of extreme climate events as a result of rising temperatures may push systems beyond ‘coping range’.

The OECD (2008) notes further that changing average climate conditions are particularly important in developing countries where increasing frequency of heat waves, heavy precipitation, drought, high sea levels coupled with increasing frequency of hurricanes, warmer oceans may adversely affect vulnerable populations.

Thus, the variability of climate change impacts and extremes will affect countries, regions and sectors of society differently, depending on the level of exposure and sensitivity to climate as well as differential variables of adaptive capacity. As the AfDB (2003) notes, this will have economic repercussions, particularly for natural resource dependent and climate sensitive economic sectors such as agriculture, forestry and fisheries (AfDB et al. 2003). Consequently, climate change will have a dramatic effect on the development trajectory of low-income societies in developing countries and their populations.

### **Committed Climate Change**

As a global society, we are committed to a changing global climate and rising sea levels for several decades, if not centuries, into the future. This is because the nature of the Earth's climate system has a time lag between the historic build-up of GHG levels in the atmosphere and the consequential rise in global temperatures (and subsequent ecological impacts). Even with the mitigation of current levels of GHGs, we are virtually assured a warmer world in the future as result of historic emissions. The IPCC (2007c) substantiates that climate processes and feedbacks virtually assure continued warming and sea level rise, even if GHG concentrations are stabilized.

The IPCC Fourth Assessment Report (2007) projects that the earth's average surface temperature will increase by between 1.1°C and 6.4°C (relative to 1990) by the end of



the present century (2100). The IPCC also estimates that mean sea levels will rise by at least 18cm and perhaps by as much as 59cm, and certain processes could lead to substantial additional sea level rise, but this is still not well understood (Oppenheimer et. al. 2007 as cited in OECD: DAC/EPC, 2008).

Wigley (2005) reports that recent scientific climate modeling studies have shown that global-mean temperature and sea level rise will continue to rise due to oceanic thermal inertia, even if GHGs were drastically reduced. Wigley recommends there be a substantial reduction in GHGs below present levels in order to stabilize global mean temperatures, noting further that impacts on low-lying island communities and on vulnerable ecosystems (coral reefs) seems 'inevitable'.

Similarly, scientific modeling studies by Wetherald, Stouffer and Dixon (2001) have found that historic time lags will lead to future warming and we are on the beginning of an upwards trend in global temperature. They recommend stringent control through the rapid mitigation GHGs as the pre-requisite to stabilize the global climate and set a course towards restoring climatic equilibrium.

Further adding complexity to the long-term challenge of climate change is the possibility for surprise events. The IPCC suggests that rising temperatures could potentially trigger 'rapid, non-linear' ecological surprises that are theoretically believed to occur with

environmental thresholds are surpassed and new equilibriums are created (Schneider and Lane, 2005, see also *Appendix 2C*).

### **Dangerous Climate Change**

Dangerous' climate change' finds its terminological origin in the 1992 United Nations Framework Convention on Climate Change (UNFCCC), which calls for stabilization of greenhouse gases to prevent dangerous interference with the global climate system. The Framework Convention further suggests that stabilization of GHGs should be achieved in such a time frame to allow for natural ecosystems to adapt, protect food production and enable sustainable development. However, the UNFCCC never makes explicit reference as to what constitutes a 'dangerous' level of interference or what the required time frame is.

The concept 'climate threshold' refers to the point at which concentrations of atmospheric GHGs trigger significant, unalterable environmental events such as widespread coral bleaching or collapse of oceanic circulation systems (IPCC, 2007c).

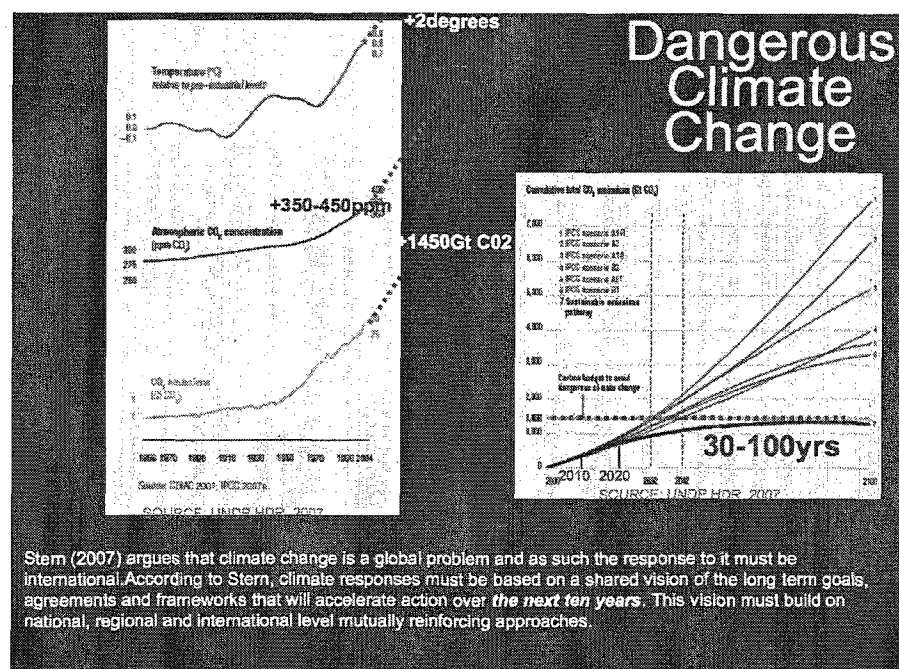
Already signs of climate thresholds being pushed are becoming apparent (as noted in Ecological Impacts). Avoiding the determinative dangers of climate change by acting on the early warning and regional dangers currently observable has therefore become an imperative to preventing dangerous climate change. Smith (2006) explains that there is

growing evidence that accelerating positive feedbacks (melting ice, forest dieback, boreal forest expansion, warming seas, melting permafrost) will reinforce and accelerate climate change beyond the point of irreversibility. Clearly, the prospective of catastrophic interference with the global atmosphere is unpalatable to the sustainability of humanity. For more information, see *Appendix 2C*.

### Avoiding Dangerous Climate Change

The UNDP Human Development Report (HDR) 2007-08 offers that the threshold for dangerous climate change is around 2°C. Further, the UNDP offers that this threshold signifies the point at which ecological degradation and degradation to dependent human systems ‘would become very difficult to avoid’ (UNDP HDR, 2007).

Figure 2A: Dangerous Climate Change Thresholds



The Pew Center (2008) reports that a long-term decline in global GHGs needs to start in the next 10-20 years in order to ameliorate the atmospheric situation. Stern (2007) warns that a doubling of atmospheric concentrations of GHGs (pre-industrial levels) could occur as early as 2035. The Pew Centre advocates a 50 to 80% reduction in total global GHGs in order to stabilize the global climate and avoid dangerous climate change. Thus, as Smith (2006) concludes, mitigating GHGs precipitating climate change is therefore an imperative to reducing the long-term risks associated with climate change [emphasis added].

There remains great uncertainty pertaining to dangerous climate change. Schneider and Lane (2005) point out the unpredictability associated with the complex factors driving dangerous climate change towards climate thresholds includes the potential for instigating 'abrupt non-linear' climate responses. They point out that we currently have insufficient understanding of the complexity, processes and interrelationships of global ecological systems (e.g. ocean, atmosphere, terrestrial systems).

Acting on the uncertainties of dangerous climate change with the knowledge and science that we do have remains a prominent, and political, issue of debate. The IPCC FAR notes astutely that decision-making must make the best possible use of available scientific research and knowledge to manage climatic uncertainties. " (IPCC c, 2007). The OECD notes that the information available is sufficient to guide informed decision-making and that climate science is incapable of providing prescriptive, nuanced projections (given the associated complexities) (OECD: DAC/EPC, 2008). Schneider and Lane (2005)

summarize that ‘dangerous’ interference with the climate system is ultimately a value-judgment by decision-makers about the ‘relative importance’ of unacceptable climate impacts.

Defining dangerous climate change, like accurately predicting the future, is impossible and unknowable, while at best the predictions remain subject or open to interpretation. However, it can be reasonably argued, on the basis of past scientific data, recent observations of a changing climate in combination with the predictive sciences and good practice of proactively acting on the pre-cautionary principle<sup>4</sup>, that acting on dangerous climate change through mitigation of greenhouse gases is a necessary component to avoid surpassing climate thresholds. By acting on the early warning dangers and regional indicators of dangerous climate change through mitigation, it may be possible to avoid setting in motion major positive feedbacks that assure determinative, dangerous climate change and the potentially devastating and irreversible ecological impacts on the global environment and dependent human systems.

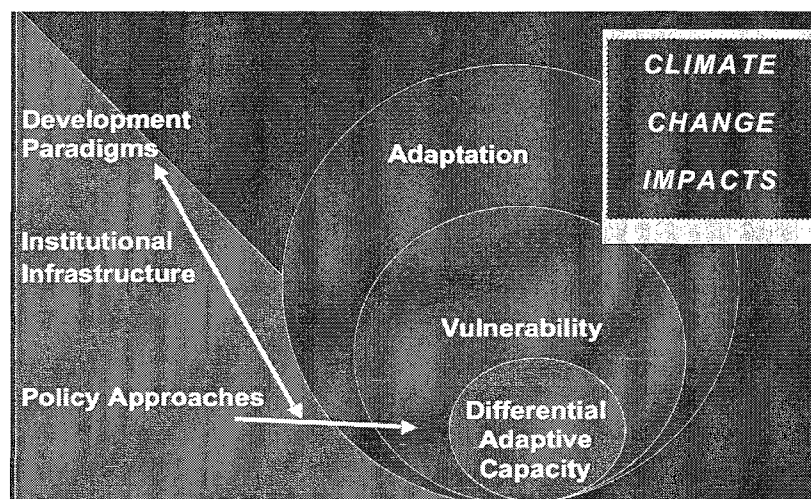
The focus of the literature review now turns to the specific discussion of concepts that relate to the topic of the differential adaptive capacity between and within nations to the inevitabilities of climate change.

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<sup>4</sup> The precautionary principle refers to future oriented, socially responsible discretionary decision-making when there is scientific evidence suggesting there is plausible risk to a particular course of action. In the case of climate change, precautionary principle based approaches are premised on anticipatory thinking and the notion that long-term reduction in future risks and climate hazards can be achieved through mitigation and adaptation action today.

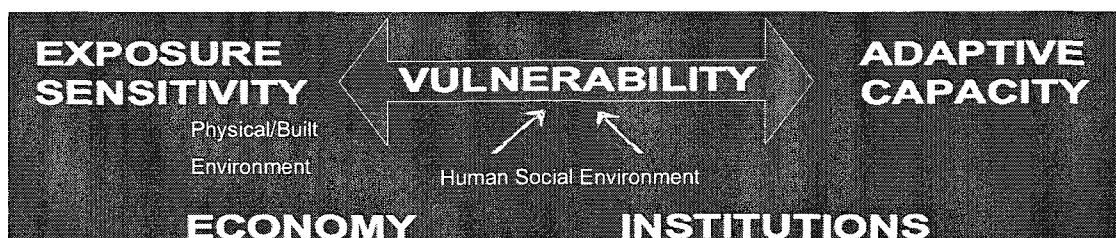
## Adaptation, Vulnerability & Adaptive Capacity

**Fig 2B: Nested Hierarchy of Differential Adaptive Capacity**



This section of the literature review will review and elaborate on the key concepts of vulnerability, adaptation and adaptive capacity to climate change. Through this discussion, the intentions are first to clarify the differential adaptive capacity of LDCs to adapt to climate change, and second to explore the nexus of adaptation to climate change through a review of the international policy context around climate change adaptation. A more thorough and deeper discussion of sustainable development and climate change will conclude the literature review. First, I will begin with an examination of the concept of vulnerability.

**Fig 2C: Spectrum of Vulnerability**



## Vulnerability

Vulnerability is a central concept in the disciplines of development, climate change policy and natural hazards/risk reduction. It is a key to understanding the dynamics and processes of adaptation and adaptive capacity. The IPCC defines vulnerability as:

The degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity and its adaptive capacity (IPCC, 2001, p.6).

Exposure is defined as “the nature and degree to which a system is exposed to significant climatic variations” while sensitivity is “the degree to which a system is affected, either adversely or beneficially, by climate-related stimuli” (IPCC, 2001, p.7).

Downing and Padwardhan note there is no universally accepted definition of vulnerability. They advocate that ‘*vulnerability is systemic, and as a consequence of the state of development... final outcomes are determined by a combination of climate hazards and system vulnerability*’ (Ch.3, in Lim et al. (ed.), 2005) [emphasis added].

The OECD points out that vulnerability increases with climate change and sensitivity factors (i.e. state of development). Adaptive capacity decreases vulnerability and that

vulnerability can be further decreased by reducing the magnitudes of climate change (e.g. GHGs), reducing exposure or increasing adaptive capacity by addressing sensitivity factors. (IPCC, 2001 as cited in OECD DAC/EPC, 2008). The OECD further notes that: *‘Sensitivity to climatic stress is higher for activities entailing climate dependent natural resources, such as agriculture and coastal resources – often critical for the livelihoods of the poor’* (p.38) [emphasis added].

In this regard, vulnerability to climate change is both an external function of exposure and sensitivity to climate impacts as well as an internal function of the adaptive capacities of social systems to cope with climate-related stresses. Noting this, it is clear that there are differentials in vulnerability both between and within countries, depending on the differential external and internal circumstances that may contribute to, or alleviate, conditions of vulnerability.

### ***Characteristics of Vulnerability***

What characterizes vulnerability? Smit and Pilifosova (Ch.2 in Smith et al. (ed.), 2003) contend that,

There is now broad agreement that the vulnerability of a given system is related both to its *exposure to climate change effects (sometimes called initial impacts)* and to its *capacity to deal with those effects (also called adaptability, coping ability and adaptive capacity)* [emphasis added].



The vulnerability of populations to climate impacts can be both *event-based and a product of political and economic structural factors* (Adger et al. 2003 citing Mustafa, 1998; Adger, 1999; Pelling, 1999) [emphasis added].

Vulnerability is a function of various elements of ‘risk’ including: physical, social, economic and environmental vulnerabilities. Physical vulnerability refers to the built environment and can be described in terms of differential levels of exposure to climate impacts. *Social vulnerability* refers to aspects within a given social system (i.e. community or society) and may include elements such as:

*Literacy, education, health infrastructure, existence of peace and security, access to basic human rights, systems of good governance, social equity, traditional values, customs and ideological beliefs and overall collective organizational systems* (UN 2006, p.11) [emphasis added].

Further, vulnerability is socially differentiated: “virtually all climate change *differentially affects different groups in society depending on their ability to cope*” (Adger, Ch.3 in Smith et al. 2003) [emphasis added]. Economic vulnerability refers to the less privileged demographics of a society as determined by: “class or caste, ethnic minorities, the very young and old, the disadvantaged, and often gender (women)” (UN, 2006, p.12). These groups tend to suffer greater impacts from disaster events. Environmental vulnerability pertains to the level of natural resource degradation in a given ecological area, for instance the level of “contaminated air, water, inadequate sanitation, diminished

biodiversity, soil degradation and water scarcity” may threaten a given population’s food security and overall health (UN, 2006, p.13).

### ***Vulnerability of the Poor to Climate Change***

The implications associated with the vulnerability of the poor to climate change are becoming clearer. Leading development publications from UN agencies, multi-lateral development banks and governments have given steadily increasing attention to the particular issues that climate change raises for development. The UNDP HDR (2007) advocates that “...climate change will steadily increase the exposure of poor and vulnerable households to climate-shocks and place increased pressure on coping strategies, which, over time, could steadily erode human capabilities” (p.6).

Specifically, the Report states,

*Vulnerability to climate shocks is unequally distributed... climate disasters are heavily concentrated in poor countries. Some 262 million people were affected by climate disasters annually from 2000 to 2004, over 98 percent of them in the developing world. High levels of poverty and low levels of human development limit the capacity of poor households to manage climate risks. With limited access to formal insurance, low incomes and meagre assets, poor households have to deal with climate-related shocks under highly constrained conditions”* (p.8) [emphasis added].

Countries and societies have differential vulnerabilities affected by variations in risk, which involves a combination of social, political, economic, environmental and developmental factors. The AfDB et al., (2003) note,

The impacts of climate change on the poor will be context-specific, reflecting factors such as geographic location; economic, social, and cultural characteristics; prioritization and concerns of individuals, households, and social groups; as well as institutional and political constraints... [noting further that] ... among the poor, vulnerability varies, since some groups are more lacking in the financial, social, and political means of securing alternative livelihoods less exposed to risk than others (p.7)..

According to Mitchell and Tanner (IDS & Tearfund, Online, 2007):

The poorest nations of the world and poor groups in developed countries are likely to be hardest hit by the effects of climate change because they: rely heavily on climate-sensitive sectors such as agriculture and fisheries; are less able to respond to the direct and indirect effects of climate change due to limited human, institutional and financial capacity and they tend to be located geographically in marginal areas that are more exposed to climatic hazards, such as flood plains, or are on nutrient-poor soils .

The Inter-Agency report, “Poverty and Climate Change: Reducing the Vulnerability of the Poor through Adaptation” (AfDB, et al., 2003) states that,

Vulnerability is a more dynamic concept than poverty, since it captures the sense that people move in and out of poverty. The meaning of *vulnerability encompasses exposure to risk, hazards, shocks and stress, difficulty in coping with contingencies, and access to assets*. In the context of climate change, *vulnerability to climate change is... the risk that climate change will cause a decline in the wellbeing of poor people and poor countries* (p.38) [emphasis added].

Noting the economic importance of climate-sensitive sectors (for example, agriculture and fisheries) for the developing world, and their limited human, institutional, and financial capacity to anticipate and respond to the direct and indirect effects of climate change, it becomes clearer that the “*vulnerability is highest for least developed countries (LDCs) in the tropical and subtropical areas*” (AfDB et al., 2003, p.10) [emphasis added]. The vulnerability of the poor to the ecological impacts of climate change can be further partitioned into the categories of human development, socio-economic and socio-political impacts.

### ***Human Development Impacts***

The UNDP Human Development Report (HDR) 2007/2008 discusses future impacts of climate change on human systems, with a focus on the most vulnerable regions of the world, identifying “five key transmission mechanisms through which climate change

could stall and then reverse human development” (UNDP HDR, 2007, p.9). These impacted systems include the following:

1. *Agricultural production and food security:* Changes in precipitation, temperature and water availability for agriculture (i.e. drought affected Sub-Saharan Africa faces increased risks of drought and desertification)
2. *Water stress and water insecurity:* Changes in run-off patterns, acceleration of glacial melt, compromising water flow for irrigation and human settlements (i.e. large populations of Central, South Asia and China are dependent on glacial melt water in the Himalayas)
3. *Rising sea levels and exposure to climate disasters:* Accelerated ice sheet melt leading to rising sea levels resulting in mass displacements of low lying areas and catastrophic damage to small island states; More intense tropical storms increasing exposure of vulnerable populations (i.e. Estimated 1 billion urban poor living in slums on fragile hillsides or flood prone river banks)
4. *Ecosystems and biodiversity:* Transformation of ecosystems and loss of biodiversity due to inability to adapt (i.e. coral bleaching, increased oceanic acidity, loss of Arctic ice, general loss of un-adaptive species)
5. *Human health:* Impacts from extreme weather (i.e. heat waves, more intense storms), expansion of tropical diseases (i.e. malaria, dengue fever) and subsequent inundation of public health systems [emphasis added]

The UNDP HDR further notes,

None of these five separate drivers will operate in isolation. They will interact with wider social, economic and ecological processes that shape opportunities for human development. Inevitably, the precise mix of transmission mechanisms from climate change to human development will vary across and within countries. Large areas of uncertainty remain (p.10).

More specifically, ecological and human social and economic development factors contribute to making the regions of Latin America, Asia (including the South Pacific), Africa as well as Eastern Europe most vulnerable to the impacts of global climate change. For example, taking the case of Latin America, the OECD exemplifies Latin America's dependencies on natural resources, sensitivities to agriculture and employment (40% of the work force). The OECD notes broadly that 'the impacts of climate change on agriculture will, therefore, affect the region's economy, development, and poverty reduction efforts' (OECD: DAC/EPC, 2008).<sup>5</sup>

### ***Socio-economic Impacts***

The interaction of climate impacts with human socio-economic systems will contribute to the global instability of economic systems and political structures with the most serious implications, as outlined above, falling on the shoulders of the developing world.

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<sup>5</sup> For further illustration of the projected regional impacts of climate change (2020-2050) please see *Appendix 2D*.

The Stern Report (2007) clearly outlines the economic consequences arising from global climate change, warning that at a global level, climate change could jeopardize the foundations of societies (food, health, environment) through hunger, water shortage and coastal flooding. The Report estimates that if we don't act, the *'overall costs and risks of climate change will be equivalent to losing at least 5% of global GDP each year, now and forever*. If a wider range of risks and impacts is taken into account, *the estimates of damage could rise to 20% of GDP or more'* [emphasis added].

Halsnæs & Verhagen (2006) highlight that there are socio-economic limitations that further compounding the socio-economic vulnerability of developing countries to climate change. This includes limitations with the management of investments, abilities for technological change, natural resource issues, institutional issues as well as human-equity dimensions. They note that 'inefficiencies or constraints in any of these areas will enhance the vulnerability to climate change impacts, and at the same time will tend to generate energy systems and consumption patterns that are costly and GHG emission intensive'.

### ***Socio-political Impacts***

The implications of climate change affecting human economic systems will also have broad repercussions within the socio-political realm. Adger (2003) notes that climate change is arguably the most persistent threat to global stability in the coming century.

Fingar (Online, 2008), commenting on the security implications of climate change, highlighted that climate change will exacerbate poverty, social tension, environmental degradation, ineffectual leadership and weak political institutions. Fingar notes that climate change could '*threaten domestic stability in some states, potentially contributing to intra- or, less likely, interstate conflict, particularly over access to increasingly scarce water resources*' [emphasis added]. Overall 'economic migrants' may be driven to seek refuge from climate impacts in 'richer' countries like the United States.<sup>6</sup>

Social unrest coupled with environmental catastrophe is not a good combination. Climate refugees and new global migration realities may come as rude awakenings to the unprepared nations of the world. Thus, there is the potential for climate impacts to directly and/or indirectly contribute to destabilizing current systems of national socio-political order, likely with global effects, exacerbating the already volatile and precipitous issues of global peace and security.

### ***Summary***

Viewing vulnerability to the impacts of climate change through these various lenses clearly indicates that the poor of the world are differentially and largely negatively affected due to their differential levels of exposure and sensitivity to climate change.

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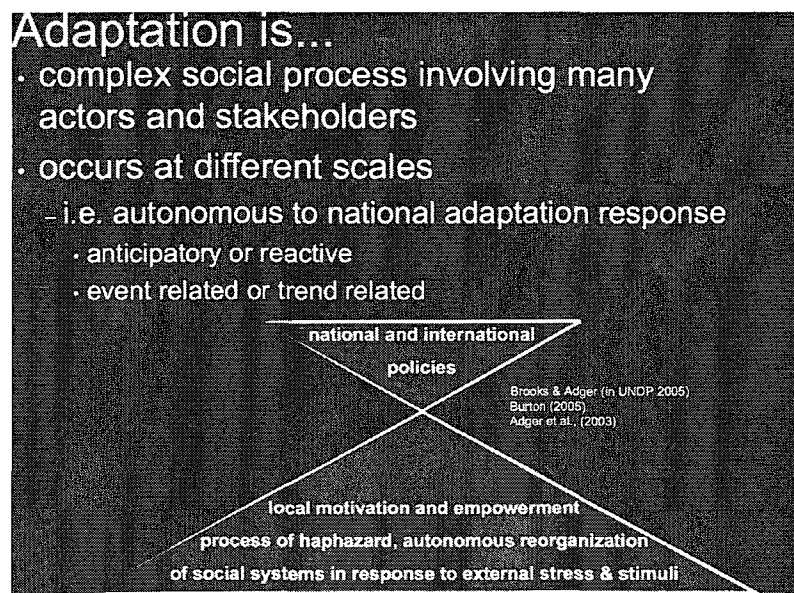
<sup>6</sup> The issue of climate change refugees and climate change induced security threats is an area of emerging interest to development agencies and governments worldwide. See for example, Jeffrey D. Sachs June 1, 2007 Scientific American Magazine Available at: <http://www.scientificamerican.com/article.cfm?id=climate-change-refugees-extended>



The adaptive capacity among the poor of the world to climate change is differential as a consequence of the exposure and sensitivity of physical, baseline conditions and differential climatological and ecological factors interacting with various socio-economic, socio-political variables. As Adger et al. (2003) summarize, vulnerability is a socially constructed phenomenon with institutional and economic factors dynamically influencing adaptive capacity and adaptation. This sets the context for greater thorough discussion of sustainable development and climate change at the end of this chapter. However, first I will review the literature pertaining to adaptation, adaptive capacity and the international policy context of climate change.

## Adaptation

Fig. 2D: Adaptation Approaches



Adaptation to climate change is a complex topic with multiple dimensions. In reviewing the literature, it is commonly acknowledged that adaptation to climate has been a part of

the human experience since time immemorial: ‘human societies have always and everywhere had to develop coping strategies in the face of unwelcome variations in climate or weather extremes’ (Adger et al. 2003). The study of adaptation is not new: the conceptual roots of adaptation trace to a diversity of academic disciplines including evolutionary biology, anthropology, geography and so on (i.e. see Schipper, 2007).

Thus, there are many definitions and interpretations of the meaning of adaptation to climate change. The IPCC defines adaptation as “adjustments in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities” (IPCC, 2001). Expanding on the notion of adjustments, Smit and Pilifosova (2001) broadly state that adaptation: ‘...refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change’ [emphasis added]. In synthesizing the meaning of adaptation, Stern (2007) simply refers to adaptation as ‘taking steps to build resilience and minimize costs.’

Schipper et al. (2008) broadly note that:

...adaptation is increasingly difficult to define in practical and operational terms, [but they offer that adaptation] involves a *process of sustainable and permanent adjustment in response to new and changing environmental circumstances, [that includes] adjusting behavior, livelihoods, infrastructure, laws and policies and*

*institutions in response to experienced or expected climatic events”* [emphasis added].

Thus, adaptation can be understood as a broadly integrated process of adjustments in response to current and future climate change.

### *Scale*

There are various geographic scales and social factors involved in the process of adaptation, with many complex cross-linkages to be drawn across scales (Adger et al. 2003). Adger et al. have found that while adaptation may be undertaken autonomously by individual actors in response to climate threats, (often initialized by individual extreme events such as hurricanes), other planned adaptation can be undertaken by government in anticipation of climate change impacts, but again often it is in response to the threat from individual events, such as hurricanes.

Burton (2005) recognizes that much of the responsibility for adaptation rests as local, community and individual levels and that top-down international and national approaches to supporting adaptation are greatly constrained by this factor.

Similarly, Brooks & Adger (in UNDP 2005) note that adaptation is ultimately a localized phenomenon driven by the needs of people to adapt to local manifestations and climate

impacts. They note that geography, local physical, social, economic and political environments mediate adaptation, further observing that ‘*adaptation is a complex process that “emerges” as social systems reorganize themselves, in a largely unplanned way, through a series of responses to external stresses*’ [emphasis added].

Lemos et al. (2007) point out, “at the local level, impacts can be modulated by state interventions as well as through actions by communities, individuals, NGOs, and the private sector.” This important point underscores the perspective that national policies and integrated approaches to adaptation can play a role in strengthening local adaptive capacity to climate change.

However as Brooks & Adger (2005) point out: “Top-down prescriptive strategies to undertake planned adaptation are therefore only a *partial* solution” [emphasis added]. They advocate that the challenge for governments, non-governmental organizations (NGOs) and other bodies is how to best create enabling environments for systems to adapt reactively and autonomously, respecting the diversity of unpredictable circumstances climate impacts will bring to systems, such as vulnerable communities in the developing world.

The role of macro-policy to facilitate micro-adaptation presents monumental challenges, particularly in contexts where there are factors that contribute to differentiated power structures (such as control over resources), thus affecting the nature of decision-making

processes. On this point, Lemos et al. (2007) note that embedded social processes (i.e. individuals, communities, the state etc.) and intrinsic decision-making relationships between these stakeholders in handling adaptation to climate risk ‘is a fraught but under-researched area (citing Adger, 2001)’.

### ***Adaptation and Development***

Adaptation is increasingly become an important and cross-cutting development issue. In a recent UNDP publication entitled, “Adaptation to climate change: the new challenge for development in the developing world,” (Schipper et al. 2008, Available Online) argue the crucial point that “adaptation is closely linked with development and this linkage is critical to reducing vulnerability to climate change”.

Schipper et al. articulate that while economic growth is essential for improving the quality of life for citizens in the developing world and increasing their adaptive capacities to weather the impacts climate change, the way in which this growth occurs can impede adaptation (i.e. focusing on development efforts on economic growth rather than dealing with climate exposure and sensitivity). Schipper et al. makes clear that the risk remains that:

Development efforts will be misaligned with future changes in climate, leading to *maladaptation, i.e. a process that initially looks like a response to a hazard but ultimately exacerbates vulnerability to the hazard* [emphasis added].

Schipper et al. argue that adaptation to climate change poses considerable challenges to the policy and practice of international development. (See Table 2.1: Adaptation and Development Issues).

**Table 2.1: Adaptation and Development Issues**

Climate change will have serious effects of climate change across sectors and scales.
Climate change will lead to greater exposure of greater numbers of people to greater risks born of ecological changes (ex. 250 million Africans exposed to greater water stress by 2020).
The IPCC (2007) predicts unavoidable impacts and changes resulting from climate change will go beyond current coping capacity, and society and ecosystems will have to implement adaptation measures.
The costs of adaptation are high by all estimates (ex. UN Climate Secretariat \$28-67 billion will be required by 2030 which is equivalent to 0.2-0.8% of global investment flows or 0.06%-0.21% of projected global GDP for 2030).
Current funding is a fraction of what is needed.
Adaptation to climate change is a complex and multi-faceted topic that presents challenges to development in the developing world.
Climate change is already impacting on the poor and most vulnerable due to lower adaptive capacity (i.e. the social, technological, financial resources to adapt). The MDGs (most notably poverty reduction) are threatened by climate change impacts.
Successful adaptation strategies require action at different levels: community, national, regional and/or international.
Adaptation measures will require long-term thinking and explicit consideration of climate change risks at the regional (cross-national), national, sub-national, and local levels (ex. Vulnerability assessment, appropriate technology, capacity-building, government action).

Agrawala (OECD, 2005) has found that adaptation to climate change impacts poses an integral challenge to the policy formulation and administration of international co-operation assistance and financial flows between the developed and developing world. Bilateral and multi-lateral agencies designated with the task and responsibilities of ensuring the development needs of vulnerable populations are addressed and poverty reduction targets are met, are faced with a considerable burden of responsibility.

The findings of a 2005 OECD study that reviewed six developing country case studies found that: 1. climate change is already affecting development; 2. a diverse range of development activities will need to adapt to the impacts of current and future climate risks (ex. hydropower, rural development and settlement); 3. *future climate change impacts may also need consideration in development planning*; 4. *incorporating future climate risks into long-term planning for ensuring cost-effective development*; 5. *current development activities may irreversibly constrain future adaptation to climate impacts* (ex. coastal development); 6. a significant portion of development assistance is directed at climate-sensitive activities (ex. OECD analysis of ODA to 6 case study countries indicate the significant portion are directed to activities that potentially may be affected by climate risks, such as 50 – 65% in Nepal, 12 – 26% in Tanzania); 6. *development activities routinely overlook climate change and often even climate variability*; 7. many planning decisions focus on shorter time scales and neglect a longer-term perspective; 8. *an analysis of national development plans, PRSPs, sectoral strategies and project documents in climate sensitive sectors indicates that they pay little or no attention to climate change and limited attention to current climate risk* (Agrawala (ed.), 2005) [emphasis added]. See also *Appendix 2D: Projected Regional Impacts of Climate Change*.

### *The Adaptation Imperative*

As the evidence suggests, clearly the risks posed by climate change requires the coordinated integration of adaptation into development planning at all levels, particularly in the developing world. Smit and Pilifosova (2001) note the variability of adaptation across regions, countries, socio-economic groups and time, arguing that reducing vulnerability must be supported by enhancing adaptive capacity for most vulnerable.

Thus in the context of development, Stern (2007) has argued that adaptation efforts be accelerated, particularly among most vulnerable countries in the developing world. Stern advocates that *‘climate change be fully integrated into development policy, and that rich countries honor their pledges to increase support through overseas development assistance* [emphasis added].

Adaptation to climate change has become unavoidable and a necessity if we are to avoid ecological calamity and attempt to address the development gap that divides the rich and poor of the world. Mitchell and Tanner (2008) note the growing predominance that adaptation is playing in international and national climate policy agendas stems from knowledge of the associated time lag in the climate system, the success of current mitigation efforts and prospective of committed climate change. Further, in the context of the development gap, they argue that, “...adaptation will be ineffective and inequitable if



it fails to learn from and build upon an understanding of the multidimensional and differentiated nature of poverty and vulnerability”.

Thus poverty and the development gap stands to be exacerbated by climate change given the differential capacities of societies to adapt and be resilient to the changing climate and development responses must be well-considered, given the stakes.

### ***Integrating Adaptation & Development***

Integration of adaptation into development presents challenges and opportunities. Huq (2005) identifies how the issue of adaptation to climate change and development assistance can be closely tied in two respects: mainstreaming adaptation into development and climate proofing official development assistance. Mainstreaming adaptation pertains to building awareness of the implications of climate change among policy-makers in developing countries, particularly those working in the sectors at risk of climate impacts (i.e. water management, agriculture, poverty reduction, disaster management, coastal zone management etc.). Then, Huq articulates that the task is to ‘mainstream’ adaptation measures in policies to address these risks. Similarly, ‘climate-proofing’ development assistance is ‘important for the development funding agencies (which include both the multilateral agencies such as the World Bank as well as the bilateral agencies) to ensure that in planning these investments, the potential impacts of climate change have been taken into account and appropriate adaptation measures have

been incorporated'. Huq notes future that 'so far this is not happening (or if it is at a very sporadic rate)' (Huq, 2005).

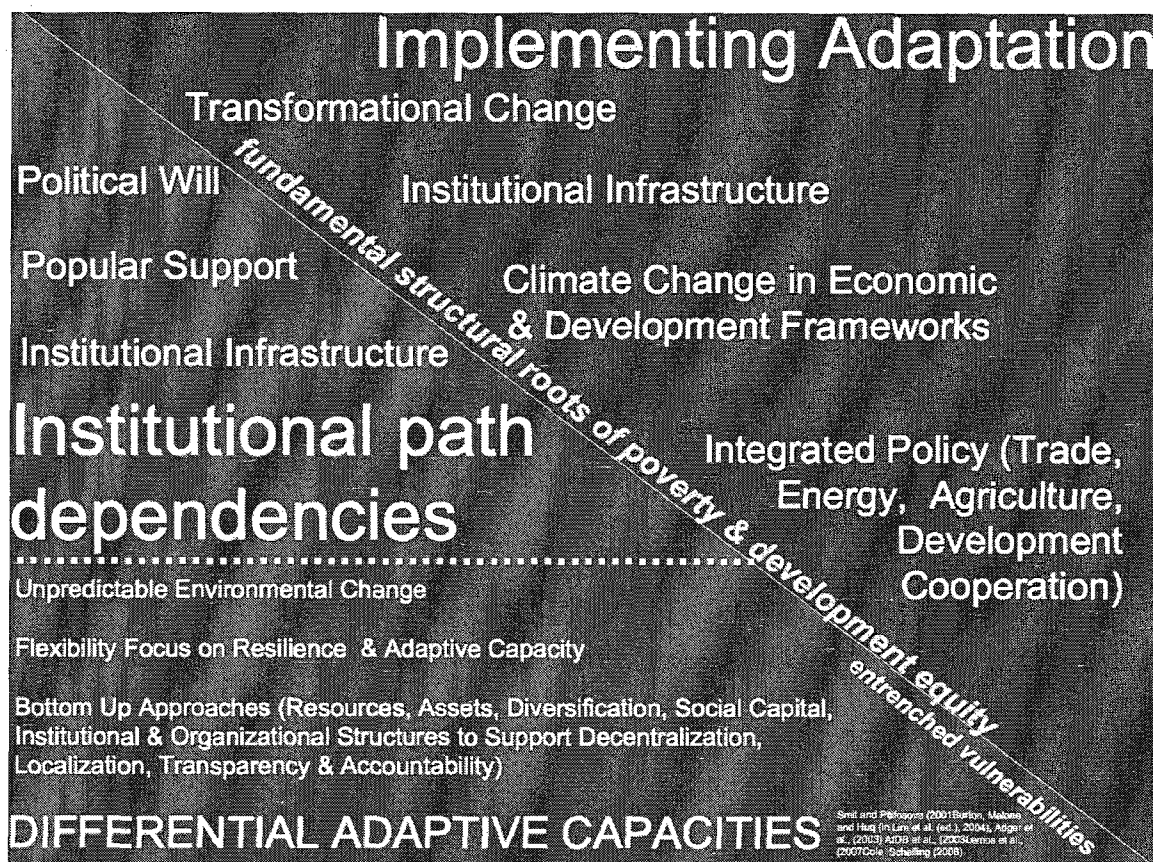
On the nexus of climate adaptation and development, Adger et al. (2003) argue that adaptation should be a central concern of development, beyond poverty reduction goals and policies. The advocate that '*climate change and its associated risks give greater impetus for both dematerialization and empowering and institutionalizing sustainable development* [emphasis added].

Similarly, Schipper (Online, 2007) summarizes succinctly that, 'climate change adaptation will be facilitated by a focus on sustainable development and vulnerability reduction, with an explicit integrated approach that will account for factors such as globalization, different belief systems, poverty and rural livelihoods.'

Lemos et al. (2007) advocate that greater linkages be forged between development and adaptation communities of research and practice, noting the opportunities for learning and transfer of knowledge about climate change, sustainable development and adaptive capacity. Huq has concluded that all development stakeholders (ex. donor agencies, multi-lateral banks) must factor climate change into development activities (ex. national planning, policies, programs, negotiations). The challenges of achieving such an integrated approach are monumental.

## Implementing Adaptation

Fig. 2E: Implementing Adaptation to Strengthen Adaptive Capacity



As has been discussed, adaptation to climate change is an on-going process that spans across a broad spectrum of policy choices, as well as individual and collective actions at multiple levels. As this is an emerging area of research with many uncertainties and nuances, there is no clear blueprint or standardized approach to effectively facilitating adaptation or guaranteeing it will be effectual. However, as Smit and Pilifosova (2001) noted, both autonomous and planned, anticipatory adaptation can reduce vulnerability for exposed or sensitive sectors and regions. Clearly development cooperation has a role to play in supporting opportunities to reinforce adaptive capacity.

According to Burton, Malone and Huq (in Lim et al. (ed.), 2005), adaptation strategies for the future must include national development objectives and priorities that include cross-linkages to poverty alleviation, food security enhancement and environmental sustainability. They note further that at an operational level, there are at least 5 important objectives: 1. Initiation of a process to *reverse trends that increase mal-adaptation* and raise the risks for human populations and natural systems; 2. *Reassessment of current plans* for increasing the robustness of infrastructure designs and long term investments; 3. *Improvement of societal awareness and preparedness* for future climate change, from policy-makers to local communities; 4. Increased *understanding of the factors that enhance or threaten the adaptability of vulnerable populations* and natural systems; and 5. A new focus on *assessing the flexibility and resilience of social and managed natural systems*. Developing an adaptation strategy that can respond to these objectives *requires a vision that balances the need to reduce climate change impacts with the constraints of national policy-making processes* [emphasis added]. Most importantly, Burton et al. flag the need for ‘*increased policy coherence across economic sectors, societal levels and time frames*’ [emphasis added].

On developing and implementing adaptation measures, The AfDB et al. (2003) advocate that adaptation policy must address the need for strengthening livelihoods and assets among the poor. They highlight that accessibility to resources and the reform required to policies, institutions and process could enhance opportunities for the poor to strengthen adaptive capacity. They add further that, ‘*incorporating local knowledge into policy*

*actions* may help governments to accommodate specific needs of poor people and ensure that strategies are taken up by local communities’ [emphasis added].

As noted by AfDB, integrating adaptation and development requires redressing some long-standing issues of development. Lemos et al. (2007) point out that development investments (ex. governance, social capital, information and technology) can fail if they do not address the structural roots of poverty. They offer an integrated *adaptive capacity building process can be delivered through a two-tiered approach that focuses on disaster risk management and structural reform aimed at addressing inequalities*.

Adger et al. (2003) have taken a different approach on this issue of adaptation implementation, through a review of case studies of past examples of successful adaptation to climate change for insight. The aim within their approach was to establish how individuals and institutions have anticipated or responded to reduce the risks of different types of climate variability and how development policy had influenced these actions. Adger et al. note that their analysis was limited by the ‘nonlinearities, or critical thresholds, in the climate change impact or response function of natural and social systems’ to potential future climate scenarios. They further note that, ‘...*the magnitude and rate of the change in climate in many parts of the world may turn out to be unprecedented in human history*’ [emphasis added]. However, they are able to conclude that, ‘human societies may experience what is already hypothesized in emerging ecosystem science – that *smooth change and adaptation can be interrupted by sudden*

*and dramatic switches to another state, resulting in the inability to cope with new circumstances'* [emphasis added]. Thus, in practical terms, Adger et al. (2003) have found that,

Much adaptation in the developing world will rely on past experience of dealing with climate-related risks, much adaptation by farmers, fishers, coastal dwellers and residents of large cities will be *autonomous and facilitated by their own social capital and resources* [emphasis added].

In another view, Cole (2008) maintains that tides of economic growth lift all boats and that top-down prescriptive strategies that aim to develop diversified robust markets and government institutions can support adaptation 'because the wealthier they become, the greater their capacity to adapt to climate change'. Cole utilizes North's concept of adaptive efficiency as the foundation for expanding economic growth to increase adaptive capacity in LDCs. North's adaptive efficiency calls for: 1. institutional and organizational structures that encourages economic experimentation and innovation; 2. decentralized decision-making processes; 3. rules that encourage the use of tacit knowledge and entrepreneurial habits; and 4. well-specified and consistent 'rules of the game,' including legal rules to ensure the reliability of contracts and property rights, efficient bankruptcy laws, transparent rule making procedures, a fair tax system and non-corrupt government organizations, including courts.

Cole believes that increasing adaptive efficiency to bolster economic growth and thus increase the adaptive capacities of LDCs requires overcoming, ‘...persistent obstacles such as inefficient social norms and institutional path dependencies’ in the developing world. Cole believes that ‘...carefully targeted, tailored, and conditioned foreign aid will enable at least some LDCs to improve living standards, thereby offsetting some of the costs of climate change.’

While this discussion is by no means exhaustive, it does set the general context of the debate and lays a foundation for further exploration of how adaptation and development may effectively integrate – a central element of this thesis study. These contrasting perspectives on what will lead to effective adaptation necessitates a return to broader consideration of the key conceptual issues facing adaptation and development.

### *Key Conceptual Issues*

Clearly integrating adaptation with development requires overcoming some considerable conceptual obstacles. Fundamentally, the long-term effectiveness of human adaptation to climate change hinges on dealing with the root of the problem through the mitigation of greenhouse gases. Brooks (2003) advocates that while, “the direct effect of adaptation is therefore to reduce social vulnerability,” he questions,

...whether or not this translates into a reduction in biophysical vulnerability or risk will depend on the evolution of hazard. In the case of anthropogenic greenhouse warming and any associated changes in climate, *the only certain way of reducing risk is therefore via a combination of adaptation and mitigation strategies, the purpose of the latter being to reduce the hazards* [emphasis added].

The important caveat that hazard reduction to long-term climate risks is brought about only through GHG mitigation is further explored in the next part of this literature review, and considered subsequently throughout my analysis through the lens of development equity between countries in terms of historically responsibility and vulnerability to climate impacts.

Even in the best-case scenarios, how could adaptation result? Burton (Ch.7 in Smith, Klein, Huq (ed.), 2005) speculates that,

The notion that humanity can adapt to climate change is based on the idea that *wealth, science and technology, organizational skills, institutional arrangements, the deployment of skilled people, public information, public support and motivation, commercial and private sector and civil society commitment, and above all political will can be harnessed and sustained over an extended time.* Even if all these ingredients are present and used effectively, *adaptation to*



*climate change will be a long and continuous process requiring patience and dedication” [emphasis added].*

With the specter of the task of integrating and implementing adaptation to climate change in mind, there is now a need to return to addressing the deeper conceptual issues of disconnect between adaptation and sustainable development that very much hinders the progress of integrating adaptation into development. Schipper (Climate Change Adaptation and Development: Exploring the Linkages, 2007, Available Online) concludes that:

In order for an adaptation process to take place, it will be necessary to address those factors currently challenging progress in sustainable development and reduction of vulnerability; this cannot be expected of the adaptation process itself. To this end, proposed approaches to formalizing adaptation policy are not sufficiently well-integrated with parallel processes addressing risk and development to affect development choices, particularly those approaches existing under the UNFCCC. Instead, it is more effective to view adaptation to climate change as a paradigm for development, where adaptation is fostered by a process of sustainable development and vulnerability reduction, rather than through explicit adaptation policies (Online) [emphasis added].

To be clear, Schipper’s vulnerability reduction approach (*Appendix 2E*) is radical in that it calls for integrative understanding of the factors that contribute to and exacerbate

vulnerability to climate change and consequently the capacity of human systems to adapt. In some ways this does presents a new paradigm for development that must redress the difficult questions about development equity. In particular climate change raises challenging equity questions about the heterogeneity of wealth, historic development benefits and differential vulnerability and adaptive capacities that exist between nations. Consideration of such issues must be brought to bear when holistically considering climate change adaptation as a development issue.

Brooks (2003) points to the important distinction between ‘endogenous’ and ‘exogenous’ factors that determine adaptation as a useful conceptual division.

It reminds us that in order to facilitate adaptation, *we must address* not only those processes operation at the sub-system scale, but also *the wider social, economic, political and environmental contexts within which the system of interest is embedded* [emphasis added].

Similar to Schipper’s characterization of the distinction between adaptation approaches and vulnerability approaches, Brooks criticizes approaches that narrowly focus on capacity building as a solution to vulnerability and poverty rooted in ‘endogenous’ factors. He argues that these approaches fail to recognize the wider context. Broader recognition ‘...challenges the powerful political and economic vested interests that determine the nature of the adaptation context, and of the view that it is either

undesirable or impossible to question the fundamental geopolitical and economic contexts within which adaptation must be carried out’<sup>7</sup>.

The long-standing and issues of structural and institutional contexts which have contributed to the development gap and undermined the process of sustainable development are impossible to ignore and important to considering how adaptation may be successfully integrated into development. However, further compounding the issues are insufficiencies in knowledge of adaptation and adaptive capacity and the lack of a ‘lessons-learned’ policy and implementation context for adaptation measures (Smit and Pilifosova, 2001).

As Schipper et al. (2008) note, adaptation is not a “stand alone” issue. There are synergies that exist between climate change adaptation and economic development, poverty reduction, disaster management and sustainable development planning at local, regional, national and international levels, and across short and long-term timescales.

In sum, integrating adaptation to climate change will require addressing the structural and institutional aspects preventing success and this will require broader consideration of deeper issues of development equity.

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<sup>7</sup> For more on “adaptation” centered approaches see for example: Cole (2008), O’Brien & Leichenko (2000), Pelling and Uitto (2001) and Singh (2002)

## **Adaptive Capacity**

Adaptive capacity pertains to the abilities of systems to adjust and to cope with climate change. This capacity is dependent on a number of external and internal variables. Adaptive capacity is defined by the IPCC FAR (2007 c) as, “the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences”. Further, adaptive capacity is “most easily perceived in terms of the capacity of a particular system to adapt so as to better cope with a particular climate hazard or set of hazards” (Brooks and Adger in Lim et al. (ed.), 2005).

Smit and Pilifosova (2001) advocate that, the extent to which human and ecological systems are endangered by climate change is dependent on exposure of the system and its ability to adapt (adaptive capacity). Smit and Pilosova (in Smith et al. (ed.), 2005) further add:

Adaptive capacity... is also a property of the system, *referring to its ability to deal with the exposure or risk. It is equivalent to coping ability, and includes the capacity to prepare for, avoid or moderate, and to recover from exposure effects.*

Adaptive capacity may reflect resilience, stability, robustness, flexibility and other characteristics of a system [emphasis added].

Thus, adaptive capacity refers to the differential properties (e.g. sensitivity, exposure and/or socially constructed vulnerability) of systems (e.g. regions, communities, households, economic sectors, business, population groups, ecological systems) interacting and coping with potentially harmful climate hazards (e.g. drought, wind, rainfall) resulting in a particular outcome (e.g. resilience or unsuccessful adaptation) (in Brooks and Adger, 2005 based on Adger and Kelly, 1999; Brooks, 2003; Pelling and Uitto, 2001).

There are internal and external dimensions that affect a system's adaptive capacity. Brooks (2003) notes that the definition of adaptive capacity must take into account all the determining processes that affect whether or not adaptation occurs. This includes processes associated with,

...different scales and systems, representing the environmental, economic and geopolitical context in which the system of interest is embedded. Perhaps a more appropriate term would be adaptation likelihood. While use of the term "adaptive capacity" often leads to debate as to where "inherent" capacity ends and external obstacles to adaptation begin, the term "adaptation likelihood" more naturally encompasses determinants at different scales (see discussion of determinants in the next part of this section).

Offering a similarly broad perspective, The OECD DAC/EPC (2008) notes,

A system's capacity to adapt is a function of the relative level of a society's economic resources, access to technology, access to information on climate variability and change and skills to make use of the information, institutions (i.e. the degree to which institutions can help adaptations be adopted), and equitable distribution of resources (societies with relatively more equitable resource distribution will be better able to adapt than societies with less equitable distributions). The level of adaptive capacity tends to be positively correlated with the level of development; *more developed societies tend to have more adaptive capacity. However, possessing adaptive capacity is not a guarantee that it will be used effectively* (IPCC, 2001 cited in OECD: DAC/EPC, 2008) [emphasis added].

Thus, the embedded context of systems can be a very influential determinant on the adaptive capacity of the system. Burton (in Smith, Klein and Huq (ed.), 2005) comments that adaptive capacity is importantly,

...a function of exposure to the effects of climate change: small island states, countries with dense populations in low-lying coastal zones and those in regions of high atmospheric hazards such as frequent tropical cyclones or low and uncertain rainfalls are considered to be most vulnerable and most in need of adaptation.

In this respect, vulnerable populations of developing countries and marginalized groups in the industrialized world face many challenges to their differential adaptive capacities.

Swart and Munasinghe (2005) suggest that:

Strengthening adaptive capacity is a key option, especially in the case of the most vulnerable and disadvantaged groups. Adaptive capacity itself will depend on the availability and distribution of:

1. *economic, natural, social and human resources;*
2. *institutional structure and access to decision-making processes;*
3. *information public awareness and perceptions, available technology and policy options; and*
4. *ability to spread risk [emphasis added].*

### ***The Adaptive Capacity Imperative***

As noted above, adaptive capacity of a system is affected by larger structural and institutional contexts. Lemos et al. (2007) state that,

...building adaptive capacity, i.e. improving the capacity of individuals, companies and states to respond and to reduce their vulnerability to climate change, has emerged as a central element in climate change adaptation (citing IPCC 2007).

Increasing adaptive capacity has become imperative given the ecological context of climate change (impacts, exposure and sensitivity) and the socio-economic/socio-political context of the development gap. Brooks and Adger (Lim et al. (ed.), 2005) advocate that there is an imperative need for increasing adaptive capacity and it is largely related to the short-term likelihood of increasing frequency and severity of recurrent climate hazards as a result of climate change, the differential sensitivities and vulnerabilities to these hazards, and the differential adaptive capacities to cope with these predicted hazards within and between countries.

Addressing these differential adaptive capacities presents monumental challenges, but establishing baseline adaptive capacity conditions through the use of determinant indicators offers a place to start.

### *Determinants of Adaptive Capacity*

Effective adaptation to climate change can be facilitated through development processes that positively build on the determinants of adaptive capacity. It is important to recognize that there are differentials in these determinants that enhance or constrain adaptive capacity between systems, based on external and internal factors. A diversity of 'lessons-learned' indicators can be summarized when discussing the generic determinants<sup>8</sup> of

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<sup>8</sup> Based on: Downing and Patwardhan (in Lim et al. (ed.), 2004), Smit et al. (2001), Adger et al. (2003), Adger (2001), OECD (2008).



adaptive capacity. These are the factors that can enhance or constrain adaptation in the longer-term.

- exposure of systems (e.g. countries, regions, sectors of society/economy)
- abilities of institutional structures (e.g. government, private sector) to be flexible, innovative and understanding of climate change imperatives and opportunities,
- abilities of institutional structures to synergistically connect short-term development objectives to long-term, anticipatory climate change outlooks
- abilities of institutional structures to integrate policy approaches that create frameworks contributive to development equity through technological capacity-building (e.g. information, skills, resources), and sustainable economic development activities
- socio-economic characteristics of systems
  - o e.g. demographics
  - o e.g. economic activities
  - o e.g. infrastructure
  - o e.g. social capital

These generic determinants of adaptive capacity are indicators for illustrating that the differential conditions and adaptive capacity between groups and nations id widely variable and unequally distributed.

### *Strengthening Adaptive Capacity*

Core to the issues, Smit and Pilifosova (2001) state that:

Enhancement of adaptive capacity represents *a practical means of coping with changes and uncertainties in climate, including variability and extremes. In this way, enhancement of adaptive capacity reduces vulnerabilities and promotes sustainable development* [emphasis added]

The AfDB et al. (2003) make clear that, ‘the task ahead for the development community is *to enhance the adaptive capacity of the poor and poor countries and to help to implement specific actions for addressing climate change impacts*’ [emphasis added].

In a review of related literature on the determinants of adaptive capacity, Smit et al. (2001) identify the following societal elements as integral to strengthened adaptive capacities and thus greater abilities to withstand climate impacts:

1. *A stable and prosperous economy*
2. *Access to technology* at various levels (i.e. from local to national) and in all sectors including access to renewable, sustainable forms of technology
3. The *clear roles and responsibilities for all levels of government* in facilitating adaptation measures
4. *Effective communications* on adaptation strategies at various levels of society
5. *Social institutions* that ensure the equitable distribution and access to resources

6. Ensuring that existing *systems with high adaptive capacity* are not compromised (i.e. Traditional ecological knowledge is treated with respect and valued in the formulation of adaptation measures).

Realizing these elements of strengthened adaptive capacity requires over-coming the differentials; one way is through utilizing development approaches that include consideration of climate change adaptation as a variable and include a focus on strengthening adaptive capacity. Swart and Munasinghe (2005) summarize that, adaptive capacity can be enhanced in the following ways:

1. *Identifying and engaging stakeholders* in the process
2. *Assessing generic adaptive capacity*, i.e. the available resources and capabilities of the persons involved... Less poverty, improvements in economic status, and better availability of resources, are all positive aspects that would help communities adapt to climate change.
3. *Assessing specific adaptive capacity*, i.e. the risk, geographic distribution, social and institutional capabilities. A better distribution of income, diversification of income, high levels of stakeholder participation, and good institutional adaptive capacity, are some positive aspects that would increase the adaptive capacity of a society

Offering further perspective to what is required to strengthen adaptive capacity, Janssen and Ostrom (2006) note that enhancing adaptive capacity can occur by supporting

information and knowledge generation and communications distribution, addressing income and education disparities and ‘encouraging appropriate *institutions that permit evolutionary change* and learning to be incorporated’[emphasis added].

### ***Obstacles to Strengthening Adaptive Capacity***

The barriers to realizing strengthened adaptive capacity in low-income societies of the developing world are significant. The resources required to strengthen adaptive capacity and facilitate adaptation are considerable and must take account of the embedded contextual “reality” and the determining factors that constrain adaptation. Brooks and Adger (in Lim et al. (ed.), 2005) note that:

The implementation of *adaptation strategies requires resources, including financial capital, social capital (eg. strong institutions, transparent decision-making systems, formal and informal networks that promote collective action), human resources (e.g. labour, skills, knowledge and expertise) and natural resources (e.g. land, water, raw materials, biodiversity)*. The types of resources required and their relative importance will depend on the context within which adaptation is pursued, on the nature of the hazards faced, and on the nature of the adaptation strategy [emphasis added].

As similarly noted in the conceptual issues of adaptation and sustainable development in earlier sections, adaptive capacity can only be effective if there is a sustainable

development process that consider and redress the over-arching structural and institutional contexts within which vulnerability to climate change is situated in the first place.

Lemos et al. (2007) suggest that:

In order to be effective, *adaptive capacity building for adaptation and development needs to squarely address the structural inequalities that create and sustain poverty, constrain access to resources and threaten their long-term sustainability*. Theorizing about the attributes of adaptive capacity is important, but *the real challenge and potential impediment to successful adaptation is how to realize adaptive capacity in very inhospitable conditions*. Addressing inequalities may require policies that profoundly challenge the current distribution of power and assets across societies. *It may require implementing deep reforms, such as income or land distribution/ redistribution, fairer trade, universal access to education, and health services, and the deepening of democratic institutions through societal participation and accountability* [emphasis added].

As vulnerability to climate change is exacerbated by structural inequalities that also constrain the realization of adaptive capacity for those most vulnerable, the ecological hourglass keeps winding down further affecting the future capacity to adapt. Brooks (2003) notes that timely adaptation measures can reduce risks and hazards associated

with climate change, and ‘in the case of global-scale anthropogenic climate change the latter will be influenced by global development pathways and the extent to which mitigation is pursued’.

There are clearly issues of scale at play when it comes to addressing and facilitating adaptive capacity, including the considerable divides between policy and practice across scales (ex. timescales, stakeholder scales, development approaches). For example, as Brooks has noted, on the small matter of the global development pathway it worth highlighting the direct correlation between global development exacerbating long-term vulnerability if it is misaligned with ecological sustainability and the definitive timelines associated with reducing GHGs.

There is another key divide noted by Adger et al. (2003): the inability of international responses focused on ‘planned’ adaptation to address the needs for adaptation at the local level. Such top-down approaches can negate from strengthening adaptive capacity at the local level. They note that there are serious limitations of international policy approaches focused on top-down prescriptive measures. They instead argue for a ‘re-alignment to focus on how policy can support the adaptive capacity and resilience of vulnerable communities.’

Another fundamental aspect required for successful adaptation is the empowerment of societies to pursue adaptive capacity. Brooks and Adger (in Lim et al. (ed.), 2005) take

the position that adaptation strategies policy interventions will be unsuccessful if they fail to engage and build consensus with those vulnerable populations they are seeking to support. This requires participatory governance approaches that are more adaptive, reactive and engaging, instead of prescriptive and rigid.

Many of the obstacles facing the enhancement of adaptive capacity for adaptation among vulnerable sectors can be attributable to political issues. Brooks (2003) notes that political will is an important variable in the adaptation process, while advocating further that *'the factors that determine a society's "political will" should themselves be subject to investigation if we are to understand the adaptation process'* [emphasis added].

Connected to political will is the idea that ideology can affect adaptation actions and policy implementation. Ideological divides can constrain the enhancement of adaptive capacity, particularly in development contexts. Aversion to recognizing climate risks and accepting responsibility for adaptation remain a problematic aspect of adaptation implementation. Brooks and Adger (in Lim et al. (ed.) 2005) note that: *'Such refusals may be ideological in nature, or the consequence of vested interests denying the existence of risks associated with climate change. Large-scale structural economic factors and prevailing ideologies, therefore play a vital role in determining which adaptations are feasible'* [emphasis added].

Drawing these observations together, Burton (2005) synthesizes what is required to strengthen adaptive capacity and enhance the will to act for adaptation across scales. In a review of the past experience of dealing with climate change issue and what lessons can be utilized in the coming years in the formulation of a global strategies, Burton considers the global, national and local contexts of what is required for adaptation.

From past experiences he summarily concludes that at the local level, there have been increasing losses and a need to adopt better measures; at the national level, there have similarly been increasing losses and a need for adaptation policy; while at the global level there has been weak governance and leadership and growing levels of inequity between nations. From these experiences, Burton projects into the future, arguing that at the local level, there is a need to strengthen empowerment and adaptive capacity, at the national level there is a need to link climate change adaptation with disaster mitigation in development policy while at the global level a common adaptation framework would advance agreement and action on matters of adaptation.

### ***Differential Adaptive Capacity***

This final section of the literature review clarifies key features of the need to address differential adaptive capacity to climate change as a development equity issue. As described in the previous sections, there are differential vulnerabilities and adaptive capacities to climate change between and within countries. Within this context, it is



commonly understood that the social systems with a greater capacity to adapt are usually associated with societies possessing greater integrity in their determinants of adaptive capacity (i.e. socio-economic infrastructure, technological capacities, access to resources and so on). As Fingar (2008) notes: “most developed nations and countries with rapidly emerging economies are likely to fare better than those in the poorer, developing world, largely because of a greater coping capacity”. However, as Oxfam (2007) advocates,

Adaptation activities such as integrating adaptation into development planning, policies and practice, ‘climate proofing’ ongoing and existing infrastructural investments, physical and natural forms of capital, as well as addressing new investments needed due to climate change are all essential parts of building adaptive capacities in LDCs.

In comparison, it is commonly assumed that social systems with less adaptive capacity (“in the poorer, developing world”) are this way given the compromised integrity of the factors that determine their adaptive capacity. As Adger et al. (2003) have noted, some adaptive capacity strategies, ‘are more technologically dependent, better resourced, or more robust or resilient than others... and therefore populations today are differentially vulnerable to existing variations in climate and weather based on structural factors.’

At the risk of oversimplification or stating the obvious, it is important to recognize that social systems are heterogeneous entities and the social vulnerability a society experiences to climate change may not be equally distributed across sectors, regions and countries. The same is true of adaptive capacity. To provide a clear example of how

adaptive capacity varies between and within regions, compare how the differential social, political and economic contexts and factors affect adaptive capacity in North America versus Latin America(IPCC c, 2007).

**Table 2.2: Differential Adaptive Capacity between North America and Latin America**

North America	Latin America
<p>Considerable adaptive capacity built on traditions and institutions that encourage decentralized response frameworks (ex. reactive, unevenly distributed versus precautionary preventive approaches)</p> <p>Adaptive capacity is not always effectively deployed to protect populations from climate impacts (ex. extreme weather events such as Hurricane Katrina)</p> <p>Evidence suggest that mainstreaming climate change is a pre-requisite for sustainability</p>	<p>Need to enhance the integration of climate change into development policies, future sustainable development plans</p> <p>Lack of capacity-building and appropriate political, institutional and technological frameworks; climate risks to low income, and settlements in vulnerable areas, sensitive sectors (ex. agriculture)</p>

The differential adaptive capacity of Latin America to adapt and cope with climate change is undermined by the social, political and economic variables. When factoring in ecological risk variables as well, compared to North America, Latin America has less adaptive capacity to cope with climate impacts and thus can be considered more vulnerable. The differential circumstances of vulnerability that in the developing world demand the assistance of developed countries to assist in their development process of adaptation.

As noted by Burton,

...this demand is supported by the ethical argument that since the northern industrialized countries are historically responsible for the vast majority of greenhouse gas emissions, they bear a disproportionate share of the responsibility for climate change and its impacts on developing countries (in Smith, Klein, Huq (ed.), 2005).

Similarly, this demand has also been substantiated within the international policy environment, for example the principles laid out in the texts and funding mechanisms of the UNFCCC (i.e. Article 4.4<sup>9</sup>), the adaptation policies of the Kyoto Protocol (through the LDC Fund, the Adaptation Fund) as well as in high-level statements such as the OECD Declaration on Adaptation (2006). I will now turn to a review of the international policy context of adaptation, development and climate change.

### **Development in Climate Policy: UNFCCC & the Kyoto Protocol**

The climate change issue rose to global prominence in 1990 with the publication of the IPCC First Assessment Report. This report was initiated under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC), signed in 1992 at the Rio Earth Summit. The convention encapsulates the major challenges of development,

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<sup>9</sup> Article 4.4 of the UNFCCC states, “the developed country Parties... shall also assist the developing countries Parties that are particularly vulnerable to the adverse effects of climate change in meeting the costs of adaptation to those adverse effects.”

equity, marginalization and globalization and it is likely to have had consequences across the world in matters as wide-ranging as energy use and settlement patterns (Adger et al. 2003).

Generally on adaptation Schipper et al. (2008) add that UNFCCC came into force in 1994 and now has 191 Parties (member countries). The UNFCCC commits Parties to launch national strategies for adapting to expected impacts including the provision of financial and technological support to developing countries by developed countries and to cooperate in preparing for adaptation to the impacts of climate change. It also refers to adaptation in several of its articles.<sup>10</sup>

Wiegandt (MIT, 2001) summarizes the significant principles in the UNFCCC (1992), putting emphasis on the commonly agreed, differential roles and responsibilities between Northern and Southern countries, as laid out in the text. Wiegandt notes that under the Convention, the parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities (Article 3.1 of the UNFCCC). Wiegandt points out that the 1992 Convention takes “note” in its introduction that “the largest share of historical and current global emissions of

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<sup>10</sup> Examples of specific provisions in the UNFCCC regarding climate change adaptation include: Article 4.2 requiring all parties to “cooperate in preparation for adaptation to the impacts of climate change” and obligates the developed countries to provide financial and technological assistance to LDCs for purposes of adaptation. While Article 3.5 calls for broader development assistance as an adaptation strategy: “the parties... *should promote... sustainable economic growth and development in... developing country parties, thus enabling them to better address the problems of climate change.*” (Cole, 2008)

greenhouse gases has originated in developed countries.” Wiegandt highlights that this justifies the special obligations, defined in Article 4.2A, of developed countries, responsible for the major portion of emissions, to take the lead in modifying the longer-term trends of rising GHGs. Wiegandt indicates that Article 4.3 more fully details the responsibility of developed toward developing countries because of the latter’s “special vulnerabilities to the adverse effects of climate change and their reduced capacity to implement mitigating and adaptive strategies.”

Huq et al. (2004) demonstrate since that 1994, the climate change issue has progressed in two distinct domains: the scientific domain (with the continued research and publication of the four IPCC Assessment Reports) and the political domain (with the regular meeting of the signatories and parties to the UNFCCC process).<sup>11</sup>

In 1997, at the 3rd Conference of the Parties (COP) in Kyoto, Japan, the UNFCCC gave birth to the Kyoto Protocol as an international policy agreement for setting national targets for the mitigation of global greenhouse gases and as well as providing a policy framework for assisting developing countries in adapting to the unavoidable consequences of climate change. However, the primary focus of the Kyoto Protocol has been on the mitigation and reduction of greenhouse gases in industrialized countries, not adaptation. Over time, this has proven to be largely an ineffectual mechanism, due to the

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<sup>11</sup> Huq et al. (2006) have provided several useful diagrams showing the co-evolution of the climate and development debates, key actors involved, and scale issues (see *Appendix 2G, 2H, 2I: Links Between Climate Change and Development*, Huq et al. (2006)).

omission of the United States of America, the world's number one emitter of greenhouse gases, from the ratified Protocol.

In the recognition of a variety of support mechanisms needed for adaptation implementation, the UNFCCC (2005) has included measures in climate negotiations on several adaptation matters including:

- The provision of adaptation funding;
- Insurance and technology transfer; and
- Scientific and technical assistance for all Parties to enhance their knowledge base [also known as capacity-building]

Huq (2005) highlights that at COP-7 in Marrakech, Morocco (2001)<sup>12</sup> the funding mechanisms to support adaptation were developed. However, none of these funding mechanisms are sufficient, mandatory or binding. These funds, administered by the Global Environment Facility (GEF) include the Special Climate Change Fund (SCCF), the LDC Fund, both under the Convention, and the Adaptation Fund, under the Kyoto Protocol. Mostly, these funds rely on voluntary donor contributions from industrialized nations.

The SCCF finances capacity building projects in support adaptation, including technology transfer and mitigation measures to support economic diversification in

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<sup>12</sup> The MARRAKECH ACCORDS, Available Online: [http://unfccc.int/cop7/documents/accords\\_draft.pdf](http://unfccc.int/cop7/documents/accords_draft.pdf)

countries with high dependency on fossil fuels. As well the SCCF supports a special work program on LDCs adaptation, including the National Adaptation Programs for Action (NAPAs) recently completed by many vulnerable LDCs and SIDS and seeking a 1.9 billion implementation program (Adger et al. 2003, various sources 2010).

The AF finances concrete adaptation projects and programs in developing countries that are Parties to the Kyoto Protocol. This fund relies on a 2% certified emissions reductions (CER) share of proceeds through clean development mechanism (CDM) project activities as an innovative means of funding. The Fund was only fully operationalized in 2007 and has met with limited success as means of generating funds to finance adaptation.

The Kyoto Protocol finally entered into force in February 2005 and has been fraught with political issues, most glaringly – the absence of the world's leading contributor of greenhouse gases, the United States, from the agreement. Further, in the opinion of Cole (2008), countries party to Kyoto and the UNFCCC are more pre-occupied with minimizing regulatory compliance for domestic industries than in actually reducing GHG emissions or supporting adaptation in LDCs through multi-lateral approaches.

### Climate Change & Development

As the literature has shown, the global climate is changing, especially with regard to global warming. Climate change has serious implications for development. The groundbreaking report “Poverty and Climate Change” (AfDB, 2003) states plainly: “climate change is a serious risk to poverty reduction and threatens to undo decades of development efforts” (p.5). The Report adds further:

Climate change will compound existing poverty. Its adverse impacts will be most striking in the developing nations because of their geographical and climatic conditions, their high dependence on natural resources, and their limited capacity to adapt to a changing climate. Within these countries, the poorest, who have the least resources and the least capacity to adapt, are the most vulnerable (AfDB, p.1).

Current trends of climate change are a product of historically uneven regional patterns of human development and processes of industrialization. Huq et al. (2006) argue that ‘unsustainable’ development is an important underlying cause of climate change, and further that development pathways will largely determine the degree to which a particular given social system is vulnerable to climate change impacts.<sup>13</sup>

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<sup>13</sup> It is important to note that: “the scale of the human economy is a function of throughput- the flow of materials and energy from the sources of the environment, used by the human economy, and then returned to environmental sinks as waste. *Throughput growth is a function of population growth and consumption.* Throughput growth translates into increased rates of resource extraction and pollution (use of sources and sinks). *The scale of throughput has exceeded environmental capacities: That is the definition of unsustainability*” (Daly & Goodland, 1996, p. 1011).



While fossil fuel based growth and development has benefited some countries immensely, the large majority of countries in the world have not substantively benefited. The UNDP Human Development Report (2007) notes: “in reality, the world is a heterogeneous place: people have unequal incomes and wealth and climate change will affect regions very differently” (p.4). Clearly, socio-economic and cultural differences that exist between developed and developing countries play a significant role in the crosscutting issues of climate change.

Smith (2006) reports that there are some 2.7 billion people in the world surviving on less than \$2 US per day, a large proportion of whom live in rural areas and whose livelihoods are directly connected to climate-sensitive natural resources. In turn, this development inequality has contributed to differential vulnerabilities between and within countries to the perils of climate change and the differential societal capacities to adapt and be resilient to these inevitable ecological changes.

In drawing connections between climate change and development, Brainard and Purvis (2008) argue that the choices that the poor make around climate change have long term implications for development and poverty and furthermore that climate and development are two-sides of the same coin. Huq et al. (2004) point out the mutual reinforcement that climate and development processes play, in exacerbating or alleviating the climate conundrum, particularly for those most vulnerable.

It is imperative to recognize that climate is closely intertwined with development choices and pathways. Agrawala (2005) recognizes that climate is a resource in and of itself, and that climate can have a large effect on the productivity of other critical resources, including food and fibre, forests, fisheries and water resources. Agrawala further notes that climate sometimes can act as a hazardous threat and that it is equally the case that development pathways are having a clear impact on local and global climate patterns.

Yamin et al. (2004, 2005) have found it to be the case that development can contribute to climate change through development pathways that actually accrue increased greenhouse gases through carbon-intensive choices. They note that more broadly, cultural factors and processes affect development pathway preference, namely carbon intensive rapid industrialization and increased material wealth as has been experienced in recent decades in countries such as China and India in emulation of the high income societies' hyper-capitalist economic gains in the late twentieth-century.

It is clear that development pathways and choices, made in the context of climate change, are closely interlinked with addressing the inevitable impacts of climate change, now and for the future. Agrawala (2005) recognizes that the impacts of climate change will have long-term effects on ecological and human systems well into the future, which in turn, will have an effect on future development pathways and choices for future generations. Ultimately, GHG mitigation can reduce longer-term risks associated with rising greenhouse gases adversely driving the need for climate adaptation.

Brainard and Purvis (2008) argue that in order to build true resilience, climate integrally needs to be contained within the 'very DNA of development.' They further point out that it is widely recognized that developing countries must form a part of effective strategies towards mitigation. Further, they observe that strategic efforts towards poverty alleviation must include both climate and development communities enhancing and scaling up efforts to support the buffer, or adaptive capacity, of vulnerable populations in the developing world.

Stern (2007) argues that climate change is a global problem and therefore the response to it must be international. According to Stern, climate responses must be based on a shared vision of the long-term goals, agreements and frameworks that will accelerate action over *the next ten years*. This vision must build on national, regional and international level mutually reinforcing approaches.

Huq et al. (2005) recommend that, fundamentally, within international development co-operation and climate change responses, resources should be provided to fund adaptation efforts; climate insurance schemes should be created to manage climate risk; adaptation should be mainstreamed into development assistance; and capacity should be built so that adaptation resources are effectively directed.

### **Climate Change, Adaptation & Development: In Context**

While the impacts of climate change on the poor are widely recognized (e.g. AfDB, 2003; UNDP, 2007; IPCC 2001, 2007), the merging and deepening of discourses between development and climate change discourse is a relatively recent phenomenon. As Mitchell & Tanner (2007) note: “today climate change adaptation is a mainstream development issue... the challenge is now to embed adaptation within wider development debates and practices” (IDS In Focus, p. 1). The same could be said of GHG mitigation strategies and low-carbon development pathways as threads of the broader development debate.

Schipper and Pelling (*Disasters* 2006, pp. 9-36, Available Online) suggest that there are four main issues generally characterizing the broad relationship between climate change and development. These issues include:

1. the role of industrialization in causing climate change and the differential responsibility of developed and developing countries;
2. the inequitable impact of climate change on developing countries;
3. the significant role of development issues in influencing climate change policy and political negotiations; and
4. the way in which climate change interacts with other forces affecting development, such as globalization.

In the foundational article: "Climate Change and Development: A Tale of Two Crises," Newell (IDS Bulletin, 2004, pp. 120-126) argues that climate change raises a series of difficult and challenging issues for the theory and practice of development. Newell recognizes that the vested interests controlling the reins of power, those who benefit in the short term from a lack of concerted action on climate change (including fossil-fuel corporations, some governments and international financial institutions), are the same actors, who in large part, continue the status-quo approach to economics: fossil-fuel based 'growth' trajectories as a part of the neo-liberal economic globalization agenda.

Munasinghe and Swart (2005) contend that a principal reason why it is so difficult to achieve a coordinated international response to the climate change crisis is that countries have more urgent priorities, the foremost being domestic economic development [as Newell argues is based on an unsustainable model]. In case of the high income societies, it is arguable that, for the most part, development pathways have largely been based on the historic and current exploitation of non-renewable oil and gas and mineral resources as well the historic and continued exploitation of moderately renewable and conservation-based resources, such as forests, water resources and agriculture. In less than two centuries, through the exploitation of resources, the material wealth that has been accumulated in North America, Europe and Australia is unprecedented. However, the cumulative global effect has had devastating impacts, from rainforest destruction in Brazil, to melting polar ice caps, there are connections to be drawn in the impacts of global capitalism's unprecedented environmental devastation, now culminating in a

warming global climate. The prospect of rapidly industrializing nations developing economies based on fossil-fuel growth and increasing consumption to standards of the high-income societies is a truly frightening prospect to global environmental sustainability.

In contrast, what is truly needed is the prioritization of the needs for rapid global reductions of greenhouse gases precipitating the global climate crisis in order to protect the better interests of global ecological sustainability and the stability of thermo-climatic regulatory systems of our planet.

Halsnæs & Shukla (2008) argue along the lines that the precedence that has been given to economic development goals in the political agendas of nations must give greater consideration to the many cross-linkages that can be drawn between development choices and pathways on the one hand, and climate change on the other.

This implies that government's policy and regulatory efforts must include deeper analysis of climate change adaptation and mitigation measures within the broader policy agenda of 'economic growth', and utilize indicators beyond simply 'cost-effectiveness' variables or classical GDP. However, where this occurs within a risk-averse or status quo political/bureaucratic framework, it is often the case that holistic and integrated approaches of substantively linking climate change to sustainable economic development

fall short, with a few exceptions<sup>14</sup>. Greater consideration of the social and cultural factors that affect political will and action on making climate change linkages to economic development are ultimately required.

Newell (2004) continues his argument that, within the development community, climate change has been framed within conventional analytical frameworks: a problem of bad governance and inefficient markets. He argues that conventional frames of interpretation miss the opportunities to effectively and more substantively critically revisit the conventional development pathways and strategies (carbon-intensive economic growth) that are fueling the climate crisis to begin with. Newell identifies two key strategic challenges facing development in light of climate change: first, there is the challenge of policy integration within government and development institutions and second, there are the limitations of development and adaptation strategies.

According to Newell, policy integration means:

Not viewing climate change as an isolated problem, but rather as a product of a whole series of policy choices about economic and energy strategy that need to be revised to ensure minimal impact on climate change. Otherwise the effects of actions taken to protect the climate will continue to be systematically offset by

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<sup>14</sup> For example, Germany & Ontario have recently shown forward-looking policy linkages between manufacturing sector renewal strategic efforts and feed-in tariff supports for solar and wind energy. This shows an innovative example of how integrated policy to build capacity for domestic sustainable economic development and growth can be compatible with GHG mitigation priorities.

decisions taken in policy areas such as energy, trade, transport and agriculture (pp.120-126).

Newell argues that this is precisely the case in terms of the lack of coherence between the political rhetoric on climate change from developed countries and the reality of increasing greenhouse gas emissions arising from the contradictory domestic and international policies and practices of these same developed countries. Newell acknowledges that:

The issue is not to construct a new hierarchy of policy priorities, but to bring about a *degree of policy integration such that policies aimed at reducing the threat of climate change are not systematically undermined by the effects of trade, aid and development policy more generally*” (pp.120-126) [emphasis added].

Swart et al. (2003) further note that policy synergies provide opportunities, and trade-offs can be minimized if the linkages are well understood. For example, green economic development and greenhouse gas reductions strategies can yield economic results, such as through increased efficiencies and conservation, trades innovation and through the rapidly deployment of green technologies. Countries such as Germany exemplify integrated economic and environmental agendas to transform a country’s energy sector to the color green.



Newell notes that there is the lack of acknowledgement given to the fundamental need for economic and trade agencies to internalize the climate costs generated by their own policies. Newell advocates for the clear recognition of climate within other policy domains of government (ex. trade policy, transport policy, agricultural policy) as means of more broadly pursuing sustainable development. Newell's radical notion *'might require us to revisit our faith in a model of economic development that appears to be increasingly at odds with the goal of stabilizing the climate system, which so directly impacts on the lives of the poor'* (p.126) [emphasis added].

Newell's contention that climate change challenges capitalism as an organizing paradigm for development raises a series of deeper questions about the nature and purpose of development. Similarly, Bezanson (IDS In Focus, 2004, pp.127-134) advocates that climate change challenges the very notions of 'development'. Bezanson argues that climate change prompts a *'fundamental re-examination of the meaning of development'* in light of the much deeper issues affecting development thought and practice. This creates paralysis in the environment and development debates, which in turn, stifles progress on poverty reduction and climate vulnerability. Further, Bezanson adds that:

The pursuit of development, as conceived and currently pursued by most development organizations, is inappropriate in today's economic, political and social circumstances, [arguing further that], *most development discourse continues with a language of unlimited economic growth and expansion in the face of a reality of social and ecological collapse. This places development in a*

*situation dangerous incoherence: unless changed, its language will be judged as incoherent with our historical reality [emphasis added].*

The argument here is that climate change fundamentally challenges models of capitalism based on the premise of endlessly exploiting natural resources and pursuing economic growth based on fossil-fuels. Ancillary to this recognition must evolve a broader policy agenda of 'economic growth' that is consistent with ecological and finite energy realities of the planet. Politics has an important role to play, particularly in the high-income societies of the industrialized world where there is a clear need to reign in oil and gas corporations and society at large to conform with the need for rapid reductions in greenhouse gases to avert a climate crisis. Substantive mitigation results have proven difficult to achieve, particularly in North American countries like Canada and the United States where dominant corporate hegemonies have historically maintained luxurious positions of privilege with government subsidies and lack of substantive environmental regulatory mechanisms on greenhouse gases. This is inconsistent with the paradigmatic shift required to rapidly address the prospect of run-away climate change jeopardizing the global ecological future sustainability, particularly so in the low-income societies of developing world.

The deeper discourse around these issues is beset with considerations of equity and responsibility. In Brainard and Purvis' (2008) view there is a fundamental need for transformation of the global economy and human activity to stabilize the climate and to

do so in ways that improve livelihoods for the poor. Seeing those transformations through will require enormous political will and that in turn largely depends on public support.

Further to this, Oxfam (Online, 2007) has argued that:

Climate change is a challenge to the current models of economic growth: all countries will have to find low-carbon paths to development, in order to keep global temperatures to less than 2 degrees Celsius above pre-industrial levels. But given their historic role in causing the problem, *rich countries now have two extra-ordinarily clear obligations: to stop harming, by massively cutting their GHG emissions, and to start helping, by providing compensatory finance so that poor countries can adapt, before they suffer the full impacts of climate change* [emphasis added].

Similarly, Smith (2006) has argued that international action under the Kyoto Protocol has been far from adequate and is rife with political barriers based on the self-interest of countries, as opposed to the shared interest in resolving planetary-scale risks, such as climate change. Instead, Smith contends that policies are needed that will enable just and equitable solutions to climate change and poverty reduction. Those most responsible for pollution and most able to act must be made accountable for their obligation to ensure that those least able to cope and least responsible – poor people – are protected from the impacts of climate change and are able to escape poverty.

Offering a similar yet more moderate perspective, Cazorla and Toman (Online, 2000) have articulated that countries experience differential vulnerability, differences in historic and projected GHG contributions and differences in abilities to bear the costs of mitigation:

... and neither history nor philosophy provides a definitive guide to what would constitute a fair distribution of burden. *Developing countries high vulnerability reflects both a greater dependence on natural systems (such as agriculture), which could be affected by climate change, and a more limited capacity to adapt to climate change given limited resources* [emphasis added].

On this issue of equity, Burton (Chapter 7 in Smith et al. 2003) argues that there is a complex issue between the developed and the developing nations, but also within the heterogeneous countries of the low-income societies of the developing world, including rapidly industrializing nations, least developed nations and highly in-debted countries with consideration to the variable pattern arrangements that any one nation could occupy at any one time.

Burton further takes note that within the climate domain, prioritization of adaptation needs within countries and prioritization of vulnerability among countries is set within the larger global context of inequality between rich and poor and the differential abilities to adapt. Questions of debt and debt forgiveness, trade and access to markets and the rest

of the development litany remain as a nested sub set within the larger issues of climate, development and equity.

In synopsis, Agrawala (OECD, 2005) highlights the notion of how complex social, economic and environmental systems interact and shape prospects for development. He illustrates this further by pointing to the interconnectivity between economic development and ecosystem balance, specifically arguing that consumptive lifestyle choices based on non-renewable energy and material resources, in addition to global population growth, are “unlikely to be consistent with sustainable development paths”. The following section is dedicated to an overview of the concept of sustainable development with a focus on how it relates to some of the key issues of climate change.

### **Sustainable Development & Climate Change**

While notions of sustainability have deep roots within influential works of environmental thought (e.g. Club of Rome, 1972; Lovelock, 1979; Hardin, 1968; Schumacher, 1974), the specific discourse on sustainable development finds its roots in the World Commission on Environment and Development (1987) – commonly referred to as the Brundtland Commission. In the Commission’s report, *Our Common Future*, the concept of sustainable development was defined as: “development that meets the needs of the present without compromising the ability of future generations to meet their own

needs.” This definition has received much criticism for “its opacity, and the definition of sustainability in a growth context” (Daly and Goodland, 1996, pp. 1002-1017).

Moving towards a more contemporary and nuanced interpretation of the concept, Munasinghe and Swart (2005) offer that sustainable development is an approach that can allow for continued improvement in present quality of life, but at a lower intensity of resource use, such that future generations are left an undiminished stock of productive assets (i.e. manufactured, natural, and social capital) that could enhance opportunities for improving the future quality of life of populations.

Huq et al. (2006) point out that there is no singular definition of sustainable development and the idea of sustainable development has come to mean different things for various disciplines and stakeholders. Huq et al. point out that the lexicon of sustainable development is contingent upon its context. For example, the meaning of sustainable development to economists cannot be considered the same as the meaning of sustainable development to ecologists or sociologists. In this respect, there is an inherent subjectivity to interpret the meaning of sustainability and sustainable development. While this may be the case, Soltau (2006, pp. 253-255) observes that:

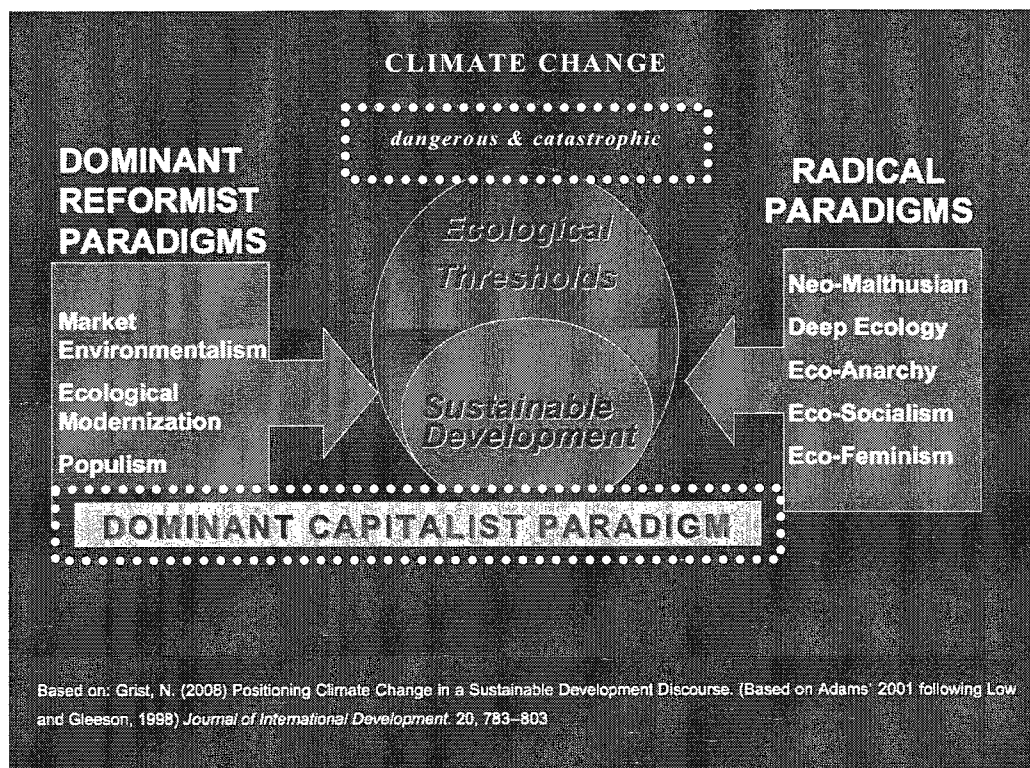
...it is increasingly being recognized that in order to be effective, efforts to combat climate change will have to be integrated into the broader context of social and economic development... The core tenet of sustainable development is the integration of economic, social and environmental concerns in policymaking.

Applying this mode of thinking — seeing climate change through a “sustainable development lens” — could help in tackling the climate change challenge.

In the seminal article, “Positioning Climate Change In Sustainable Development Discourse,” Grist (2008, pp 783-803) explores in greater depth the concept of sustainable development with a particular focus on how it relates to mitigation and adaptation initiatives meant to address the issues of climate change. In the article, Grist acknowledges various critiques of the sustainable development concept as being vague in meaning and aim (citing Carvalho, 2001); of lacking attention to power structures, anthropocentrism and marginalization of the poor in practice (citing Sneddon et al. 2006). More broadly, Grist points to the inherent tensions of sustainable development as a modernist discourse where it is assumed that wealth creation and successful environmental management can co-exist ‘sustainably’ (citing Hajer, 1995). Grist synthesizes two divergent approaches to the interpretation of concept of sustainable development (see *Appendix 2F* for further details).

First, Grist offers that there are the mainstream approaches to sustainable development that “have typically focused on inter-generational equity issues and on the global environment, particularly climate change and biodiversity depletion. Issues developed around ideas of global environmental change, with a focus on technological and market-based solutions.”

Fig 2F: Sustainable Development, Paradigms, Ecological Thresholds &amp; Climate Change



Second, Grist contends there are the radical approaches to sustainable development that “incorporate calls for shifts in corporate or national wealth and power, social or industrial organization”. Grist argues that, “*economically powerful actors are currently following a mainstream interpretation of sustainable development that allows little room for the significant and radical shifts that may be most effective in tackling climate change*” [emphasis added].

In her analysis of various climate change initiatives, Grist finds that underlying both the generalized approaches to sustainable development:



There is a deeper perspective – the irreconcilable positions of the perceived need for continued economic growth in many developed countries versus evidence for human well being as unrelated to economic wealth once basic needs have been met. The need for economic growth in developing countries as part of a sustainable development endeavour is less frequently questioned, although the means of achieving this remains highly debated. *This reveals the fundamental lack of agreement about the endeavour of ‘development’ itself as a goal—to increase material wealth and economic wealth, or to ensure human well-being is enhanced* (pp 783-803) [emphasis added].

As Grist points out, these irreconcilable differences in perspective on ‘sustainable development’ in many ways prohibits a coherent and common path forward for initiatives dealing with the issues of climate change (see *Appendix 2F: Perspectives on Sustainable Development and Climate Change Initiatives*, Grist 2008). For example, eco-anarchists and market environmentalists rarely see eye to eye on things.

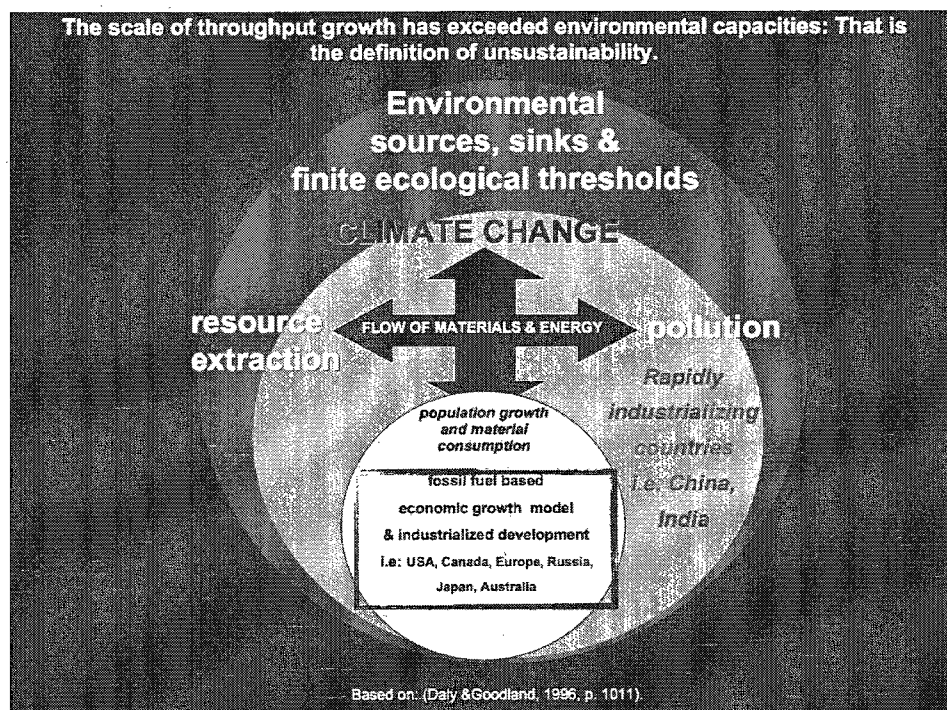
Switching gears, in the broader perspective Adger et al. (2003) add that competing objectives of sustainable development are both highlighted and exacerbated by the problems of climate change. Huq et al. (2006) have further argued that climate change will affect the resilience of economic, social, and environmental systems, and for this reason, sustainable development strategies can assist in facilitating climate responses.

Echoing a similar perspective, Daly and Goodland (1996) offer that sustainable development is: “development without throughput growth beyond environmental carrying capacity and which is socially sustainable.” They add to the discourse on the underlying theme of the sustainable development debate by specifically citing the key distinction between growth and development:

Growth implies quantitative physical or material increase; development implies *qualitative improvement* or at least change. Quantitative growth and qualitative improvement follow different laws. Our planet develops over time without growing. Our economy, a subsystem of the finite and non-growing earth, must eventually adapt to a similar pattern of development without throughput growth.

The time for such adaptation is now (pp. 1002-1017) [emphasis added].

Garnering adaptive forms of sustainable development is the challenge. Adding to this overview of climate change and its connection to sustainable development, Burton (2000) argues there is an interactive relationship and relative difference between populations of the industrialized world and developing regions. He articulates that this interactivity is a function of population levels, affluence, level of consumption behavior and technological means to extract natural resources, produce goods and services and dispose or recycle wastes. All of which has GHG implications. As Schipper (2007) further points out addressing the underlying causes of vulnerability underscores a successful adaptation process, this is the role for development to play. This last point is crucially important.

Fig 2G: Throughput Growth, Climate Change and the 21<sup>st</sup> Century

Overcoming and adapting to the long-term implications of climate change and achieving a 'sustainable' form of development that does not compromise the environment for future generations, must include the adaptation of our economic structures, our energy systems, our lifestyles, our values and our technology to operate within the finite nature of planetary resource and sink capacities. This presents monumental challenges to commonly held assumptions about the nature of development, economic growth and so on. Dominant paradigms and institutional infrastructure are inescapably culpable targets in the deeper analysis of issues at the nexus of climate change and development. It is clear that the issues of climate change are nested within the larger context of debates pertaining to the ways and means of achieving 'sustainable' development. However, there are several key and specific challenges to linking climate change and development.

## Critical Perspectives on Climate Change & Development

Stepping back to the bigger picture, as this recap of recent international climate diplomacy indicates, there are major obstacles facing the linkage of climate change and development. To this end, Yamin et al. (2005) recognized that current development policies, plans and programmes are not attuned well-enough to existing climate vulnerabilities never mind sufficient to address the increased levels of risks and new risks such as sea level rise (citing Burton and Van Aalst, 2004).

On the issue of this disconnect, Brainard and Purvis (Online, 2008) emphasize the point further:

Climate experts have focused primarily on mitigating emissions in developed countries rather than on bolstering climate resilience and encouraging sustainable development. Development experts have viewed climate change as marginally relevant to their anti-poverty agenda. *Even governments failed to make the connection. Neither the Millennium Development Goals (MDGs) nor the official indicators of progress towards these goals mention climate change, for example.* In turn, global development has been an afterthought in the Kyoto Protocol [emphasis added].<sup>15</sup>

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<sup>15</sup> Whereas various other international and multi-lateral agencies such as UNDP, UNEP have been actively engaged on climate change at programmatic levels for the last several years.

Brainard and Purvis offered specific advice in advance of COP-15 in Copenhagen, including the following recommendations for action. Since China and the U.S. account for 40 percent of global GHG emissions, they therefore should play key and leading roles in moving forward the global solutions. Brainard and Purvis argue that it would be unwise for countries to leave the UNFCCC framework and process, but that practical and flexible approaches are required to be put in place when considering the building blocks of globally accepted and enforceable climate policies. Brainard and Purvis note further that the Major Emitters Forum (MEF which includes: Australia, Brazil, *Canada*, China, the Czech Republic, Denmark, the EU, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, South Africa, South Korea, Sweden, the UK, and the U.S.) could catalyze significant movement on global and individual abatement targets. Mexico is a key player with a recent voluntary commitment to reduce CO<sub>2</sub> emissions by 50 million tons annually. Brainard and Purvis advocate that the MEF might be the appropriate venue to develop consensus on mitigation, with Mexico playing a leading role among developing nations, including hosting the 2010 climate talks. Brainard and Purvis (2008) take note:

While time is not on humanity's side relative to IPCC forecasts, agreement on a broad framework, including 2020, 2030 and 2050 global targets, national targets for all developed countries, *agreement to develop national action plans by most large emerging market economies and more detailed consensus on some issues—including reducing emissions from deforestation and degradation in developing countries (which seems likely) and/or technology cooperation—would be*

*welcome progress*. Such a “deal” would have to overcome most of the sticking points... The exact mechanisms and *specific institutional arrangements* that will have to govern carbon markets and adaptation finance may require more work, more detailed design and further political compromise... [emphasis added]<sup>16</sup>

To summarize, Brainard and Purvis make a compelling case that the MEF must take a leadership role in setting emissions targets and implementing mitigation and adaptation plans and mechanisms at the institutional level in order for there to be meaningful progress on climate change policy solutions.

Returning back again into the philosophical discourse, Adger et al. (2003) add that there is a fundamental dilemma at the heart of international action on this issue – the need for reductionistic identification of the ‘climate’-related part of global social and economic trends, versus the desire to see climate change as another important dimension of global environmental threats to development.

Thus it seems there are some entrenched issues within development and climate change responses to successfully and mutually reinforce each other. Governments acting within international climate diplomacy forums, such as the UNFCCC, require synergistic policy solutions that address the larger issues of successful integration, between and within nations. Cohen et al. (1998) observe that climate change has been removed from its

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<sup>16</sup> [http://www.brookings.edu/testimony/2009/0723\\_climate\\_change\\_dervis.aspx](http://www.brookings.edu/testimony/2009/0723_climate_change_dervis.aspx)

social context, and normative aspects have, for a long time, been ignored (in Swart et al. 2003). This leads back to earlier issues identified in the different perspectives on the underlying themes of 'sustainable development' and larger questions pertaining to the meaning and purpose of development and how it can be malleable to various perspectives and agenda. Clearly the normative aspects create great difficulties when translated to the climate change policy-dome.

However this may be, the case remains that climate change adaptation must factor into the development and policy-making process in order to address and reduce current and future vulnerability and risks. Huq et al. (2004) comment that the increasing evidence and support for potential impacts of climate change on both natural as well as human systems has been a key factor in stimulating discussions between the climate change and mainstream development communities. Huq et al. reiterate that future greenhouse gas emissions will influence the capacity of communities and countries to adapt to climate change. Alternative development, low-carbon pathways are imperative. Thus, "the marriage of climate change and development policy is fundamental if progress is to be made in either area." However, achieving this successful union is not without its obstacles. The literature review now turns to some of the key issues facing the integration of climate change and development.

### *Poorly Articulated Research Agendas*

Several of the key distinctions between climate change and development can be traced to climate change long being treated as a scientific issue, while development is related to political and social science discourse.

Six years ago, Huq et al. (2004) argued that:

The development community is made up of a multitude of social sciences trying to identify and describe the social, political and economic obstacles to development. Environmental problems (such as natural resource scarcity, land degradation, and pollution) are recognized as impediments to development prospects, but climate change has largely escaped notice. Perhaps this is due to the fact that climate change has been defined as a 'science' problem, not a social one (2004, Online).

Munasinghe and Swart (2005) echoed this key distinction, noting that,

The discourse in science about sustainable development and climate change has progressed largely independently. One reason is that the framing of climate change in the late 1980s by natural scientists with their climate models divorced the issue from its social context and normative aspects have long been ignored (citing Cohen et al. 1998).<sup>17</sup>

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<sup>17</sup> See also Grist, 2008



This omission was noted in the 2001 IPCC Third Assessment Report and consequently, more emphasis on the social dimensions of climate change have been included in subsequent IPCC research (i.e. Scenarios – IPCC Fourth Assessment Report, 2007). In fairness, the discourse and evolution of climate change impacts and adaptation research has progressed in recent years, as exemplified in previous examples and subsequent analysis.

### *Issues of Scale*

Another obstacle is that climate change and development operate at significantly different scales. Two key issues identified by Huq et al. (2004) include the differentiated timescales and geographic scales utilized within the climate and development domains. In terms of time scale, the climate community often deals in decades and centuries in climate projection scenarios while the development community is often more focused on shorter term time periods in addressing development issues.<sup>18</sup>

Agrawala (OECD, 2005) adds that,

Climate change may also have much broader implications for development planning and development co-operation activities in a much longer time frame. Infrastructure, which is a critical vehicle for economic development, could be particularly sensitive to climate change impacts.

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<sup>18</sup> See *Appendix 2K: Time & Scale Issues of Climate/Development Responses*

In terms of geographic scales, a global to local approach is utilized by the climate community in addressing issues of climate change versus the inverse local to global approach often utilized by the development community in addressing development issues (Huq et al. 2006).

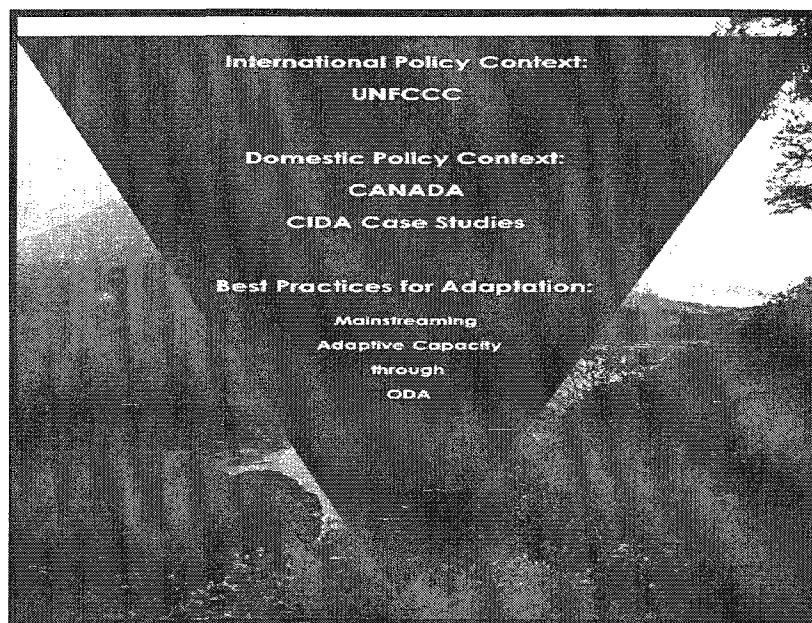
A specific issue of scale facing the linkage of climate and development agendas is the problem of micro versus macro development responses to reducing vulnerability and enhancing adaptive capacity of vulnerable societies (Smit and Pilosova in Smith et al. 2003). While Smit and Pilifosova recognize that taking action to strengthen adaptive capacity to climate change is often synergistic to measures taken to promote development generally, they state that there has been little integration of climate risks into development programs and that further, there has been little done for the capacity building among vulnerable groups to reduce current and future climate vulnerability. They conclude that effectiveness is dependent on integration of adaptive capacity into decision-making and policy processes. With that, I will conclude Chapter Two: Literature Review. I will now consider adaptation integration into development cooperation, by looking specifically at the examples of Canada's track record on matters of strengthening adaptive capacity to climate change through international development cooperation.

## **Chapter Three: Evidence & Empirical Data**

### **Overview**

As the literature has demonstrated, the paradox of the climate crisis is that those who have benefited the most from atmospheric pollution arising from fossil-fuel based industrial development, seemingly will suffer the least from the effects of climate change and will also, presumably, have greater capacity to adapt to climate change. On the other hand, poor, vulnerable populations that have contributed the least to the climate problem in the developing world seemingly will suffer the brunt of climate impacts, with the least capacity to adapt to hurricanes, typhoons, droughts and floods and longer term climatic changes. This paradox presents a meaningful and relevant development research topic focused on looking at Canadian domestic policy agendas for climate, development and adaptation. This analytic research aims to consider if and how Canada is contributing to current development needs for strengthening adaptive capacity to climate change in the developing world. The previous chapter has set the context through a comprehensive review of the historic and present context of climate change adaptation in international policy and cooperation, with an emphasis on UNFCCC processes. It has been found thus far that development and climate change are integrally linked to one another and there are multiple dimensions to consider, including the institutional and paradigmatic contexts of our current climate dilemma, and the roles for developed nations government to play.

Figure 3A: Data Collection Strategy



In this Chapter, I will provide a review of Canadian international development and adaptation approaches, including the present and historic context, drawing from the key and foundational documents relevant to the topics of climate change adaptation and international development cooperation, from a Canadian domestic policy and practice perspective. An assessment of recent case study data of Canadian development cooperation and overseas development assistance that includes adaptation at a high level will be carried out, with an emphasis on highlighting some recent examples of mainstreaming adaptation within Canadian aid. Within the scope of my analysis, consideration will be given to the success of domestic mitigation approaches within Canada, as pre-requisite to genuine long-term climate harm reductions approach. This will set the context for further quantitative and qualitative analysis in Chapter Four and Five, including utilizing the OECD climate lens as a ‘best-practices’ benchmark.

Considering the effectiveness and credibility of Canada's approach to addressing differential adaptive capacity to climate change through international cooperation is the central intention of my research.

### **Rationale**

By taking an approach to data collection that utilizes a variety of data sources, I can provide a more comprehensive discussion in Chapter Four on Canada's role in the adaptation imperative within the broader scope of international climate and development policy, while reflecting further on the barriers and opportunities for practical application of integrative policy measures within Canadian domestic approaches to international development policy, aid and development cooperation practice. This approach will allow me to engage in a broader critical analysis of Canada's international cooperation, development practice and overseas development assistance to examine the level of integration of adaptation & adaptive capacity at bilateral and multi-lateral levels. This presents an interesting opportunity to reflect critically on Canada's level of initiative on integrative ODA development policy and practice for climate adaptation in the developing world, and the opportunities for Canada to show leadership on the international stage in Cancun, 2010. Quantitative measures will be utilized to critically examine Canada's response to the immense scale of climate change adaptation responses. This integrated approach underscores the importance of continued Canadian multi-lateral funding commitment and support for climate change adaptation financing

initiatives on the international stage, as well as strong domestic mitigation within Canada as a building block of legitimate and coherent approaches to climate change international co-operation and diplomacy.

### **UNFCCC: Present Context**

In the lead-up to a recent UNFCCC meeting in Bonn, the new UNFCCC Executive Secretary Christiana Figueres offered the following perspective:

Governments need to achieve clarity on how institutional arrangements, particularly financial arrangements, lock into other issues. For example, how could institutional arrangements for financing be linked most effectively to an operational technology mechanism or action on adaptation? (pp1-2 Bonn, 2 August, 2010, Press Release)

The UNFCCC Executive Secretary reported that at the conclusion of the recent meeting of the AWG-LCA in Bonn Germany:

Governments made progress towards deciding the shape of a successful result at COP 16, but now need to narrow down the many options for action on climate change presently under negotiation... To achieve desired outcomes in Cancun, governments must radically narrow down the choices on the table.

It was further noted by the Secretary that:

Many governments said they believed a set of COP decisions, which quickly operationalise key elements of the Bali Action Plan, would be an achievable outcome of Cancun. This means countries could agree to take accountable action to, for example, manage and deploy climate finance, boost technology transfer, build skills and capacity to do this and deal with adaptation, especially in the poorest and most vulnerable countries.

### *Estimated Costs of Climate Change Adaptation*

Various estimates of the overall cost for all developing countries to adapt to climate change range from US\$28 billion to US\$86 billion per year (Pembina, 2009).

According to the UNFCCC (2009) implementing National Adaptation Plans of Action (NAPAs) prepared by 43 of 49 LDCs will cost at least 1.5 billion/year. In comparison, Oxfam suggests it will cost at least US\$50 billion per year beginning in 2009, while the World Bank estimates the cost at US\$75 billion per year as of 2030.

The UNFCCC has pledged to operationalize \$ USD 30 billion dollars by 2012 and \$ USD 100 billion by 2020.

The Pembina Institute, Oxfam Canada, World Wildlife Federation and Canadian Council for International Cooperation have argued that the Canadian government should provide \$US 300-400 million each year in fast-start climate financing from 2010 to 2012, over and above existing official development assistance. These influential and respected Canadian NGOs argue that Canada should consider the GEF Trust Funds (Least Developed Country Fund to implement National Adaptation Programs of Action & as well Canadian donor support to strengthen the Adaptation Fund) as new and additional destinations of Canadian development assistance, in meeting Canada's international climate change commitments (Pembina et al. 2010 See *Appendix 3A*)<sup>19</sup>.

Based on this 'equity' benchmark, my research aims to investigate if Canada is fulfilling its commitments to strengthen adaptive capacity to climate change through international development cooperation.

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<sup>19</sup> The Greenhouse Development Rights Framework is a means of quantifying the relative obligations of each country in an equitable fashion. In a report commissioned by EcoEquity, SEI, and the Heinrich Boll Foundation, Canada was assessed with a Responsibility and Capacity Indicator (RCI) of about three per cent. This represented a combined calculation of per capita income, population, per capita emissions, cumulative emissions, share of population over the development threshold, share of global capacity, and share of global responsibility. *Tom Athanasiou et al. Canada's Fair Share in a Climate Constrained World: An analysis of Canada's climate obligations under the Greenhouse Development Rights Framework, A EcoEquity, SEI, Heinrich Boll Foundation, April 2009.* <http://www.climateactionnetwork.ca/e/issues/climate-justice/gdr-canada-fair-share.pdf>



## **Canada's Domestic Policy Context For Adaptation And International Cooperation**

### **Recent High Level Events**

#### ***Government of Canada: 2010 Budget Measures***

The 2010 Canadian speech from the throne<sup>20</sup> stated that, together with other industrialized countries, “Canada will provide funding to help developing economies reduce their emissions and adapt to climate change.”

The Canadian federal budget for 2010<sup>21</sup> announced a cap on the international assistance envelope at C\$5 billion in ongoing annual support for overseas development assistance. This budgetary cap is subject to ongoing government review on a year-by-year basis for planned increases in spending until 2015, and is by no means guaranteed funding, given global economic uncertainty and the political subjectivity of domestic fiscal restraint measures.

This year's aid budget increase of \$CAN 364 million (or 8 per cent) to \$CAN 5 billion fulfills a 2002 commitment to increase aid budgets by 50%, by 2010-11. The budget highlighted Canada's further contribution of \$CAN 800 million of loan resources, and \$CAN 40 million in subsidy resources, to LDCs through the IMF Poverty Reduction & Growth Trust. Further efforts highlighted in the budget include assurances that “Canada

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<sup>20</sup> Available Online at: [http://www.speech.gc.ca/grfx/docs/sft-ddt-2010\\_e.pdf](http://www.speech.gc.ca/grfx/docs/sft-ddt-2010_e.pdf)

<sup>21</sup> Available Online at: <http://www.budget.gc.ca/2010/pdf/budget-planbudgetaire-eng.pdf>

did its part and more by making available over US\$22 billion to core institutions since January 2009.” (Budget 2010. p.145) This includes:

- 10 billion to IMF for balance of payments to developing countries
- 4 billion in temporary loans to IADB
- 2.6 billion for 5 years to ADB
- 200 million to International Finance Corporation’s Global Trade Liquidity Program (trade finance to small/medium-sized enterprises in developing world)
- Assurances that ‘the necessary resources will also be set aside within the International Assistance Envelope for upcoming capital and concessional resource increase negotiations at the World Bank and regional development banks’

The budget highlights the issues of maternal health, global food security and the recent humanitarian crisis in Haiti as top international development assistance priorities. The government reports that Canada has already met its commitment to double aid to Africa, fulfilling Canada’s Gleneagles (G-8, 2005) commitment.

#### ***G-8/G-20: The Muskoka Report (2010)***

As a recent policy benchmark, the ‘G-8 Muskoka Accountability Report’ (Online, 2010)<sup>22</sup> offered a snapshot of the Group of Eight industrialized countries perspective on

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<sup>22</sup> Available Online at: [http://g8.gc.ca/wp-content/uploads/2010/06/muskoka\\_accountability\\_report.pdf](http://g8.gc.ca/wp-content/uploads/2010/06/muskoka_accountability_report.pdf)

addressing climate change issues, including adaptation, among other areas of related interest, including renewable energy and technology transfer as well as biodiversity protection. Since the G-8 includes most major emitters and since Canada played host to the G-8/G-20 in 2010, this document is of particular interest to gauging the level of interest in adaptation as a key development issue among the world's leading economies and donor countries, in the aftermath of Copenhagen. This follow-up G-8 accountability report was in line with the L'Aquila (G-8, 2009) declaration on "the need to address financing for adaptation through appropriate bilateral and multi-lateral mechanisms" The L'Aquila declaration, included pledges:

To assist developing countries in integrating adaptation efforts into national development plans and policies, strengthening knowledge networks for adaptation and support for research and capacity building related to vulnerability and impact assessment, as well as planning and implementation of adaptation measures, and addressing the need for financing for adaptation through appropriate bilateral and multilateral mechanisms"(G-8 Muskoka Accountability Report: Environment & Energy, p.2, 2010, Available Online)

The 2010 Report (p.66, Available Online) summarized the following key G-8 actions on addressing the need for financing for climate change adaptation in developing countries:

- G-8 Members have responded to Copenhagen Accord commitments through multi-lateral and bilateral approaches and supports

- LDC Fund: 180 million in total pledges (100 million from G-8) and estimated 1.9 billion dollar National Adaptation Program of Action implementation budget (2009).
- Special Climate Change Fund: G8 members, (Canada, Germany, Italy and the United Kingdom) contributions to the SCCF exceed \$50 million

### *Canada's Climate Change Plan, 2010*

The Government of Canada<sup>23</sup>, in mandatory reporting requirements under the Kyoto Protocol Implementation Act, has offered this recent update on Canada's international participation and perspective in the climate policy dialogue:

In 2010, Canada will continue to work with the United States and other like-minded countries to develop a fair, effective and comprehensive post-2012 international climate change regime, guided by the following five principles: balancing environmental protection and economic prosperity; maintaining a long-term focus; developing and deploying clean technologies; engaging and seeking commitments from all major economies; and support constructive and ambitious global action. The Climate Change Plan states plainly:

Canada will provide funding to help developing economies reduce their emissions and adapt to climate change, as part of a collective developed country commitment

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<sup>23</sup> Available Online at: <http://www.climatechange.gc.ca/default.asp?lang=En&n=4891E5BA-1>

under the Copenhagen Accord to provide up to US \$30 billion for the 2010-2012 period. Throughout 2010, Canada will continue to work with its international partners to maintain political momentum to enhance global action on climate change, including through the full implementation of following provisions of the Copenhagen Accord: development of a transparent and effective process for international review of mitigation and financing commitments; strengthening long-term financial architecture, including through the establishment of the Copenhagen Green Climate Fund and a High Level Panel to review options for long-term financing; establishment of a new international adaptation program that prioritizes the needs of the poorest and most vulnerable countries; and, establishment of mechanisms to facilitate technology transfer and the reduction of emissions from deforestation and forest degradation. The UNFCCC will remain the main forum for negotiations of a new, comprehensive, legally-binding global climate change agreement that builds on the Copenhagen Accord... Canada will remain actively and constructively engaged in the international negotiations and related meetings, in line with our key principles and objectives. (Government of Canada, 2010, Available Online). See also *Appendix 3C*.

*CIDA Report on Plans & Priorities (2009-2010)*

The CIDA Report on Plans & Priorities (for the period ending March 31, 2010)<sup>24</sup> is a strategic planning document that outlines CIDA's current thematic focus. The high level document references three key themes: increasing food security, securing the future of children and youth and stimulating sustainable economic growth. In principle, these three broad themes have indirect and direct correlations to climate change and climate change adaptation. Surprisingly, the document only makes one explicit reference to 'climate change' when establishing the International Development Context early on, stating:

A number of factors will influence Canada's development agenda in the coming years... [including]...the effect of erratic commodity fluctuations on developing countries (e.g. food, fuel), uncertainties in the multilateral trading system, *climate change*, food insecurity, health pandemics, and population growth" (Available Online, [emphasis added]).

While there are no direct references to climate change adaptation in the document, there are correlations between operation priorities and integrating climate change adaptive capacity climate change adaptation variables into Canadian development cooperation. This will be revisited in more detail in subsequent sections and in Chapter Four: Discussion.

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<sup>24</sup> Available Online at: <http://www.tbs-sct.gc.ca/rpp/2009-2010/inst/ida/ida-eng.pdf>

*Canada's Aid Effectiveness Agenda*<sup>25</sup>

Half of Canada's International Assistance Envelope partnership funding goes to 20 countries of focus. The remaining 50 percent supports initiatives in countries eligible for official development assistance. CIDA aims to ensure that 80 percent of its partnership investments align to CIDA's three priority themes: increasing food security, securing the future of children and youth, and sustainable economic growth.

This agenda is based on the current government's main priorities of modernizing foreign aid and improving its effectiveness. Since 2006, the current government has introduced new measures to better ensure the effective use of Canadians' tax dollars by attempting to strengthen the focus, efficiency, and accountability of Canada's aid program.

*New Approach to Increasing Effectiveness of International Assistance: Priority Themes*

The Government of Canada reports<sup>26</sup> that there are three priority themes to guide CIDA's work: increasing food security; securing the future of children and youth; and stimulating sustainable economic growth. The government reports, "These three themes, which complement other major aid effectiveness components such as untying aid, geographic

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<sup>25</sup> Available Online: <http://www.acdi-cida.gc.ca/acdi-cida/acdi-cida.nsf/eng/FRA-825105226-KFT>

<sup>26</sup> Canada Introduces a New Effective Approach to its International Assistance May 20, 2009  
Available Online at: <http://www.acdi-cida.gc.ca/acdi-cida/acdi-cida.nsf/eng/NAT-5208514-G7B>

focus, and decentralization, will guide CIDA's future programming decisions. This will allow Canada to focus on key issues and challenges that partner countries are faced with and ensure that Canadian international assistance investments are achieving concrete results.” (CIDA Report on Plans and Priorities, 2009-10, Available Online).

The government has outlined a number of operational and management priorities for ODA. It is worth highlighting that the Government of Canada also has reported the following factors will influence the nature of Canadian aid, going forward: the global economic downturn and its impact on financial flows to developing countries; evolving and increasing challenges regarding security issues where humanitarian workers are targeted and access to humanitarian organizations is being denied; the effect of erratic commodity fluctuations on developing countries (e.g. food, fuel); uncertainties in the multilateral trading system; climate change; food insecurity; health pandemics and population growth.



## **Historic Context: Canadian Development Policies, Strategies & Priorities**

### ***CIDA's Policy for Environmental Sustainability***

CIDA's Policy for Environmental Sustainability (Government of Canada, 1992, pp.1-15, Available Online)<sup>27</sup> is a high-level strategic policy document outlining the organizations approach to environmental sustainability.

Although it contains no direct references to climate change, the document begins by stating that it will be:

CIDA's policy is to integrate environmental considerations into its decision-making and activities, and to work with its partners and developing countries at improving their capacity to promote environmentally sustainable development.

The environmental sustainability policy recognizes that:

We must undertake interdisciplinary analyses in program and project design, and follow cross-sectoral and ecosystem approaches to project implementation. We must promote domestic and international economic policies and employ management tools that recognize the full costs of environmental degradation and resource depletion. Then we must provide the incentives necessary to incorporate such policies and tools in development decisions.

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<sup>27</sup> Available Online: [http://www.acdi-cida.gc.ca/inet/images.nsf/vLUImages/Policy2/\\$file/ENV-nophotos-E.pdf](http://www.acdi-cida.gc.ca/inet/images.nsf/vLUImages/Policy2/$file/ENV-nophotos-E.pdf)

The environmental sustainability policy sets its scope, by stating the following:

CIDA will comply with the requirements and spirit of Canadian environmental assessment law, guided by the following principles: CIDA will respect the sovereignty of partner countries and will adapt approaches for public review of environmental assessments and consultation with affected communities in a manner that respects the foreign nature of projects; it will apply the environmental assessment requirements of partner countries, or international development institutions, when these meet the basic objectives of Canadian law; and it will assist partner countries to develop and apply local environmental planning and assessment capacity.

In analyzing the high-level and operational objectives of CIDA's environmental sustainability policy, it is possible to make inferences to climate change and development. This will be revisited in greater analytic detail in Chapter Four: Discussion.

The eighteen-year old environmental sustainability policy document concludes:

A comprehensive effort to integrate environmental considerations into the thinking and practice of CIDA and its partners in Canada and developing countries will take a long-term effort. The Implementation Strategy is to be prepared within one year of the release of this policy, but will be a "living document" which reflects evolving objectives and priorities for environmental sustainability. Established annual consultations between CIDA and its partners

will provide a means for reviewing progress. CIDA will update the policy, based on these reviews and experience gained. (Government of Canada, 1992, pp.1-15, Available Online)<sup>28</sup>

*Canada Making A Difference In The World: A Policy Statement On Strengthening Aid Effectiveness*

“Canada Making A Difference In The World: A Policy Statement on Strengthening Aid Effectiveness” (Government of Canada, September, 2002, pp.1-39, Available Online)<sup>29</sup> is a high-level strategic policy document laying out Canada’s position on strengthening aid effectiveness.

This document makes no direct references to climate change, but the policy document approaches the subject of aid effectiveness with the recognition that,

... [there is] no single path to development. This model underscores the need for a balanced approach, which addresses the political, economic, social and institutional dimensions of development. It stresses the importance of getting governance right, the proper sequencing of reforms, the need for building capacity to ensure sustainability, and engaging civil society.

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<sup>28</sup> John Carter, freelance development consultant, notes from his own experiences with CIDA: “CIDA does undertake environmental impact assessment of its development projects and does consider climate change in environmental sustainability analysis of its country programmes, as a way of making this policy operational” (personal communication, 2010).

<sup>29</sup> Available Online at: [http://www.acdi-cida.gc.ca/inet/images.nsf/vLUIImages/pdf/\\$file/SAE-ENG.pdf](http://www.acdi-cida.gc.ca/inet/images.nsf/vLUIImages/pdf/$file/SAE-ENG.pdf)

This policy document recognizes the important strategic linkages between Poverty Reduction Strategy Papers (PRSPs) and Sector-Wide approaches (SWaps) to better achieve effective development while also recognizing the importance of local ownership and donor coordination:

This may involve implementing projects that support sectoral plans or contributing aid funds to a common pot that the developing country would then use to implement its sectoral plan. Whatever the instrument, these strategies place a premium on local ownership and donor coordination and embody a comprehensive approach to development. They also reflect a strong emphasis on strengthening government capacity in developing countries, through the provision of technical assistance and the establishment of policy environments, which enable social and economic progress.

The document contains reference to the importance of agriculture as a means of development for rural areas, with reference to environmental aspects.

There is increasing recognition that, for most developing countries, particularly the poorest ones, transformation of the rural sector is a key to achieving the sustainable poverty reduction necessary to attain the Millennium Development Goals.

On this point, the document continues that, “CIDA will develop a policy framework to guide its programming in agriculture and rural development and will strengthen its investments in this sector”.

This high-level policy statement on strengthening aid effectiveness, pledges that, CIDA will continue to assess opportunities to improve policy coherence in the Government of Canada’s policies affecting developing countries and is committed to working with other governmental agencies towards this end. (Government of Canada, 2002, pp.1-39, Available Online)

These policy pledges will form the focus for our analysis in a subsequent Chapter.

### ***Sustainable Development Strategy (2004-2006)***

CIDA’s 2004-2006 Sustainable Development Strategy (Government of Canada, 2004, pp.1-91, Available Online)<sup>30</sup> is a high level document regarding the strategic implementation of sustainable development objectives into the work of CIDA. The document contains 16 explicit references to climate change as well as 3 direct references to climate change adaptation.

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<sup>30</sup> Available Online: <http://www.acdi-cida.gc.ca/acdi-cida/acdi-cida.nsf/eng/STE-320155755-SMK>

The strategy identifies two sustainable development priorities that clearly relate to climate change and adaptation, including:

- D.3.1 Support and promote the integration of environmental considerations in countries' policies, programs, and projects in support of the achievement of the MDGs.
- D.3.2 Contribute to increasing capacities to address environmental issues such as desertification, **climate change**, and water and sanitation, in ways that reflect the priorities and interests of women and men, girls and boys.

*Sustainable Development Strategy (2007-2009)*

CIDA's Sustainable Development Strategy (Government of Canada, 2007, pp.1-53, Available Online)<sup>31</sup> is a high level document regarding the ongoing strategic implementation of sustainable development objectives into the work of CIDA.

The document contains 6 explicit references to climate change, but 0 direct references to climate change adaptation.

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<sup>31</sup> Available Online: <http://www.acdi-cida.gc.ca/acdi-cida/acdi-cida.nsf/eng/RAC-1129144152-R4Q>

The strategy identifies priorities for sustainable development, that relate to climate change and adaptation, including:

Greater integration of environment into CIDA decision making as well as increased capacity of developing countries to manage their environment and natural resources... [this includes] sustainable land management, sustainable integrated water management, and *building the poor's adaptive capacity to address their vulnerability to environmental stresses and change. CIDA will assist, in a targeted manner, developing countries to enhance their capacity to implement international environmental agreements. This will include strengthening institutional capacity and accountability in relation to the environment and natural resources* [emphasis added].

### **Present Context: Canadian ODA & Climate Change**

#### ***Canada's Official Development Assistance: 2008-09 Summary & Statistical Reports***

A closer look at the facts & figures presented in Canada's most recent reports on Official Development Assistance<sup>32</sup> helps reveal a clearer picture on government's recent spending, providing the basis for further adaptive capacity and adaptation analysis.

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<sup>32</sup> See *Data Annex*. Summary and statistical reports are Available Online: <http://www.acdi-cida.gc.ca/acdi-cida/ACDI-CIDA.nsf/eng/NAT-9288209-GGP>

***Key Observations***

- Of the 5.4 billion total spent in 2008-09 on ODA the largest geographic portion, 2.1 billion was allocated to Africa.
- Of the 3.6 billion of ODA spent by CIDA in 2008-09, 1.5 billion was channeled through to bilateral aid with 66 partner countries. CIDA bilateral programs supported 2,863 aid projects and initiatives in Africa, the Americas, the Middle East and Eastern Europe.
- 2.7 billion of bilateral aid was targeted at 20 countries of concentration, as a part of long-term development assistance including programs, projects, development activities and policy dialogue (see p.3, Summary Report).
- The Summary Report notes that in countries of concentration, progress has been achieved in the management of environmental issues (sustainable management policies and practices); in addition to poverty reduction strategies & institutional improvements and infant mortality. The Summary report adds that [bilateral] contributions are supported by CIDA's multi-lateral, geographic and partnership programs.
- Top country recipients of Canadian aid included Afghanistan and Haiti.
- Afghanistan received 224 million in reconstruction and development assistance,
- Haiti received 110 million in bilateral aid, on top of humanitarian and food aid (125.6 million).



In addition to bilateral aid, the Summary & Statistical Reports note that:

- 352 million was spent on international humanitarian assistance in developing countries
- CIDA allocated 864.65 million to fragile states and countries experience humanitarian crises
- CIDA allocated 447.62 million to selected countries and regions to enhance stability and development goals and to contribute to Canada's international interests through expertise, dialogue and resources.
- CIDA allocated 1.3 billion to multi-lateral, international and Canadian institutions to enhance the capacity and effectiveness in achieving development goals through expertise, core funding, participation on decision-making/advisory committees and boards
- 27.06 million was spent to increase Canadians awareness, understanding and engagement in international development, which "provides an ongoing basis for commitment on the part of the Government of Canada to international development cooperation

It is worth noting the 'highlights of Canada's ODA assistance' full suite of programs, undertaken to achieve poverty reduction.

Private sector development, agriculture, skilled workforce development, better labor policies and laws in developing countries, food security and economic

growth, international humanitarian assistance, food aid, reconstruction, peace-building in response to natural crises and conflict.

International and multi-lateral organizational support [including]: international financial stability, *climate change*, food security, health, telecommunications, regional security in areas of conflict and major influence in Afghanistan and Haiti, debt relief to developing countries, supporting civil society (NGOs & private sector) in developing countries, research, scholarship, institutional linkages with Canadian organizations (to support human capital development) in areas such as agriculture, business, environment, health, technology, human rights and law, refugee support and protection, support for sustainable development, democratic promotion, human rights (p.1, Summary Report).

For further detailed analysis on Government of Canada development budget planning in 2008-09 see *Appendix 3B & Data Annex*.

### ***Independent Analysis of Aid Budget***

Independent policy analysis by the Pembina Institute has shown “calculations of effort-sharing and precedents from other international financing initiatives [on adaptation] show a fair share for Canada is approximately 3 to 4 per cent of the global effort. Applying this to current estimates of the need indicates Canada’s fair contribution to be \$1-5

billion per year, over and above Official Development Assistance (ODA).” (Pembina, 2009 – See *Appendix 3A*)

Pembina (2009) have also noted in their analysis that “financial support for emission reductions (“mitigation”) in developing countries and very significant scale-up in adaptation efforts in Canada” are also considerations for further climate and development policy, beyond the scope of this research study.

Oxfam Canada (Online, 2010) report that:

CIDA’s bilateral spending in “low-income” and “fragile & crisis-affected” countries will fall [from 2008-09 levels] by just under \$200 million, while spending in ‘middle-income’ countries will rise [from 2008-09 levels] by just under \$43 million, on a budget (excluding support for multilateral institutions) that rose from \$3 billion to \$3.15 billion. Notable too is that both “low-income” and “fragile” took a hit (\$135 million and \$60 million respectively).

Further, Oxfam share that:

If we look at the percentage of total CIDA transfers (total spending minus administration), low-income & fragile combined went from 53% to 45%, while middle-income went up from 13% to 14%. Low-income alone went from 32% to 26%, and fragile/crisis went from 21% to 18% (numbers rounded).

## **Adaptation in Canadian Aid**

### **Multi-lateral Assistance & Departments other than CIDA**

Clearly differentiating adaptation spending within the Canadian context is not entirely possible (without an exhaustive and rigorous auditing beyond the capacity of this study) as adaptation permeates many aspects of bilateral, multi-lateral and other forms of official development assistance. This section will highlight the key high-level development data from several recent government reports pertinent to this critical analysis of adaptation in Canadian aid.

The Government of Canada has reported that environment and climate change received \$1.6 million in 2008-2009, while \$173 million was spent in total on environment and development (230 projects in 140 countries). See Canada's Official Development Assistance: 2008-09 Summary & Statistical Reports (Available Online).

The ODA Summary Report states that in particular the Department of Foreign Affairs and International Trade (DFAIT) international assistance programming "supports effective international action to strengthen the capacity of the poorest and most vulnerable to adapt to the impacts of a changing climate." DFAIT is responsible in large part for Canadian engagement in international agreements, and DFAIT spent 277.7 million for ODA in 2008-09. The Government reports in the 2008-09 ODA Report that:

Canada's funding support to the UNFCCC LDC Expert Group forms an important component of DFAIT's international assistance programming, as it supports effective international action to strengthen the capacity of the poorest and most vulnerable to adapt to the impacts of a changing climate. Canada's support to this initiative facilitated representation from developing countries in the Expert Group, helped the national adaptation programs of action and increased the capacity to better manage national greenhouse gas inventories in Eastern and Southern Africa.

Additionally, DFAIT's assistance funds a project entitled 'Assessing and Mitigating the Impacts of Climate Change on Coastal Infrastructure in the Caribbean' [as a part of bilateral programming]. This project is aimed at reducing the vulnerability of coastal infrastructure in Caribbean countries to the adverse effects of climate change. This component of DFAIT's climate change and environmental program directly contributes to the federal government's objective of promoting effective international action to strengthen the capacity of the poorest and most vulnerable to adapt to the impacts of climate change (see Summary Report, Available Online).

The ODA summary report also states that Canada supports research efforts through the International Development and Research Centre, including two initiatives that form a part of the Climate Change Adaptation in Africa initiative launched in 2006 between IDRC & DFID in the UK. This initiative supports 38 research and capacity building

projects in 29 countries and forms a part of the \$175.75 million dollar budget at IDRC. Adaptation research & capacity building are key themes within these and other ODA funding streams.

The ODA Summary Report notes that Environment Canada offers bilateral technical cooperation to developing countries, including on areas such as environmental monitoring, wildlife conservation and environmental policy while the Departments of Health contribute to multi-lateral programs in disease prevention and mitigation. The Department of Defense receives an amount of ODA funding for unspecified activities. Certainly climate adaptation considerations could affect the long-term effectiveness of these and other ODA funding streams.

The Statistical Report offers that support for multi-lateral agencies included 4.8 million to support the Global Environment Facility core funding, while 1.2 million was contributed to the United Nations Framework Convention on Climate Change (as highlighted above); and 3 million was contributed to United Nations Environment Program. One would infer a multi-lateral climate adaptation theme within these funding streams.

### Case Studies: Canadian Bilateral Aid with an Adaptation Focus

Having established the adaptation/development context through a fairly comprehensive review of Canadian development aid, with an adaptation focus, we will now narrow in a few examples of Canadian bilateral aid to be the subjects of further analysis in Chapter Four.

For data selection<sup>33</sup> of Canadian bilateral aid including adaptation, a random search methodology was employed. Based on database search of the web-hosted “Project Brower” search engine at the CIDA website, six operational adaptation case studies were gathered (August 24, 2010).<sup>34</sup> These six Canadian development projects are meant to support adaptation in some regard and are based mostly on sectoral interventions, including in the following areas: agricultural policy, management, research and development; strengthening civil society (democratic participation); promoting development awareness & environmental education/training; environmental research, policy, administration & management; promoting public sector policy and administration and promoting sustainable energy policy and administration.

<sup>33</sup> For complete data results, please see **Data Annex**.

<sup>34</sup> <http://les.acdi-cida.gc.ca/project-browser>, last modified May 5, 2009

A database search for ‘climate change’ yielded 19 results. Of the 19 results, 8 were listed as operational, at the date of last modification. Two of these operational climate change projects were public awareness-raising media projects in francophone Canada, not of foremost interest to this study. The remaining six case studies form the bilateral aid data material for further analysis. Note: there are other examples of adaptation and development initiatives such as Canada/China Cooperation in Climate Change project, and a Environment Canada led Climate Change & Biodiversity in the Americas symposium. Another data selection method considered was through the Canadian Environmental Assessment Registry with 93 recent entries of CIDA projects screened for Environmental Assessment. Assessing CIDA practice in more detail by considering the degree to which Strategic Environmental Assessment processes take into account climate change adaptation adaptive capacity would prove an interesting and relevant future study.

**Table 3.1 Bilateral Case Studies of Canadian Development Adaptation Focused Aid**

<b>Project Name</b>	<b>Location</b>	<b>Sectors</b>
Climate Change Adaptation Capacity Support	Africa; multiple countries	Environmental education/training: 20%  Environmental research: 80%
Latin America Energy Organization (OLADE) Sustainable Energy project	Latin America; multiple countries	Energy policy and administrative management: 50%  Environmental policy and administrative management: 50%
Building Nigeria's Response to Climate Change	Nigeria	Public sector policy and administrative management: 35%  Environmental policy and administrative management: 25%  Environmental education/training: 40%
Sahel and West Africa Club Support	Africa; multiple countries	Public sector policy and administrative management: 30%  Democratic participation and civil society: 20%  Agricultural policy and administrative management: 20%  Environmental policy and administrative management: 10%  Multisector aid: 20%
Mapacho River Watershed Environment	Peru	Strengthening civil society: 45%  Environmental education/training: 45%  Promotion of development awareness: 10%
Rice Initiative	Mali	Agricultural development: 50%  Food crop production: 50%



This data<sup>35</sup> may be compared against broader objectives contained within various Canadian strategic development policy documents. These cross-analytic benchmarks from Canada's Budget (2010); G-8/G-20 (2010), CIDA's Strategic Plans & Priorities (2009-10) include:

- building the poor's adaptive capacity to address their vulnerability to environmental stresses and change, including building resilience to natural disasters;
- ensuring long-term food security of poor and vulnerable people in developing countries through food assistance, agriculture, nutrition, and research and innovation;
- strengthening institutional capacity and accountability in relation to the environment and natural resources;
- strengthening developing-country capacity and systems to enable countries' ability to deliver basic services to their population;
- enhancing more strategic efforts to engage with civil society organizations.

As a preliminary high-level scan, from the limited data available, it would appear that these six adaptation-driven development projects show reasonable consistency in broadly contributing to these stated Canadian development policy objectives. Consistency with international commitments such as the OECD declaration is apparent. However, it is

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<sup>35</sup> This bilateral data analysis is limited in scope to a high-level scan of CIDA adaptation projects and programs. A comprehensive review of original project documents could provide further opportunities for in-depth analysis.

worthy to note a low ratio of current operationally bilateral development projects with a climate change adaptation focus as a potential area for improvement, in Canadian bilateral aid. This data will be subject to greater scrutiny in the next Chapter.

### **Summary & Next Steps**

Chapter Three has clearly identified the complex integration of the issues of ‘mainstreaming adaptive capacity’ into international development cooperation, with an emphasis on the Canadian context.

We have reviewed much of the current and historical data of international and Canadian domestic climate and development policies, practices and initiatives that is relevant to the further analysis of adaptation in Canadian development policy. The next chapter will present a methodological framework for further data analysis and critique.

Paramount to the subsequent quantitative analysis in the following Chapters is this premise: it is to be assumed that the overall cost of adaptation is 28-86 billion per year and, with the premise that the Copenhagen Accord will provide 30 billion between 2010-2012, and 100 billion as of 2020. If it is arguable that Canada’s fair-share of fast-start financing is to be \$US 300-400 million each year in fast-start climate financing from 2010 to 2012, then how does the quantitative data about Canada’s adaptation commitments, pledges and actions compare? These assumptions provide discernable

benchmarks against which to measure Canada's national contribution to international progress to meet the adaptation imperative and fast-start financing pledges. Qualitatively, the literature review and OECD methodological framework offer several reflection points for best practices of integrating adaptation into development practice, but by no means are these the only yardsticks or mechanisms through which to conduct a Canadian cross-comparative review of adaptation to climate change in development.

## **Chapter Four: Discussion**

### **Introduction**

This Chapter will present a comprehensive discussion of Canada and its international role within the scope of climate and development policy, with emphasis on further examining Canada's contributions to the adaptation imperative in the developing world. Utilizing the data collected in Chapter Three, this Chapter will present data on Canadian international cooperation and integrative development for adaptation and adaptive capacity. I will begin by highlighting various methods for integrating adaptive capacity within the broader scope of international cooperation and adaptation, at various levels of intervention. This will include an overview and description of the Organization for Economic Cooperation & Development (OECD) 'climate lens' as a methodological tool of interest to our study. We will also review various recent domestic and international adaptation and development policy benchmarks useful to further critical analysis of adaptation and development.

The objective of my research is to assess (quantitatively and qualitatively) the level of integration of adaptation and adaptive capacity at multi-lateral and bilateral levels within Canadian ODA, while reflecting further and critiquing measures within Canadian domestic climate change approaches to international development policy, aid and international cooperation practice. We will review the Canadian case study data utilizing a combination of benchmarks and tools to highlight Canadian examples of development

success in consideration of climate change. Case study examples will be compared and contrasted utilizing the OECD climate lens.<sup>36</sup> Our critique will highlight Canada's domestic limitations to supporting adaptation implementation within bi-lateral and multi-lateral international cooperation, while considering the imperative need to strengthen adaptive capacity in the developing world, now and into the future.

At a broader level, I argue that domestic mitigation of greenhouse gases by Canada is an integral part of a 'whole of government' approach to addressing issues of climate change and development. Paradigmatically, I argue that equitable climate change in development approaches are fundamentally required by the Canadian government in order to address and minimize the prospect of long-term interference with the global climate system. This requires a radical re-evaluation of popularly held assumptions of economic growth and development.

I will conclude this analysis with a timely and relevant summary of Canada's key initiatives on integrative ODA development policy and practice for climate adaptation in the developing world through international cooperation mechanisms, and, opportunities for improvement.

This analysis is particularly salient, given Canada's responsibility for high levels of industrial GHG emissions and development equity responsibilities. At the same time,

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<sup>36</sup> See *Appendix 4A: OECD Lens*

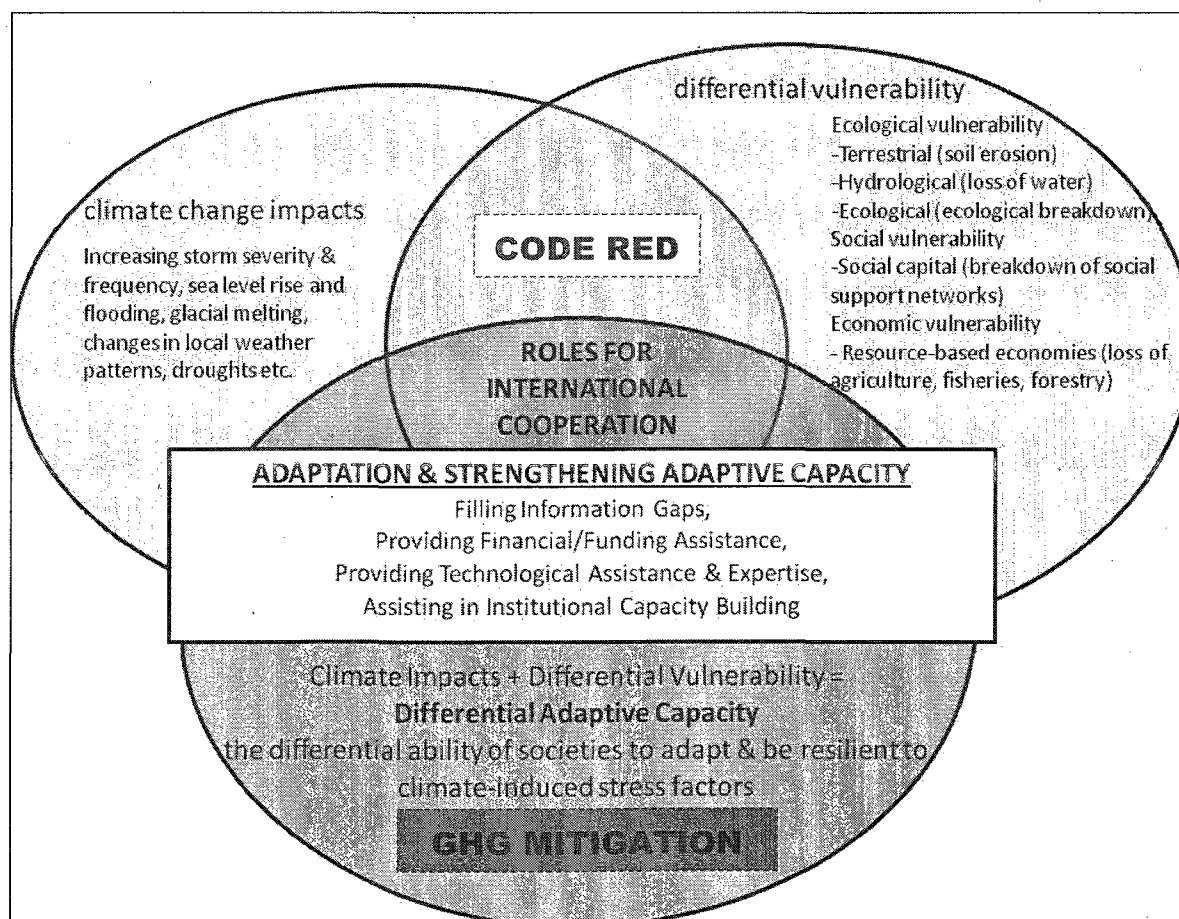
Canada is legally bound by historic, global environmental development and climate change policy obligations to mitigate emissions and to contribute to adaptation efforts through various high-level international climate and development policy commitments, bilateral development cooperation as well as through various UNFCCC mechanisms, including the Kyoto Protocol and the replenishment of GEF Trust Funds (i.e. LDCF, SCCF) and GEF core funding needs. In Cancun 2010, will Canada show leadership?

### **Strengthening Adaptive Capacity: Analytic Approaches**

Given the far-ranging adverse impacts of climate change, adaptation along with mitigation must form the axis of effective international cooperation strategies to address the plethora of issues that lie at the nexus of climate change and development (see Fig 4.1). These two climate imperatives are intricately linked development issues — the more we as a global society (particularly in developed countries) mitigate now, the less we will have to adapt in the future. However, even if substantial mitigation efforts are undertaken to reduce further greenhouse gas emissions, some degree of climate change is unavoidable and will inevitably lead to adverse climate impacts, some of which, as the literature has shown, are already being experienced. *Ultimately, developed and developing countries must rapidly reduce GHGs at least 80%+ reduction in global GHGs below 1990 levels, by 2050, to avoid catastrophic climate change disproportionately impacting on resource-based livelihoods within marginalized, vulnerable groups in the low-income societies of the developing world.* Given the

inevitable, strengthening adaptive capacity could be viewed as a forward-looking, seemingly wise, pro-active complementary measure to be broadly undertaken within development in response to the likelihood of a different climate future than the present. Critically important to analyzing the current climate crisis is the irony that the world's poor in the developing world, who have contributed the least to greenhouse gas emissions and benefited the least from industrial development, will suffer the worst impacts of climate change and have the least capacity to adapt.

Figure 4A: Nexus of Climate Change & Development Issues



It is clear that many LDCs (LDCs) and Small Island Developing States (SIDS) have a high degree of physical exposure to climate change and a limited capacity to respond to the challenges of adaptation.

Elementary principles of equity demand that the world's response strategies to climate change adaptation give special priority to the poorest and most vulnerable countries, particularly given historical GHG benefits and what could be termed compensatory 'carbon debt' responsibilities, on the part of developed nations like Canada. The key point here is that appropriate, long-term and holistic consideration of global social justice imperatives demands that both sides of the climate change coin (mitigation and adaptation) be considered when taking a broad view of Canada's domestic and international responses on these matters. Adaptation and mitigation are not to be considered mutually exclusive domains, but rather deeply interconnected strategic components of responding to climate change. Such a perspective allows for holistic analysis of international cooperation and policy approaches undertaken by Canada on matters of climate change.

In its recent report, 'Closing the Gaps,' the International Commission on Climate Change and Development (2009, p.1-107)<sup>37</sup> stated:

Development that can be sustained in a world changed by climate must be enabled by building the adaptive capacity of people and defining appropriate

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<sup>37</sup> Available Online: [http://www.ccdcommission.org/Filer/report/CCD\\_REPORT.pdf](http://www.ccdcommission.org/Filer/report/CCD_REPORT.pdf)



technical adaptive measures. Adaptive capacity results from reduced poverty and human development. Adaptive measures require the institutional infrastructure that development brings.

Toward that end, the Commission called for a rapid transition to a low-carbon global economy that would create new jobs and business opportunities. They state further that new green growth investment opportunities are necessary to respond to the urgent and growing needs for climate change adaptation – as an integral part of the strategic, global approach necessary to reducing the long-term risks associated with rising levels of greenhouse gases.

At the highest levels, this sentinel-call for widespread, global ‘green growth’ investment in mitigation and adaptation measures and technologies must be embraced by countries the world-over, particularly through development cooperation, if humanity is to adapt to predictable and necessary economic and energy transitions while adapting to inevitable and increasingly unpredictable ecological realities of the 21st century in a coherent, responsible, timely and sustainably prosperous fashion.

### **Strengthening Adaptive Capacity through Development**

Adaptation and strengthening adaptive capacity through and within development interventions occurs through iterative processes of decision-making, at various levels,

within various sectors and locations within donor and recipient countries. Strengthening adaptive capacity includes consideration of the policies, strategies, regulations, plans and/or programs that help to inform development directions and priorities, placing a key recognition on the importance of incorporating climate change variables and imperatives into these measures. Ultimately, by undertaking pro-active measures to strengthen adaptive capacity today, future climate vulnerability in developing countries can be addressed and/or ameliorated, thus ensuring development investments and sustainability benefits for current and future generations the world over are among the key outcomes of development cooperation.

At the level of practical implementation of adaptation, decision-making can be made through various levels, sectors and locations. Decisions are dependent on those making choices and carrying out actions to exercise due diligence in mainstreaming best practices and experiences. Research has shown that adaptation occurs from the individual level as well as at the community level and it is assisted by NGO, IGO, local, regional and national governance. Funding, assessment, knowledge (including traditional knowledge and research), timing and horizons for adaptation all factor into the adaptation process. The UNFCCC<sup>38</sup> offers further and various analytic development tools that can be modified to incorporate climate adaptation variables, including: cost-benefit analysis; cost-effectiveness analysis; multi-criteria analysis; checklist analysis

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<sup>38</sup> UNFCCC, 2009: The NWP: Making a difference on the ground. See Chapter 4: Assessing the impacts of, vulnerability and adaptation to, climate change

using indicators, criteria and considerations; consensus or voting to establish an order of preference of options; modelling and scenario development; and project baseline analysis to compare actions as a result of climate change against what would be done if there was no climate change.<sup>39</sup>

### *OECD: Climate Lens*

In examining potential development interventions, a key publication of interest is the OECD's 'Integrating Climate Change Adaptation into Development Cooperation' Policy Guidance (2009, pp 1-197)<sup>40,41</sup>, which advances the notion of applying a climate lens for strengthening adaptive capacity through development cooperation. A climate lens is an analytical tool to examine a development strategy, policy, plan, program or regulation in the context of climate change adaptation.

The OECD observes that the application of such a climate lens at the national or sectoral level involves examining:

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<sup>39</sup> For further examples, see 130 unique adaptation resources, Available Online at the UNFCCC adaptation practices interface: [http://unfccc.int/adaptation/nairobi\\_work\\_programme/knowledge\\_resources\\_and\\_publications/items/4555.php](http://unfccc.int/adaptation/nairobi_work_programme/knowledge_resources_and_publications/items/4555.php)

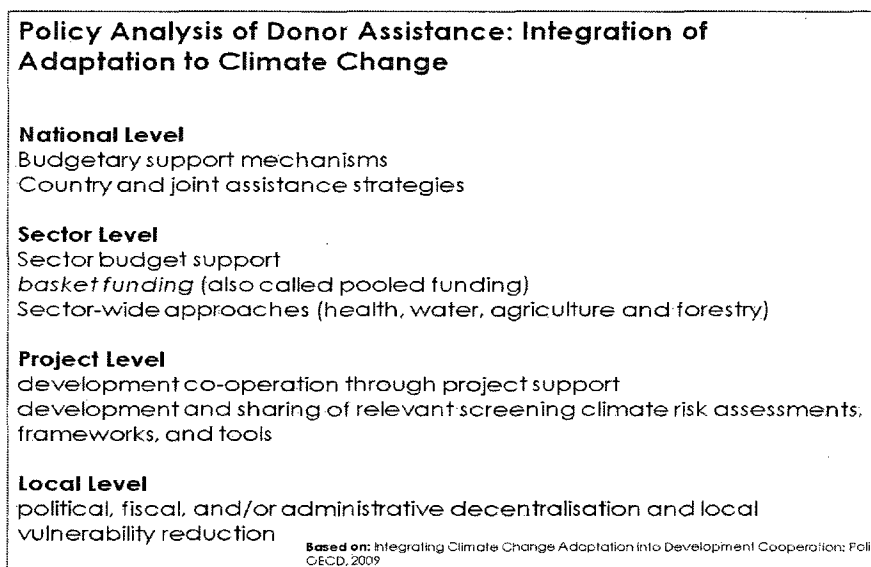
<sup>40</sup> See *Appendix 4A* for further elaboration on this methodology. Other recent publication of note, including adaptation methods: Evaluating Climate Change & Development, (2009) van den Berg, RD & Feinstein, O (ed.) World Bank Series on Development, Vol 8 Transaction Publishers, New Brunswick, New Jersey and the Handbook on Vulnerability and Adaptation Assessment (2009), by Consultative Group of Experts on National Communications from Parties Not Included in Annex-1 to the Convention (CGE)

<sup>41</sup> Also Available Online at: [http://www.oecd.org/document/3/0,3343,en\\_2649\\_34361\\_44096282\\_1\\_1\\_1\\_1.00.html](http://www.oecd.org/document/3/0,3343,en_2649_34361_44096282_1_1_1_1.00.html)

1. The extent to which a measure – be it a strategy, policy, plan or program under consideration--could be vulnerable to risks arising from climate variability and change;
2. The extent to which climate change risks have been taken into consideration in the course of the formulation of this measure;
3. The extent to which it could increase vulnerability, leading to mal-adaptation or, conversely, miss important opportunities arising from climate change;
4. And for pre-existing strategies, policies, plans and programs that are being revised, what amendments might be warranted in order to address climate risks and opportunities.

The OECD advocates that the application of a climate lens to a policy, strategy, regulation, plan or program can help improve its general directions and priorities. However, the OECD states that the real impact will materialize only at the stage where it is translated into actual enforcement of decisions, and implementation of activities and investments on the ground.

Figure 4B: OECD Climate Lens - Options for Intervention



This OECD policy guidance and climate lens tool on adaptation were developed in response to the OECD Ministerial Declaration on Adaptation<sup>42</sup> which commits OECD members to: “work to better integrate climate change adaptation in development planning and assistance, both within their own governments and in activities undertaken with partner countries [and to]:

1. promote understanding of climate change and its impacts within their development co-operation agencies and with partners in developing countries;
2. identify and use appropriate entry points for integrating adaptation to climate variability and climate change into development co-operation activities, including country assistance strategies, sectoral policy frameworks, poverty reduction strategies, long-term investment plans, technical consultations and sector reviews, as well as strategic and project-level environmental impact assessments;

<sup>42</sup>Available Online at: <http://www.oecd.org/dataoecd/44/29/36426943.pdf>

3. assist developing country partners in their efforts to reduce their vulnerability to climate variability and climate change, to identify and prioritize adaptation responses, and, where necessary, to help integrate such considerations within a wide range of sectoral interventions and projects, in line with the principles and objectives of the Paris Declaration on Aid Effectiveness.”

The harmonization of donor practices is another central objective within mainstreaming adaptation. OECD declarations and subsequent policy guidance are intended to assist donors and partners in effective development cooperation. A critical reference point particularly relevant to this policy guidance is the Paris Declaration on Aid Effectiveness, and especially its five overarching principles.

The Paris Declaration on Aid Effectiveness (March 2005), and the follow-up Accra Agenda for Action (September 2008)<sup>43</sup> marked an unprecedented level of international consensus and resolve to reform aid in order to make it more effective in combating global poverty and inequality, increasing growth, building capacity and accelerating achievement of the Millennium Development Goals. It laid down practical, action-oriented commitments for both donors and partner countries. The five overarching principles of the Paris Declaration – ownership, alignment, harmonization, managing for development results and mutual accountability – are major reference points for guiding

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<sup>43</sup> Available Online: <http://www.oecd.org/dataoecd/11/41/34428351.pdf>

policy dialogue and shaping development co-operation programs in all sectors, around the world.

This declaration is also particularly relevant to mainstreaming adaptation, given that adaptation is further enhanced by domestic development policy coherence with the Paris principles.

1. Ownership: Partner countries exercise effective leadership over their development policies and strategies and co-ordinate development actions.
2. Alignment: Donors base their overall support on partner countries' national development strategies, institutions and procedures.
3. Harmonization: Donors' actions are more harmonized, transparent and collectively effective.
4. Managing for Results: Managing resources and improving decision-making for results.
5. Mutual Accountability: Donors and partners are accountable for development results.

The subsequent Accra Agenda for Action articulates a set of ambitious actions by donors and partners to accelerate the full implementation of the Paris Declaration. Key points agreed in the Accra Agenda for Action:

1. Predictability – developing countries will strengthen the linkages between public expenditures and results, and donors will provide 3-to 5-year forward information on their planned aid to partner countries.
2. Ownership – developing country governments will engage more with parliaments and civil society organizations.
3. Country systems – partner country systems will be used to deliver aid as the first option, rather than donor systems, and donors will share their plans on increasing use of country systems.
4. Conditionality – donors will switch from reliance on prescriptive conditions about how and when aid money is spent to conditions based on the developing country's own development objectives.
5. Untying – donors will elaborate individual plans to further untie their aid.  
Aid fragmentation – donors agree to avoid creating new aid channels, and donors and countries will work on country-led division of labor.
6. Partnerships – all actors are encouraged to use the Paris Declaration principles, and the value of South-South cooperation is welcomed.
7. Transparency – donors and countries will step up efforts to have mutual assessment reviews in place by 2010. These will involve stronger parliamentary and citizen engagement and will be complemented with credible independent evidence.



It should be noted that Canada has been an active participant in both of these highly recognizable international forums on development co-operation and strategic approaches to ensuring the long-term effectiveness of international aid and assistance.

### **Adaptation and Development: High-Level Policy Benchmarks**

I will now turn to an analysis of Canada's performance within the international sphere of climate, adaptation, and development. Recall, firstly, the data on Canada's commitments presented in Chapter Three. At a high-level, Canada has pledged and committed, through various international mechanisms, to pursue adaptation through multi-lateral development initiatives including: high level policy commitments, policy development and support, project and program implementation initiatives, and various other mechanisms that include provisions for adaptation financing.

Table 4.1: Canada's High Level Adaptation Commitments &amp; Mechanisms

Canada's International Commitments: Multi-lateral	
Organization	Examples
United Nations Framework Convention on Climate Change	Kyoto Protocol: Ratification (2002), <b>under Kyoto, Canada agreed to reduce GHGs 6% below 1990 GHG levels by 2012</b> ; Nairobi Work Programme (2006), Bali Road Map (2007), Adaptation Fund, GEF Funding (ongoing) - GEF Trust Funds: Special Climate Change Fund (SCCF), Technology Transfer, LDC Fund, GEF Core Funding; Support for Copenhagen Accord (2009) and Green Climate Fund (2010); Canada participates in various roles and capacities within UNFCCC processes (including on LDC Expert Group);
G-8/G-20	L'Aquila Declaration – 80% GHG reduction below by 2050, 'under 2 degrees' by 2050 (G-8, 2009), Muskoka Accountability Report & various recent high-level commitments on adaptation & mitigation, including pledges of support for Copenhagen Accord/Green Fund (G-8, 2010); G-20 claims that a commitment of \$350 billion to support multi-lateral spending at multi-lateral development banks has been fulfilled. Purpose was to: "strengthen focus on lifting the lives of the poor, under-writing growth, and addressing climate change and food security issues" (G-20, 2010)
Organization for Economic Cooperation and Development	Declaration on Adaptation, 2006; ongoing Canadian participation in Development Assistance Committee (DAC)
Other Relevant International Agreements	Agenda 21, 1992 UN Conference on Environment and Development; 1994 Convention to Combat Desertification; 2000 Millennium Development Goals; World Summit of Sustainable

	Development (2002)
<b>Canada's Bilateral Policies, Strategies &amp; Approaches that Affect Adaptation</b>	
CIDA's Policy for Environmental Sustainability, 1992	
CIDA's Approach to Strengthening Aid Effectiveness, 2002	
Government of Canada: Canada's Aid Effectiveness Agenda, 2007	
CIDA's Sustainable Development Strategies, 2004-2009	
Canada's Official Development Assistance, 2008-09	
Government of Canada: Budget & Speech from the Throne, 2010	

### ***Other Multi-Lateral Contributions***

Before getting into the adaptation-specific development data, it is important to point out the extra-ordinary global financial circumstances of recent years as key factor to keep in mind within the bigger picture of analyzing adaptation and development financing and Canada. Canada's ODA in the past year(s) has largely been focused on debt relief and financing as Table 4.2 shows. Debt relief and financing contributions have been the focal point of recent Canadian aid to developing countries. For example, Canada's 2008-09 5 billion dollar aid budget is dwarfed by the 22 billion debt relief and financing contributions (a difference of 77%). Clearly Canadian development assistance funds have targeted on debt rather than aid, granted the extra-ordinary global financial circumstances. The recipients of this aid have largely been International Financial Institutions (IFIs) and Multi-lateral Development Banks (MDBs), which implement adaptation actions, to a small degree.

**Table 4.2: Recent ODA Expenditures: Government of Canada (2008-10)**

IMF (International Monetary Fund)	Debt Relief	10 billion (2009-10)
	Poverty Reduction & Growth Trust	840 million (2009-10)
IADB (Inter-American Development Bank)	Debt Relief	4 billion (2009-10)
ADB (Asian Development Bank)	Debt Relief	2.6 billion/5 years (2009-10)
International Finance Corporation	Global Trade Liquidity Program (stimulus spending for enterprise in the developing world)	200 million (2009-10)

However when keeping in mind the bigger picture, these funds seem consistent with the G-20's claim to "implement unprecedented and co-ordinated expansionary macro-economic policies, including the fiscal expansion of 5 trillion including unconventional monetary policy instruments; notably the establishment of the Financial Stability Board; and substantial efforts to strengthen the IFIs, including the expansion of resources and improvement of precautions within lending facilities of the IFIs (including MDBs)" (G-20, 2010). One would hope accountability frameworks for international lending would include vulnerability and adaptation assessment criterion in results-based management best practices.

In the broader scope, a combined total of Canadian development and debt-relief funds, of 27 billion in 2008-09, including the \$ 5 billion dollar ODA budget, is a relatively small portion of global finance required in the international response to global green growth and climate adaptation, and it is difficult to accurately determine the portion of this recent aid that will be targeted at these climate/development areas of interest, suffice to say that it appears that Canada could improve climate adaptation and mitigation efforts at all levels, across government as my research findings will show. Pre-emptive from deeper analysis, should the majority of funding be targeted at debt relief and servicing through international lending agencies, it is fair to assume that it could easily be going to any number of better projects for development (including adaptation), notwithstanding recent MDB & IFI climate initiatives. Nevertheless, the disproportionate spending on debt underscores the need for debt relief reform and amnesties, as the international community has long advocated through various campaigns such as Jubilee 2000<sup>44</sup>. The global financial crisis was not fully captured as an opportunity for the development 'yellow-brick road' of debt reform, green stimulus spending and development cooperation in support of the green energy revolution in rapidly industrialization nations as well as adaptation/adaptive capacity development game-changers for LDCs and SIDS. This is unfortunate and bearing this in mind, adds greater clarity and context to the analysis at hand. Let us turn now to further data analysis of Canadian multi-lateral and bi-lateral development and adaptation, including financing support.

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<sup>44</sup> <http://www.jubileedebtcampaign.org.uk/?lid=6281>

### **Multi-lateral Analysis**

Based on the data we can observe the following recent trends with regards to Canadian multi-lateral assistance and adaptation:

1. In recent years, Canada has given discernible recognition to the adaptation imperative, through high-level recognition of the importance of climate change in development, participation and financial support of various international policy vehicles such as the UNFCCC, OECD and World Bank; as well participation in multi-lateral partnerships, capacity building, research initiatives to support adaptation and adaptive capacity in the developing world through various multi-lateral mechanisms.
2. In the past, present and future Canada's government has committed to providing adaptation funding to developing nations to reduce emissions and adapt to climate change through various government mechanisms. Based on the data, total Canadian multi-lateral commitments and contributions to adaptation and green growth in the developing world are estimated to be in excess of \$ CAD 1 billion dollars over the past 10 years and next 5 years.
3. In terms of international financing mechanisms, the Adaptation Fund (AF) is particularly important to developing countries. AF assistance is based on the needs and priorities of vulnerable-countries, in developing country driven implementation processes. The Adaptation Fund was set up under the UN Framework Convention on Climate Change's (UNFCCC) Kyoto Protocol to

finance tangible adaptation projects and programs in vulnerable developing countries. It has several specific features that make it stand out among multilateral funds including direct access for developing countries, with a provision for accredited domestic implementing entities. The AF relies on revenues generated from the Kyoto Protocol's Clean Development Mechanism (CDM). There is a levy of two percent on all transactions in the CDM context, and this money flows into the AF. Estimates are that AF will contain up to \$ 360 million from CER (Certified Emissions Reductions) transactions by 2012. The UNFCCC Adaptation Fund currently has 112.5 million USD Total. Further an estimated 317-434 million USD Total is projected to be needed for the Adaptation Fund budgets in the next two years. In principle, the Fund is financed through CERs and does not depend on grants or loans from donor governments. Nevertheless, as the projected needs are great and will not be met through innovative CER financing alone, voluntary donor contributions have been welcomed. In 2010, Spain transferred € 45 million, while Germany and Sweden pledged € 10 million each for the Adaptation Fund.<sup>45</sup> At the time of writing, Canada has not contributed to this fund.

By honoring and fulfilling current and future international commitments (see Table 4.1), supporting the Paris Declaration on Aid Effectiveness and the follow-up Accra Agenda for Action, as well as working to strengthen adaptive capacity through development, the

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<sup>45</sup> <http://www.inwent.org/ez/articles/178318/index.en.shtml> Sven Harmeling and Alpha Oumar Kaloga: Assessing the Adaptation Fund, June 2010

data fully supports that Canada can show a leadership role on international adaptation financing and policy by signaling early and sustained financial support for the Adaptation Fund and its ongoing relevance in the post-2012 climate/development financing architecture and international climate adaptation funding regime, under the UNFCCC. Cancun presents a clear and definitive opportunity for Canadian leadership on adaptation and climate financing.

Further based on the data, it seems that the paramount multi-lateral mechanism by which Canada could participate multi-laterally on adaptation, should be through providing Canada's fair share contribution to the Copenhagen Accord's pledge to provide up to US \$30 billion for the 2010-2012 Copenhagen Green Climate Fund as the signatory global recognition of the needs to address adaptation and clean technology transfer through multi-lateral development cooperation and financing. While recent Canadian pledges<sup>46</sup> for fast-start financing are commendable, the gap between rhetoric and action remains un-bridged. Dave Martin Greenpeace Policy Adviser takes note:

This (400 million) represents about 4 per cent of the first year of funding for the overall three-year commitment of US \$30 billion. This is a positive first step towards Canada providing its fair share of the climate financing for adaptation to

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<sup>46</sup> Environment Canada, "Government of Canada Makes Major Investment to International Climate Change" News Release, June 23, 2010. Available at: <http://www.ec.gc.ca/default.asp?lang=En&n=714D9AAE-1&news=FD27D97E-5582-4D93-8ECE-6CB4578171A9>



climate impacts and emissions reduction in developing countries. However, several serious concerns remain... (Greenpeace Canada, June 2010)<sup>47</sup>

Canada's making a new and additional donor contribution to the already operative Adaptation Fund in 2009-2010, or at the earliest palatable moment, would send clear signals that Canada supports adaptation and adaptive development for climate resilience, through international mechanisms, such as the UNFCCC & AF. Further, such an action would contribute to making up the difference between AF projected budgets for the next two years, and AF's current abilities to generate novel funding through CDM-CER (a projected deficit of \$US 317-434 million 2009-11). As other donors like Spain, Germany and Sweden have shown significant voluntary commitments to the AF (10-45 million euros), Canada should so follow suit with similar, ongoing and increasing commitments to support adaptation (also through other GEF funds such as the Special Climate Change Fund to support National Adaptation Programmes of Action).

## **Bilateral Analysis**

### **Methodology & Rationale**

There is a need to respond to the urgent development priority of adaptation to the inevitable consequences of human-induced climate change. This will require strengthening adaptive capacity across the board – overcoming the ecological,

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Available Online at:  
[http://www.greenpeace.org/canada/Global/canada/report/2010/6/g20/A\\_Climate\\_Change\\_Agenda\\_for\\_Canada.pdf](http://www.greenpeace.org/canada/Global/canada/report/2010/6/g20/A_Climate_Change_Agenda_for_Canada.pdf)

biophysical, infrastructural and socio-economic/socio-political vulnerabilities, particularly in the developing world, to a disproportionate exposure to impacts of global climate change. Obviously development assistance and cooperation is the route by which developed industrial nations may fulfill international 'carbon-debt' equity obligations of historical responsibility while contributing to further enhancing development for the majority of the world's population living in low-income societies. There are many possible mechanisms for analyzing Canadian bilateral aid and the level of integration of adaptation into modern Canadian development practice. Taking stock of Canada's performance internationally on issues of climate change adaptation and development can help to better inform future improvements, while highlighting current successes, of Canada's approach to climate and development diplomacy and the accompanying political will and leadership to instigate bureaucratic programmatic responses required to 'mainstream adaptation' and support strengthening adaptive capacity in the low-income societies of the developing world, particularly in most vulnerable SIDS and LDCs.

A useful point of reference is the Commissioner on Environment and Sustainable Development 2004 Report<sup>48</sup>, which considered CIDA's progress on commitments pertaining to: water (access to safe drinking water, providing sanitation, integrated water resources management, combating desertification); environmental sustainability commitments such as integrating cross-cutting environmental issues in programs, projects as well as providing environmental assessments that consider the scope of

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<sup>48</sup> Available Online at: [http://www.oag-bvg.gc.ca/internet/English/mr\\_20041026\\_e\\_15441.html](http://www.oag-bvg.gc.ca/internet/English/mr_20041026_e_15441.html)

impact, cumulative effects, alternatives, mitigation, and public consultation as well as integration of the environment early into planning and decision-making; and lastly long term environmental commitments such as those that encourage local ownership, participatory approaches, partnerships, donor coordination, monitoring and measuring for long-term impact as well as examining lessons learned and integration of best practices into future development programming. At that point in time, the Commissioner reported that:

- CIDA's approach to the environment is hit or miss
- CIDA could not provide evidence that it had assembled the level of resources necessary needed to implement its commitments (i.e. water)
- CIDA had yet to report on the Convention to Combating Desertification
- CIDA could not provide evidence that measurable performance expectations had been set for the MDGs, including MDG 7: Environmental Sustainability, nor had it established specific roles and responsibilities for meeting this and other goals.
- CIDA could not provide evidence that measurable performance expectations had been set for the MDGs, including MDG 7: Environmental Sustainability, nor had it established specific roles and responsibilities for meeting this and other goals.
- CIDA had not set specific corporate performance expectations or assigned explicit roles and responsibilities for fulfilling its international commitments, and was further inhibited by an inability to measure and report on overall results. The Commissioner noted at that time that “this lack of stated expectations is a serious shortcoming... and has significant implications: 1. CIDA does not know the

extent to which it is making progress against... commitments; 2. This shortcoming affects CIDA's preparation of country programs and design and delivery of projects..."

- Internally, the Commissioner reported that CIDA officials were concerned about the large number of commitments, in a range of policy areas, that they were expected to accommodate without available tools to focus and integrate efforts. The Commissioner reported that CIDA's management expectations were not clear.

With this recent 2004 snapshot in mind, let's now take a thin slice of this adaptation problem. This next section of the research aims to comparatively analyze recent Canadian bilateral co-operation with proposed best practices for strengthening the adaptive capacities of vulnerable populations in developing countries. By first examining the best practices in development that can reduce vulnerability by increased/integrated adaptive capacity into development policy and practice (OECD climate lens – *Appendix 4A*); and then comparing and contrasting this model to the Canadian case study data, this research aims to shine clearer light on the path forward to address issues of differential adaptive capacity, and the role that developed countries (like Canada) can assume to meet their fair compensatory share of having benefited from the historical and current exploitation of humanity's collective global commons, the Earth's atmosphere. This urgency of this point is underscored particularly with respect to the inherent need to protect the livelihoods of future generations in a climate-changed world, both domestically and internationally. Even when approached through a prudent viewpoint

such as ensuring the long-term effectiveness of Canadian development investments, both at home and abroad, clearly, Canada has a role to play in adaptive, integrative development policy and practice for a climate changed world.

The inspiration for this comparative analysis of the integration of adaptation into bilateral development co-operation is ultimately driven by the notion that,

“The creation of the necessary confidence and understanding to adopt policy innovations requires more knowledge to be brought to bear on the issues. This in turn means more original research. But more important than original research is the need to *assess existing knowledge from other policy domes and to bring it to bear on adaptation and adaptive capacity*” Burton (in Lim et al. (ed.), 2005) [emphasis added].

In that regard, this novel and original research will utilize various Canadian domestic & international policy benchmarks as well as the OECD climate lens for further critiquing this particular niche of international development cooperation, in an attempt to bring more knowledge to bear on these relevant issues in support of better facilitating practical actions and policy innovations that can support strengthening adaptive capacity through development cooperation.

## OECD Lens<sup>49</sup>

The bilateral Canadian case data shows consistency with several of the recommendations of the OECD climate lens. At the national level, OECD adaptation interventions and supports can occur through:

- country and joint assistance strategies
- capacity building & awareness-raising (high-level policy dialogues, monitoring & assessment of future climate change impacts and adaptation priorities)
- the inclusion of budgetary support mechanisms
- better donor co-ordination and harmonization on adaptation at the country level

The Canadian bilateral and multi-lateral case data supports several of these OECD climate lens criteria for national level assistance. Take for example, the following Canadian case data in support of the OECD climate lens criteria:

### Joint Assistance:

- \$CAN 4.5 million direct financial support partnership through the OECD to the Secretariat of the Sahel and West Africa Club (SWAC) to carry out its mandate effectively which aims to help identify and address strategic questions related to

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<sup>49</sup> Note to reader: please refer to Case Studies: Canadian Bilateral Aid with an Adaptation Focus (Chapter Three) for the context of this analysis. As previously noted, this high-level project scan is by no means an exhaustive process of critical analysis, rather an attempt to compare and contrast, at a high level, Canadian bilateral aid examples with adaptive capacity standard best practices.

medium - and long-term development in West Africa (including issues of climate change adaptation, agriculture and migration).

#### Country Assistance & Budgetary Support Mechanisms:

- \$CAN 4.9 million partnership with the Ministère des finances in the Government of Mali in support of the rice initiative which aims to increase local rice production substantially via better access to credit, input subsidies, equipment, and support for producers, thus contributing to enhancing local and regional food security and agricultural markets, underscoring adaptive capacity and long-term development for climate adaptation and resilience.

#### Capacity-Building:

- \$CAN 5 million to Building Nigeria's Response to Climate Change project builds on the achievements of the Canada-Nigeria Climate Change Capacity Development Project, completed in 2004, which laid the groundwork for addressing climate change within Nigerian governmental, civil society and research institutions through capacity-building activities.
- Technological and research/capacity support through \$CAN 4.7 million project at the African regional specialized institution of the Permanent Interstate Committee for Drought Control (AGRHMET).
- Mitigation policy support through \$CAN 4.8 million project to improve environmental and regulatory practices in the Latin American energy sector

areas, with respect to poverty reduction, rural energy, indigenous issues, and climate change.

- \$CAN 420,000 to support environmental research, policy, education and training through a grassroots watershed management capacity-building project in Peru

#### Donor Coordination:

- Canada exhibits reasonably positively with OECD Development Assistance Committee-Strategic Environmental Assessment Task Team (OECD-DAC SEA) participation, including acting as the 2010 Chair of OECD-DAC SEA, as well as broader participation in the OECD-DAC Adaptation Task Team, which makes recommendations and guidance to development policy makers and practitioners on mainstreaming adaptation into development. Canada has been an active contributor to the international policy dialogue, including providing a template for Climate Change Integration through Strategic Environmental Assessment processes, emerging from the strategic policy work at CIDA.
- Recent IDRC/DFID partnerships provides some evidence of joint implementation of development projects between donor countries (Canada/UK)
- Elements of the data highlighted in the previous multi-lateral section would pertain within this bucket as well (such as multi-lateral donor mechanisms through UNFCCC, efforts to fast-start financing, including World Bank Climate Investment Funds contributions etc.)



The Canadian case data shows consistencies with the OECD climate lens when considering options for sectoral interventions for adaptation. The OECD recommends:

- Mobilization of the additional resources required to integrate the needed adaptation measures in the context of sectoral strategies, plans and programs in sector-level budget support and sector-wide approaches. Canadian Examples: Latin American energy project, Mali rice initiative, recent high-level commitments (i.e. 400 million, in principle, for fast-start financing to the Copenhagen Fund and long-term support)
- Capacity building & awareness-raising among both sectoral planners and their counterparts within donor agencies of the implications of climate change on their specific areas of activity & supporting their abilities to evaluate the implications of climate change for specific sectors. Canadian Bilateral Examples: Latin American energy project, Mali rice initiative, Nigeria capacity building, OECD strategic development project, AGRHYMET research support, Peru grass-roots environmental project<sup>50</sup>.
  - Domestic Policy Examples: Strategic Environmental Assessment (SEA) and Environmental Assessment (EA) mechanisms within CIDA policy, including a Climate Change Integration Tool<sup>51</sup>.

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<sup>50</sup> One would expect that the responsible persons required to implement, monitor and evaluate these bilateral projects, on the CIDA side, would be a beneficiary in building capacity and technical project management skills required to factor climate adaptation, adaptive capacity and resilience into development cooperation practice in ways that is consistent with international best practices.

<sup>51</sup> Strategic Environmental Assessment Tool, April 2010. In personal communication, Peter Croal at CIDA. See *Data Annex*.

- Providing support for capacity development needed to apply climate lenses (including climate information gathering and monitoring at the sectoral level) and implementation of the different development interventions (i.e. the development and application of sector-specific methodologies to identify, assess, cost and prioritize the needed climate adaptation measures and investments)
  - Domestic Policy Examples: Strategic Environmental Assessment (SEA) and Environmental Assessment (EA) mechanisms within CIDA policy, including a Climate Change Integration Tool
- Encouraging and supporting the monitoring and evaluation of progress towards integrating climate adaptation into sectoral strategies, plans and programs. (i.e. financial and technical support for the implementation of reporting tools and indicators as well as performance assessment frameworks.)
  - Several bilateral projects would seem implicitly aligned with these items. In particular the OECD project highlights the need for integrated approaches to migration in response to climate crises and effects in the Sahel; while in another example the Latin American energy project seeks to address variables beyond institutional capacity-building by incorporating poverty reduction, rural energy and climate change variables into the project work
    - Domestic Policy Examples: Strategic Environmental Assessment (SEA) and Environmental Assessment (EA) mechanisms within CIDA policy, including a Climate Change Integration Tool; as

well as development project monitoring protocol such as the Results Based Management framework<sup>52</sup>

It is worth highlighting also that the bilateral and multi-lateral data appears to support OECD climate lens criteria for national/sectoral interventions, generally in the sense that:

Strategies, policies, plans or programs appear to be considering vulnerability to risks arising from climate variability and change, at least to a certain degree; most notably through the Strategic Environmental Assessment frameworks and mechanisms through CIDA practice. This would imply that climate change risks are being taken into consideration, at least to a certain minimal degree, in the course of the formulation of development policy and measures.<sup>53</sup>

The OECD climate lens offers the following guidance at the local level, and the limited Canadian data under analysis support, at least in some cases, the OECD recommendations:

- Supporting sectoral priorities in light of climate change (i.e. urban infrastructure provision and maintenance; agriculture and rural development, sustainable land and water management)

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<sup>52</sup> This accountability reporting measure would present an interesting a relevant data set for further analysis of climate change adaptation integration into Canadian ODA.

<sup>53</sup> In the absence of a more thorough and comprehensive analysis, it is difficult to appropriately ascertain the degree of comprehensiveness for adaptive capacity integration in Canadian bilateral and multi-lateral ODA. Further analysis of CIDA sectoral and country joint assistance strategies may yield a more comprehensive picture in future research and analysis of Canadian development aid. Also, further analysis of the effectiveness of SEA in ODA could provide greater insight into this particular niche area of development research.

- Projects seem reasonably aligned with sectoral priorities (ex. agriculture, land/water management, infrastructure, energy)
- Options for channeling funds and stakeholder engagement to build local adaptive capacity (e.g. by supporting municipal infrastructure funds).
  - An emphasis on local adaptive capacity has been clearly highlighted in at least one of the six case studies (Peru watershed management project). This could provide potentially useful as a pilot study for NGO & grassroots partnerships for climate capacity building research & action being supported more broadly within CIDA bilateralism.
- Decentralization processes that transfer authority to elected local governments and enhance local government capacity to take up the responsibilities afforded by decentralization.
  - Insufficient data to properly assess; however the Peru case study seems a likely candidate for qualification under this criteria
- Increasing support to civil society organizations as they represent a key constituent in local-level adaptation
  - As noted above, the Peru case study seems to highlight the importance of strengthening civil society and economies at a local level for better environmental leadership and governance

This concludes the bilateral analysis of Canadian ODA. Now, the chapter enters the final sections, which will summarize key findings and offer an analytic critique of Canada's

adaptive & integrative development and international leadership in a climate-changed world.

## **Key Findings**

### **Overview**

In offering a critical reflection on Canada's level of initiative and international leadership on integrative ODA development policy and practice for climate adaptation in the developing world, this section will further elucidate on the barriers and opportunities for Canada to lead by example in the field of climate-proof and climate resilient international development. In that regard, the International Commission on Climate Change and Development (2009)<sup>54</sup> states:

Development that can be sustained in a world changed by climate must be enabled by building the adaptive capacity of people and defining appropriate technical adaptive measures. Adaptive capacity results from reduced poverty and human development. Adaptive measures require the *institutional infrastructure* that development brings [emphasis added].

Canada and CIDA have a clear role to play in institutionally and infrastructurally providing the measures necessary to meet the high-level objectives for climate-positive development approaches and adaptation actions.

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<sup>54</sup> Closing the Gaps,' the International Commission on Climate Change and Development (2009, p.1-107)

*Critical Reference Points*

Many developing countries insist that adaptation financing is compensatory for climate-induced development setbacks, thus making it quite different from conventional ODA. Recent World Bank estimates are that \$ 70 billion to \$ 100 billion will be needed per year on average until 2050, and low-income countries alone will need around \$ 26 billion per year to adapt to climate change.

Paramount to the subsequent analysis is this assumption: the overall cost of adaptation is assumed to be US\$26-100 billion per year and, it is hoped that the Copenhagen Accord will provide US\$30 billion between 2010-2012, and US\$100 billion as of 2020. Analysis has shown that Canada's fair share would be 3-4% of the global effort, including a minimum commitment of \$400 million in 2010 to support meeting 2010-2012 timeline of the Copenhagen Accord. These assumptions provide discernable benchmarks to measure national and international progress to meet the adaptation imperative. In that regard, it is fair to conclude that Canada's participation, as a developed country, must exceed past and current ODA efforts considerably if future climate financing needs are to be fully realized.

In light of projected escalation in adaptation (+green growth) costs of US\$26 billion to US\$100 billion per year, globally, it is not unreasonable to consider Canada's ODA contributions increasing, on a yearly basis, to provide funding to help developing

economies reduce their emissions and adapt to climate change. This is consistent with Canada's historic responsibility and proverbial 'carbon debt'; while remaining consistent with principles articulated in the Kyoto Protocol, which Canada ratified in 2002. In no uncertain terms is Canada currently in violation of the Kyoto Protocol as top emitter of GHGs, clearly Canada is not on track to meet Kyoto targets (and indeed appears to be arrogantly in contempt of them). Increasing ODA for adaptation is also consistent with Canada's stated commitment to provide funding to help developing economies reduce their emissions and adapt to climate change, as part of a collective developed country commitment under the Copenhagen Accord to provide up to US \$30 billion for the 2010-2012 period. Thus, as the research has shown, Canada clearly must provide new and additional ODA funding, targeted at climate adaptation, increasingly and on an ongoing basis.

Broadly speaking, adaptive capacity could be spurred through debt relief efforts and balancing Canada's \$CAN 5 billion ODA budget with Canada's US\$22 billion lending to core international financial institutions for debt relief and financing capital. While multi-lateral lending can be productive actors in some regards (i.e. World Bank Climate Investment Funds), when precious overseas development assistance money is applied to debt-servicing, it is missing an important opportunity to indirectly support adaptive capacity – by freeing domestic capital in developing countries from debt-servicing. By directly freeing domestic capital resources from debt-service for other spending, Canada could encourage developing countries to take domestic ownership over their own

adaptation needs and measures. In the long run, this could ultimately prove to be a more sustainable model of adaptation and development financing, but does not preclude the importance of Canadian ODA contributing to adaptation needs in the developing world given historic obligations and development equity debts between Canada and the low-income societies of developing countries.

Principles of global social and environmental justice must fall within the analytic praxis of the Canadian domestic context. Canada's historic carbon responsibility, international climate change mitigation obligations and poor international performance, must also be brought to bear when considering Canada's adaptation efforts abroad. To over look this factor, is to not see the forest from the trees, in international climate/development diplomacy. Ultimately, Canada must be domestically accountable to all of its climate obligations and genuinely work as a team player on the international stage to take meaningful action on mitigating the impending climate crisis, in addition to supporting adaptation. Thus far Canada has performed miserably on the mitigation front, while showing some promising signs for adaptation. However the point here is that *without consolidated domestic mitigation action by Canada today, any Canadian adaptation development efforts could be undermined in the future and furthermore, from the cynical long-view, could almost be seem to be incoherent, hypocritical or trite. Without broader consideration, policy-makers will be found in contempt of the historic realities facing countries.*



***Key Finding 1:***

Canada appears to have made progress on the 2006 OECD Ministerial Declaration on Adaptation through Canadian development policy objectives and actions that show some consistencies with the OECD declaration to:

- i. promote understanding of climate change and its impacts within their development co-operation agencies and with partners in developing countries;
- ii. identify and use appropriate entry points for integrating adaptation to climate variability and climate change into development co-operation activities, including country assistance strategies, sectoral policy frameworks, poverty reduction strategies, long-term investment plans, technical consultations and sector reviews, as well as strategic and project-level environmental impact assessments; and
- iii. assist developing country partners in their efforts to reduce their vulnerability to climate variability and climate change, to identify and prioritize adaptation responses, and, where necessary, to help integrate such considerations within a wide range of sectoral interventions and projects, in line with the principles and objectives of the Paris Declaration on Aid Effectiveness.

*Critique 1:*

In reviewing the Canadian case data of multi-lateral and bi-lateral policy and practice as well as internal policy frameworks, Canada's ODA shows promising signs of support for mainstreaming adaptation such as by supporting capacity building and research activities to support adaptation and adaptive capacity in the developing world. In 2010, the Government of Canada reported repeatedly on Canadian efforts to support adaptation in developing countries, reduce vulnerability, enhance resilience and build adaptive capacity to prepare for or respond to the observed or projected impacts of climate change.

The data suggests that CIDA has undertaken a diversity of bilateral activities, which have included climate change adaptation capacity-building approaches and mitigation measures with particular emphasis on Chinese mitigation efforts. Preclusive of deeper analysis, Canada's interest in Chinese mitigation underscores the fundamental need to curb GHG emissions from rapidly industrializing nations.

Canadian aid could always show greater integrative development practice in support of adaptation by factoring climate change into all: country assistance strategies, sectoral-policy frameworks, poverty reduction strategies, long-term investment plans, technical consultations and sector reviews, as well as strategic and project-level environmental impact assessments. Subsequent analysis will elaborate further on these points.

***Key Finding 2:***

In principle, Canada shows a high level of international support and involvement for action on adaptation and development issues, mostly through multi-lateral channels.

Canada participates and supports UNFCCC processes (including federal support, in principle, for the recently announced 2012 Copenhagen Green Climate Fund). In the Fifth National Communication (Ch. 7, 2010)<sup>55</sup> the Government of Canada stated that they “support international efforts to address climate change in developing countries through various multilateral, bilateral and partnership channels.” Further they state:

Canada will contribute its fair share to the total developed country contribution of US \$30 billion for the period 2010-2012 in support of mitigation and adaptation in developing countries. Canada will also work with partner countries to mobilize US \$100 billion per year by 2020 from private and public funds in support of climate change action in developing countries.

However, there is no evidence to suggest that Canada will provide ongoing and increased support for already established multi-lateral funding channels, such as those UNFCCC funds administered by the GEF, or under the auspices of the Kyoto Protocol.

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<sup>55</sup> Available Online: [http://unfccc.int/resource/docs/natc/can\\_nc5.pdf](http://unfccc.int/resource/docs/natc/can_nc5.pdf)

***Critique 2:***

Canada has recently pledged 400 million dollars to fast-start financing towards Copenhagen goals, however it remains to be seen where these new and additional funds will be procured, given that the Canadian ODA budget has been capped and frozen at CAD\$5 billion<sup>56</sup>. If these new Canadian funding efforts will not be additional to current adaptation and climate funding, or general ODA, Canada has not positively signaled its commitment to increasing funding for climate adaptation and low-carbon growth in the developing world, thus failing to bridge the gap between political rhetoric and real climate action.

***Key Finding 3:***

The domestic Canada leadership for mitigation and the post-carbon economy has been far from adequate and has been notably deficient, particularly in recent years. On the international stage over the past 5-10 years, Canada has been party to international partnership agreements such as the Kyoto Protocol ratification (2002), with further pledged support for the Nairobi Work Program and the OECD Declaration on

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<sup>56</sup> Climate Works (<http://www.climateworks.org/>) has recently found that in total \$285.7 million would be provided by the Canadian government as *loans through the International Finance Corp. a member of the World Bank Group* that would distribute the loans to private-sector recipients managing clean-energy projects that help reduce pollution in developing countries as reported here: <http://www.canada.com/business/Environmental+group+says+Canada+falling+short+climate+change+funding/3714240/story.html>

Adaptation (2006), as well participating and supporting various as G-8/G-20 climate declarations and commitments (2008-10). Canadian domestic rhetoric and mitigation efforts needed to be aligned with international action to support long-term Canadian domestic development and international development cooperation that is climate-positive for both adaptation and mitigation, at home and abroad.

***Critique 3:***

Canada has yet to honor its Kyoto Protocol obligations of reducing Canada's GHGs contribution 6% below 1990 levels by 2012. In 2006, Canada *was 29% higher than the Kyoto target*, largely attributable to exponential growth in the oil and gas energy sector (UNFCCC, 2007). Canadian domestic mitigation action is inseparable from international policy dialogue on climate, development and adaptation. Domestically, meaningful political will and action have been deficient in Canadian efforts to ramp up mitigation efforts, since Canada ratified the Kyoto Protocol in 2002. Canada's commissioner on Environment and Sustainable Development reported in 2006,

In the course of our audit work, we have tried to answer three basic questions:

1. Is Canada on track to meet its emission reduction obligations?
2. Is Canada ready to adapt to the impact of climate change?
3. Is the government organized and managing well?

*The answer is no to all 3 questions.* (News Release, Office of the Auditor General of Canada, 28 Sept 2006, Online) [emphasis added].<sup>57</sup>

Partially as a result of Canada's lack of domestic strategizing on domestic mitigation initiatives to meet the Kyoto Protocol targets, and recent obstructionism or lack of leadership within international climate policy forums (including Canada being the only country in the world to change the Kyoto base year and targets from 1990 to 2006), it remains to be seen what will become of this international environmental treaty and its relevance, in the post-2012 succession. It is arguable that Canada is in international violation of this global environmental treaty for changing the base year, not fulfilling its Kyoto obligations and should be held accountable to its missed Kyoto Protocol targets, perhaps through carbon debt compensatory means and penalization for missed targets.<sup>58</sup>

The point of Kyoto was that without strong mitigation by developed countries today, adaptation measures and development investments, particularly in LDCs & SIDS, may be perfunctory, irrelevant, ineffective or submergibly redundant (under water) in the future. If Canada is sincerely aligned with its G-8 claims to support long-term targets

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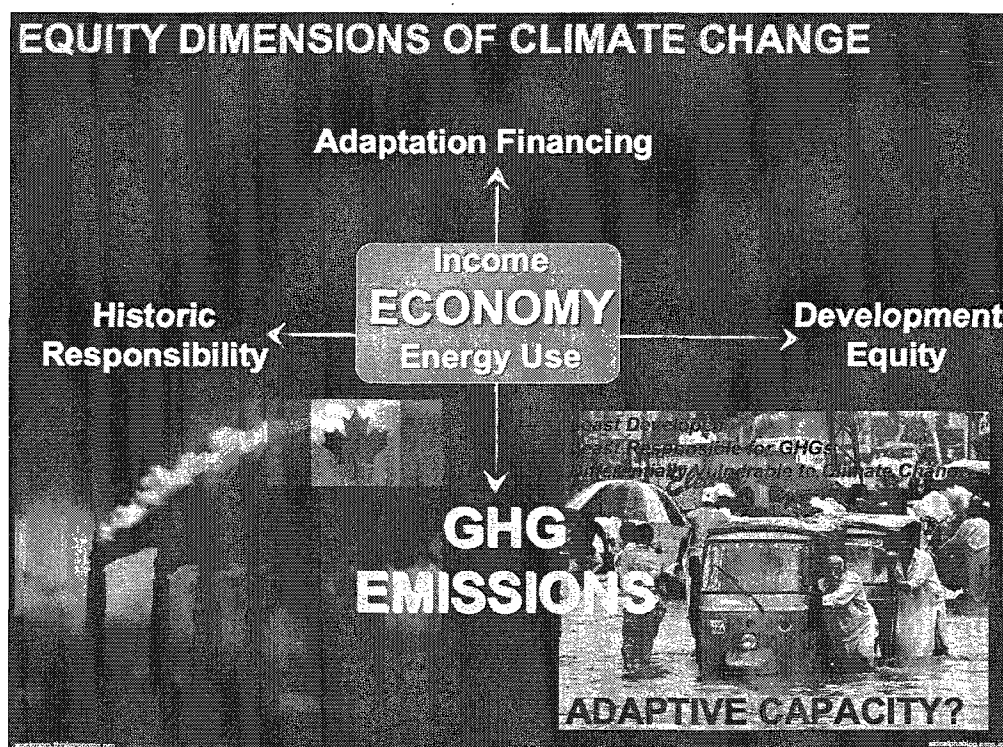
<sup>58</sup> As a party to the Kyoto Protocol, Canada committed to reduce emissions 6% below 1990 levels by 2010-2012. *In 2006, Canada was 29% higher than the Kyoto target*, largely attributable to exponential growth in the oil and gas energy sector (UNFCCC, 2007). In 2006, Canada became the only country in the world, to change its reduction base year and target to 20% below 2006 levels by 2020, with an aspirational target 60-70% by 2050 (less than G-8 objective of 80%+). Environmentalists have claimed that this change will lead to a 2.5% increase in Canada's GHG levels as compared to the 1990 base year, by 2020. Thus, it is arguable that Canada is in violation of its international mitigation responsibilities under the Kyoto Protocol and should be subject to appropriate penalization and environmental enforcement for failed compliance with GHG reductions. Canada is among the most energy-intensive nations (per capita) and ranks within the top three (per capita) emitters in the world. For more details see *Appendix 4B: Canada's energy use and emissions in comparison to LDCs*.

such as keeping global temperature from rising by more than 2 degrees and significant reducing developed country emissions by 2050, much more must be done domestically within Canada to combat rising GHGs and work towards these inter-generational sustainability goals – as the CESD particularly noted in 2004, within the environmental regulation of the western Canadian oil and gas energy sector, in particular the tar sands of Fort McMurray. Ultimately, Canada must meet and exceed the mitigation, adaptation and financing targets put in place Copenhagen Accord as a multi-lateral imperative if humanity is to avert catastrophic climate change and Canada is to make up for decades of wasted time on domestic mitigation. This will require radical domestic measures to complement radical international measures to finance the climate adaptation crisis and the green-growth imperative. Given the need, government and bureaucratic incrementalism does a dis-service to future generations. The time for action is now.

As a suggested complementary action, Canada could signal strong support for the Adaptation Fund (AF) to continue to be a key cornerstone of the UNFCCC process and post 2012 climate financing architecture. Canada could show its support by ensuring that new and additional funds are voluntarily contributed by Canada to meet current AF funding needs. Similarly, Canada could do much more to participate in innovative financing and regulatory measures for climate, adaptation and development, both domestically and internationally. For example, Canada could take a leadership role in the continued long-term support for the LDC Fund (including Canada's role as an expert advisor), other GEF core funding needs and particularly the SCCF to fund the projected

1.9 billion NAPA implementation program for 44 LDCs and SIDS. Canada could always be more of an active and voluntary participant, or leader, in these multi-lateral climate measures, including more active participation in high level forums on climate financing initiatives. Ultimately, the Auditor General and the Commissioner on Environment and Sustainable Development have concluded it is a ‘...lack of a strategic roadmap for many federal programs complicates their effective implementation, and lack of data hinders the evaluation of program effectiveness. Environmental programs are no exception.’” (2009).<sup>59</sup> My analysis would support that Canada can do more at a whole of government level to improve its environmental sustainability agendas.

Figure 4C: Equity Dimensions of Climate Change for Canada



<sup>59</sup> <sup>59</sup> Available Online: [http://www.oag-bvg.gc.ca/internet/English/parl\\_cesd\\_200911\\_00\\_e\\_33195.html](http://www.oag-bvg.gc.ca/internet/English/parl_cesd_200911_00_e_33195.html)



***Key Finding 4:***

Canada supports international development cooperation mechanisms and actions, through the World Bank, GEF Trust Funds, OECD Development Assistance Committee, as well as various funds and groups within the UNFCCC and through various other multi-lateral and bilateral mechanisms. It is roughly estimated that Canadian pledged spending and/or contributions on climate change adaptation and green growth, through multi-lateral mechanisms has reached upwards of 1.5 billion dollars between 1998 and 2015 (not including recent G-20 financial mechanisms). Averaged over this period of 17 years, this would be roughly be equivalent to a Canadian contribution of 86 million (or greater) per year, to support adaptation through multi-lateral mechanisms. However, the data shows an increasing emphasis on multi-lateral climate change pledges and contributions in recent years.

***Critique 4:***

Adaptive capacity can be spurred through debt relief efforts and balancing Canada's \$CAN 5 billion ODA budget with Canada's \$CAD 22 billion lending to core international financial institutions for debt relief and financing capital. It is important to reiterate that Canada's 2008-09 ODA budget of \$CAD 5 billion dollar for aid is dwarfed by the \$CAD 22 billion Canada contributed to debt relief and financing through IFIs and MDBs, which in all fairness, do implement adaptation actions, to a small degree. The

2008-09 aid: debt ratio shows a difference of 77% more spending on debt relief and financing capital, granted the extra-ordinary global financial circumstances and global economic response. The \$CAD 22 billion dollars of Canadian contributed funds make up a part of the G-20's "co-ordinated expansionary macro-economic policies, including the fiscal expansion of \$USD 5 trillion including unconventional monetary policy instruments" that was targeted at averting the global recession (G-20, 2010)<sup>60</sup>.

One would think if the world's leaders could manage to achieve such an extraordinary consensus on the multi-lateral mechanisms required to avert the global economic crisis, the same momentum could be harnessed to achieve action on the global climate crisis, including the interesting and opportune intersection of adaptation financing with debt relief. One would hope that at the very least, the accountability frameworks for this unprecedented international lending to IFIs and MDBs would be inclusive of vulnerability and adaptation assessment criterion in multi-laterally acceptable results-based management frameworks that support development best practices, transparency and accountability.

The main point here is that adaptation and financing in a time of global economic crisis and increasing fiscal uncertainty underscores the need for debt relief to free developing country partners who are unnecessarily burdened with debt obligations that preclude

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<sup>60</sup> Available Online: [http://www.g20.org/Documents/g20\\_declaration\\_en.pdf](http://www.g20.org/Documents/g20_declaration_en.pdf)

them from capitalizing on opportunities to, theoretically, utilize their own domestic taxation resources and revenues for domestic adaptation efforts.

Canadian multi-lateral funding could innovatively lead the way by matching this proposed protocol of debt relief for adaptation financing, in addition to other more substantial contributions such as making all ODA proportionate to recent support for IFIs and MDBs lending for debt relief and development financing. One way to do this would be by lifting the current \$CAD 5 billion cap on Canadian ODA, while increasing the ongoing ODA donations and to meet long-term climate commitments (\$USD 30 billion by 2012, \$USD 100 billion per year, by 2020) through new and innovative approaches (relieving debt lending to enhance domestic adaptation support in developing countries). In doing so Canada could better support its three priorities of health, food security/agriculture and youth/children, through multi-lateral and bilateral climate aid mechanisms that in turn would better match Canada's domestic and international policy commitments and aims for long-term development effectiveness, beyond a business as usual scenario.

***Key Finding 5:***

Top country bilateral recipients of Canadian aid in 2008-09 included Afghanistan and Haiti, (1/3 of bilateral aid combined at \$CAD 459.6 million of the total \$CAD 1.5 billion bilateral budget), who while exhibiting considerable vulnerability to climate change,

mostly due to insecurities borne of social unrest, disaster circumstances and environmental crises; and, while deserving of ongoing Canadian aid and democratic assistance, must not become the long-term priority of Canada's international foreign policy and spending. This diversification approach could also better support CIDA's three priorities of health, food security/agriculture and youth/children, through multi-lateral and bilateral aid mechanisms that also is a better match of Canada's domestic and international policy commitments and Canada's role and reputation as an international peace-broker.

#### *Critique 5:*

All bilateral development must consider the lens of adaptation and mitigation when making strategic development cooperation priorities, particularly in light of financing needs and pledged commitments. If a third of bilateral assistance is currently targeted at two countries, and we take into account the billions of dollars in Canadian funds devoted to maintaining a Canada's military presence in Afghanistan and Haiti in recent years, a clearer picture of Canada's foreign policy strategic priorities can be brought, somewhat, to light. Arguably, if it were to be possible to balance development and assistance spending with military spending, or even a more equitable distribution of geographic focus, while emphasizing green growth and the adaptation imperative in this financing shift and ramp-up, the long-term impact of Canadian aid could be enhanced. By doing so, Canada could better support its development priorities and do a better job of

matching domestic policy approaches with international environmental obligations. The point is that disproportionate spending on Haiti and Afghanistan by the Canadian government underscores the need for the Canadian military to exit Afghanistan by no later than December 31, 2011 and all future spending in Afghanistan be civilian in nature and devoted to supporting development and democracy, including adaptation.

***Key Finding 6:***

Between at least 2000-2012, CIDA has supported or pledged to support climate change projects through bilateral means. At the bilateral level, there is evidence that Canadian development interventions are supporting adaptation through sectoral approaches that contributes to strengthening LDC capacity in: agricultural policy, strengthening civil society, environmental engagement and management (i.e. water, forestry), institutional capacity building, and sustainable energy policy – all of which are reasonably aligned with domestic development policy objectives and international recommendations for integrating climate change adaptive capacity into development cooperation. However, the estimated total of all this twelve years of bilateral ODA focused on climate change is a mere \$ CAN 46 million and further, I have found that there are currently only 8 operational climate change focused bilateral projects within CIDA. Clearly an expanded mandate and approach could enhance CIDA's impact as an agent of adaptive capacity building in the developing world.

*Critique 6:*

While current bilateral efforts show signs of promise, greater integration of environmental frameworks, as Key Finding 6 suggests, are required in Canadian ODA decision-making. As well, emphasis on increasing the adaptive capacity of developing countries, particularly in the case of LDCs and SIDS, to manage their environment and natural resources is required within Canadian bilateralism. Strengthening climate resilience through adaptation and development measures must occur comprehensively within Canadian aid interventions on a much broader scale than is currently the case.

For example, CIDA could be giving greater consideration to the demand for adaptation from developing countries, in particular the need for implementation of NAPAs developed under the NWP. For LDCs and SIDS, the NAPAs have identified program options for intervention, with sensitivity to traditional and indigenous knowledge considerations. Past examples of Canadian development co-operation complementary to supporting UNFCCC processes exemplify the types of adaptive capacity and capacity building activities that can continue to make a difference in the lives of those most vulnerable to climate change.

Another example: by strengthening CIDA's Indigenous Peoples Partnership Program (IPPP), Canada could strengthen grassroots partnerships for engagement between Canada's First Nations with established networks for sharing traditional ecological knowledge (TEK) and experiences with other indigenous groups in the developing

world. This would be in support of the recently signed UN Convention on the Rights of Aboriginal and Indigenous Peoples. By enhancing this capacity to share skills for adaptation through TEK, Canadian development policy would innovatively support and reinforce opportunities to genuinely strengthen adaptive capacity, environmental management and resilience through development cooperation, particularly through grassroots means by indigenous groups whose indigenous and traditional livelihoods rank them among the most vulnerable groups to climate change, thus certainly deserving of ongoing and increasing development assistance. Truly this would present a opportunity for shared learning and capacity building between Canadian development practitioners and policy-makers, First Nations groups and indigenous partners in developing nations. Other Canadian Partnership Branch initiatives to link Canadians as positive contributors to strengthening adaptive capacity and resilience in low-income societies could include providing enhanced technical and resource assistance funding resources to build greater adaptive capacity to climate change vulnerabilities. A Request For Proposals process to select competitive Canadian private firms and non-governmental agencies to deliver and enhance adaptation and mitigation measures through international development co-operation to countries the developing world could signal a practical development action that would support a sustainable, adaptive economic growth and development approach to benefit Canadians and the international community at large. Such an approach could work for integrated policy approaches across government agencies.

Ultimately, key elements of Canadian development strategy that can assist to strengthen climate resilience through adaptation and development measures include increasing opportunities to enhance food security, water management, sustainable forestry, disaster preparedness, sustainable energy and other efforts that will underscore adaptation and local resilience in the developing world. Thus, a more sizable portion of Canadian bilateral ODA should include a focus on the issues at the cross section of climate change and these sectoral priorities, and, all policies and plans should take into account climate change in formulation and implementation.

There is a business case to be made for more holistic consideration of the environment within CIDA program design and policy development. The conflicting definitions of sustainable development and sustainable economic growth that the agency employs in efforts to reduce poverty in low-income societies through development interventions is a situation that must be rectified. A radical approach to include the often un-valued nature of ecosystem services within the scope of indicators used to determine strategic directions for the agency could prove a useful exercise to resolve internal conflicting interest in program choices. According to a recently released report entitled, “Mainstreaming the Economics of Nature”<sup>61</sup>,

Applying economic thinking to the use of biodiversity and ecosystem services can help clarify two critical points: why prosperity and poverty reduction depend on maintaining the flow of benefits from ecosystems; and why successful

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<sup>61</sup> [http://www.teebweb.org/LinkClick.aspx?fileticket=bYhDohL\\_TuM%3d&tabid=924&mid=1813](http://www.teebweb.org/LinkClick.aspx?fileticket=bYhDohL_TuM%3d&tabid=924&mid=1813)



environmental protection needs to be grounded in sound economics, including explicit recognition, efficient allocation, and fair distribution of the costs and benefits of conservation and sustainable use of natural resources...

The invisibility of biodiversity values has often encouraged inefficient use or even destruction of the natural capital that is the foundation of our economies... [To apply this model of thinking could] accelerate the development of a new economy: one in which the values of natural capital, and the ecosystem services which this capital supplies, are fully reflected in the mainstream of public and private decision-making... the global community has an unprecedented opportunity to rethink and reconfigure the way people manage biological resources. A new vision for biodiversity, with proposals for time-bound targets and clear indicators, is being drawn up by the Convention on Biological Diversity (CBD), in this International Year of Biodiversity (p.3)

As the recent Pakistan flood is perhaps an indication of how climate change will affect development gains<sup>62</sup>, perhaps the main thrust of development assistance and international cooperation should now consider making biodiversity of the Earth the

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<sup>62</sup> An estimated 20 million people – 6 million of them children – have been affected by the recent floods in Pakistan mostly by destruction of property, livelihood and infrastructure, with a death toll of close to 2,000. Structural damages have been estimated to exceed 4 billion USD, and wheat crop damages have been estimated to be over 500 million USD. Officials have estimated the total economic impact to be as much as 43 billion USD. "Preliminary Damage Estimates for Pakistani Flood Events, 2010". Ball State University Center for Business and Economic Research. August 2010. Retrieved 31 October 2010.

number one priority underscoring all development interventions, including sustainable economic growth objectives. Addressing systemic disconnects between the neo-liberal economic models of growth and development (often the underlying basis of poor development program choices) to instead place greater value on eco-system services, simply in terms of carbon sources and sinks, or more complexly valued as integrated and complex systems of natural, social, cultural resources that are fundamentally required to ensuring humanity's collective adaptive capacity to global environmental change. There are multiple mechanisms to ensure full-cost accountings of development are brought to bear before choices are taken on development pathways. Considering the 'external' implications of carbon-intensive development choices through lifecycle analysis, including the ecological implications of rising greenhouse gases in the atmosphere, is the starting point of climate-savvy, climate-responsible development choices, at home and abroad.

Today, we are ultimately creating the foundation of the future where climate change requires us to reconsider our development pathways and the effects that choices and options have on the environment, most importantly the global carbon and greenhouse gas dilemmas and impact consequences that humanity faces in the 21<sup>st</sup> century. Thus, in an idealistic holistic scenario, every single development decision that Canada's agency of international development makes would be required to identify how it has valued ecosystem services and long-term climate change considerations of mitigation and adaptation within its design.

This is particularly relevant in the case of development assistance targeted at Brazil, Russia, India, China, South Africa, Indonesia and Vietnam. These rapidly industrializing nations must, at every effort, be encouraged towards low-carbon development pathways to reduce the stress of increasing global levels greenhouse gases as a result of rapid industrialization and deforestation. Canadian development assistance must consider incentivizing eco-system services as well as broadly supporting climate change mitigation within the development interventions in these particular countries. The dawning economic and political power of nations such as China and India exemplifies the need for integrated approaches of development assistance that can support growth that is on an ecological sustainable pathway that values eco-system services. Such a shift could prompt an alternative development pathway towards the desirable and urgently needed low-carbon future scenario. Development agencies must take a greater leadership role in this regard to bring value and emphasis to local ecosystem resources and biodiversity conservation foundations required for global environmental benefits. However, this is contrary to the agendas of trade liberalization and international market development, economic globalization, often touted by governments in support of the corporate growth model predominate in modern market capitalism. This model is not climate-friendly, nor enhancing of adaptive capacity, nor valuing of ecosystem services. Until global capitalism can resolve its systemic flaw of not valuing ecosystem services such as, for example, global climate regulation and weather predictability that is sustainably provided for free, but only if humanity is able to respect the ecological limitations of the Earth's atmospheric carbon cycle, by better managing terrestrial

resources and human activities that are jeopardizing global climate stability. This requires fundamental changes to the frames of reference that stakeholders operating within the capitalist paradigm. Ultimately, it requires deep integration of the unvalued values of nature, literally, into everything we as a society do.

To underscore the urgency of our planetary predicament, 29 European, Australian and US scientists have recently concluded,

Human activities have already pushed the Earth system beyond three of the planet's biophysical thresholds, with consequences that are detrimental or even catastrophic for large parts of the world; six others may well be crossed in the next decades (September 24, 2009, Nature)<sup>63</sup>

Such findings on the limits of planetary boundaries are signals of the need for precaution and encouragement to environmental innovation and new thinking within the constraints of significantly diminished stock of environmental and ecological services, increased pressures on dwindling resources, that further over stressed by a changing climate. Development cooperation must at every opportunity work to ameliorate the dangerous limits currently placing immense stress on the Earth's atmosphere, oceans, forests and eco-system services. This will require drastic changes to conceptual frameworks of development cooperation to place greater value on eco-system services with the long-term in mind.

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<sup>63</sup> <http://www.sciencedaily.com/releases/2009/09/090923143339.htm>

Canada's Auditor General<sup>64</sup> recently recommended that 'departments examine their activities, programs, and functions to identify areas where the possibility of conflict of interest is greater, and devise strategies to address these situations'. In light of the previous discussion, perhaps it is time that CIDA resolve its programmatic incoherencies that create conflict of interest, particularly when considering the true meaning of sustainable economic growth and the strategic choices that entails for development cooperation in a climate-changed world requiring increased emphasis on mitigation and adaptation responses. See further discussion below.

***Key Finding 7:***

Canada's bilateral aid can do much more to support the key issues of adaptive capacity and challenges of development that partner countries are faced with. The current focus on efficiency and accountability that is targeted at increasing food security, securing the future of children and youth, contributing to health and sustaining economic growth by untying aid, having a limited geographic focus, and supporting decentralization can do much more to support adaptive capacity. In so doing, Canadian aid can ensure that international assistance investments are achieving concrete results that will endure in an increasingly uncertain climate.

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<sup>64</sup> Available Online: [http://www.oag-bvg.gc.ca/internet/English/parl\\_oag\\_201010\\_04\\_e\\_34287.html#hd51](http://www.oag-bvg.gc.ca/internet/English/parl_oag_201010_04_e_34287.html#hd51)

*Critique 7:*

Environmental sustainability and poverty reduction are building blocks of adaptive capacity and must underscore Canada's development focus and accountability for economic and environmental realities of international cooperation in the 21st century.

The role for development in strengthening adaptive capacity in light of climate change, is to work to strengthen and protect basic development assets like food security, energy security and clean water as well as to strengthen social assets like civility, sustainable socio-economic infrastructure. Ultimately, development should contribute to the future vibrancy of the unquantifiable richness and diversity of human cultures found throughout the world. Ultimately, a key goal of governments at all levels everywhere should be to ensure that nations support a high quality of social, cultural, economic and environmental systems of human life; a quality of life that is human scale, while the culture remains adaptable, resilient. Adaptive capability to withstand climate impacts while remaining continually capable and adaptable to sustain basic human needs – now and into the future – must underwrite all development efforts in a climate changed world. Ultimately, this should be the over-arching goal of Canadian aid and development cooperation.

In a 2004 review of CIDA, the Commissioner on Environment and Development<sup>65</sup> reported that, “properly done, an environmental assessment can help to avoid or mitigate

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<sup>65</sup> [http://www.oag-bvg.gc.ca/internet/English/parl\\_cesd\\_200410\\_02\\_e\\_14915.html](http://www.oag-bvg.gc.ca/internet/English/parl_cesd_200410_02_e_14915.html)

damage and be a *powerful planning tool by identifying opportunities to improve project design, enhance project benefits, and contribute to sustainable development.*” In reviewing 8 case studies, the Commissioner concluded that EA was “treated as a paper exercise to be complied with, rather than a project planning tool” and that “the spirit of EA was missing... processes and documentation did not provide assurance that projects were designed in an environmentally responsible way.” More about this below.

***Key Finding 8:***

CIDA has pledged in the past to systematically and explicitly integrate environmental considerations into decision-making across all policies, programs, and projects. CIDA's strategic priorities that pertain to climate change in the past and, somewhat, in the present, have included, for example: sustainable land management, sustainable integrated water management, and building the poor's adaptive capacity to address their vulnerability to environmental stresses and change (i.e. agriculture & food security).

The primary means by which policies, plans and programs are evaluated within CIDA for environmental considerations is through Strategic Environmental Assessments (SEA). While CIDA has shown some positive developments of including climate change within the scope of SEA, CIDA is limited in its capacity to successfully implement these ‘climate-adaptation filters’ within strategic development planning, monitoring and evaluation work and more broadly at the departmental, inter-departmental or all-of-government level. The reasons for this are numerous as further described below.

*Critique 8:*

Canada's commissioner for Environment and Sustainable Development (CESD, 2004, Online) concluded that the majority of CIDA's projects are not subject to rigorous environmental analysis. Five years later, in a 2009 review of federal government environmental assessment efforts, Canada's commissioner for Environment and Sustainable Development concluded that:

Though mitigation [of environmental effects] measures were often identified [broadly through federal environmental assessments] to reduce the anticipated environmental effects and included in the responsible authority's decision-making documents, there was little evidence provided on file to indicate that they had been implemented (Online).

Thus, while EA forms a central part of the Canadian federal bureaucracy, as of 2009 it has failed to bridge the gap between principle and practice, especially on implementation of mitigation (for environmental effects). In 2009, it appeared that environmental assessment process was experiencing some degree of duress within the broader spectrum of the Canadian federal government's ability to integrate environmental considerations into policies and practices. The CESD (2009, Online) concluded that the coordination lead agency, the Canadian Environmental Assessment Agency (CEEA), often experiences conflicts between responsible authorities on project scoping, this often results in delays to environmental assessments, dispute-resolution mechanisms are



ineffectual, there are no quality assurance programs and as a result there is little knowledge of the effectiveness of environmental assessment as a regulatory tool to protect the environment.

Thus, the CESD recommended, and the government agreed, that,

- Long-standing issues in federal coordination including the scoping of projects and other related issues need to be resolved
- The environmental assessment process should be evaluated for the quality of environmental assessments, in particular for screenings conducted under the *Canadian Environmental Assessment Act*, including assessing their effectiveness in protecting the environment and collaborating with public participation and implementing quality assurance measures.

The point here is that CIDA, as a department of the federal government, is inclusive in these observations and recommendations for improvement of EA. This analysis supports the CESD findings (2009). Furthermore, it is interesting to take note that in 2004, the CESD observed of CIDA that:

Overall, CIDA has made *limited progress in implementing environment as a cross-cutting theme and integrating environmental sustainability into its decision-making. It is missing significant opportunities to fully examine the environment and reflect it in all decision-making... we found tools, measurement and reporting to be weak. Important elements of the 1992 Policy for*

*Environmental Sustainability have not been realized. CIDA could better ensure that environmental analysis is applied in a timely and robust manner to all projects.* (2004, Online) [emphasis added].

The CESD (2004) further noted further that:

- 90% of all CIDA initiatives fall outside the requirements of the Canadian Environmental Assessment Act, due to shifting emphasis on institutional strengthening and capacity development from physical works:
  - Given these shortcomings CIDA cannot ensure that any significant environmental effects associated with projects not covered by the Act would be mitigated in a timely manner
- Country programming needs to better integrate sectoral environmental analysis within sectoral approaches (i.e. agriculture, water)
  - CIDA may have difficulty complying with the provisions of the CEEA due to restrictions on conducting public consultation and obtaining information in developing countries... [but that further] *aid projects need to be planned and delivered in a manner that avoids environmental harm, now and for future generations.* (CESD, 2004, Online [emphasis added].

CIDA was responsive to these observations and recommendations with pledges to do more to develop tools, and update environmental policy frameworks to reflect environment as a cross-cutting theme.

It appears that between 2004-2010, while there has been some progress, considerable gaps remain in CIDA's ability to integrate environmental sustainability are evident. Through my analysis, I note that while there appears to have been some progress within CIDA, more systemically, the Government of Canada still has considerable amount of leg-work to do before showing greater consistency with the CESD 2004, 2006 and 2009 recommendations and observations for improvement of performance on climate change mitigation and adaptation approaches, domestically and internationally.

Lastly, the CESD (2004) shared a positive note that CIDA's long-term sustainability of development projects encourages a continued emphasis on crucial dimensions such as local ownership, participatory approaches, partnerships, and donor coordination. This would be considered consistent with the OECD best practices for adaptive capacity.

It would appear as though CIDA continues to make some progress in this domain. The CESD (2004) offered further that:

CIDA may develop a longer term approach that enhances sustainability and results through more 'lessons-learned' efforts to capture successful examples of capacity development at the community level where project benefits are maintained through more effective monitoring and evaluation techniques (including measurable environmental indicators at the project level).

However, as of 2004, the CESD noted that, “the Agency cannot be sure of the sustainability of project results”. Ultimately, the CESD recommended that:

CIDA should develop indicators of environmental sustainability and incorporate them into country programming and project design. The Agency should ensure that there is provision for post-project monitoring to assess the sustained contribution of projects to its country program objectives and its international commitments. CIDA should measure and report on overall progress toward achieving environmental sustainability at the project, country, branch and Agency-wide levels to facilitate review and adjustment of programming where appropriate.

CIDA endorsed this recommendation, stating that:

Following a feasibility assessment, CIDA will use environmental sustainability indicators, as appropriate, in the results-based management of its projects... in country or regional programming frameworks... and (on a limited sample basis) post-project assessment of environmental and sustainable development results to guide future sustainability efforts.<sup>66</sup>

As of 2008, CIDA had included the following definitions of development outcomes in its updated RBM policy statement (CIDA, 2008, Available Online)<sup>67</sup>:

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<sup>66</sup> John Carter verifies that CIDA projects in Jordan and Palestine have received post-project results assessment (personal communication, 2010).

<sup>67</sup> Available Online: <http://www.acdi-cida.gc.ca/acdi-cida/acdi-cida.nsf/eng/ANN-102084042-GVJ>

Outputs: Direct products or services stemming from the activities of an organization, policy, program, or initiative. Examples: pamphlet produced, research completed, water treatment plan completed, training sessions provided, food aid delivered, partnership established, funding provided, schools built, bug nets distributed, etc.

Ultimate outcome (long term): The highest-level change that can be reasonably attributed to an organization, policy, program, or initiative in a causal manner, and is the consequence of one or more intermediate outcomes. The ultimate outcome usually represents the *raison d'être* of an organization, policy, program, or initiative, and takes the form of a sustainable change of state among beneficiaries.

Climate change adaptive capacity and adaptation are neither a direct product nor service, but rather a long-term development outcome based on development outputs that 'take the form of a sustainable change of state among beneficiaries' namely reduced GHG emissions and increased adaptive capacity. Pre-emptive of deeper analysis, it appears as though CIDA has failed to meet the recommendation to fully bring environmental sustainability more meaningfully into the fold of RBM definitions (and by extension monitoring and evaluation), thus offering another opportunity for internal improvement of incorporating environment as a cross-cutting theme, thus underscoring the importance of SEA within CIDA's policy frameworks and consistency with domestic and

international policy obligations and commitments.

If the objectives of Canadian development aid are to: broadly reduce poverty and support human development, then climate change is inextricably and inexorably linked to these objectives. Further, adaptation and adaptive capacity is, if not foundational, certainly fundamental to ensuring Canadian development effectiveness in the 21<sup>st</sup> century. The data would support that much more could be done, in Canada through development policy and practice, to enhance strategic measures in support of adaptation and equally by extension to support GHG mitigation, domestically and through development cooperation. As CESD noted in 2004:

“Without a clear idea of what CIDA has set out to accomplish, Parliament, Canadians, and the international community do not know the significance of the collective results of the Agency’s projects and programs. *CIDA needs to update and rationalize its priorities and expectation and direct resources and efforts toward producing tangible results against its objects*” (Online) [emphasis added].

In this regard the CESD noted that,

- A lack of clear and specific direction from CIDA senior management with respect to expectations and integration of many competing priorities limited the influence of international agreements on CIDA’s country programming
- *The Agency has not put required direction, guidance, and analytic tools; and as a consequence has made limited progress towards environmental sustainability.*

*Better guidance is needed for environmental analysis of country programs, as well as for projects not subject to CEEA*

- *The Agency now needs to undertake long-term monitoring to determine if projects are indeed sustainable [emphasis added].*

It would appear that many of the Commissioner's observations in 2004 on how to improve CIDA's environmental sustainability performance measures, are still salient and meaningful today, 6 years later, particularly when considering recent Canadian pledges to support long-term financing for climate change.

### ***CIDA Response***

Peter Croal<sup>68</sup> has offered a draft version of a climate change integration tool for CIDA's policies, plans and programs (drafted April, 2010 see Appendix 4D). Such a policy integration tool shows promising signs that CIDA is working hard to integrate climate change considerations into program activities and policy approaches. Further on this, Croal offers that this tool will assist CIDA to ensure that climate change is more integrated into all CIDA activities with respect to the new thematic priorities (sustainable

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<sup>68</sup>Manager of the Economic Growth and Environmental Sustainability Division, Thematic and Sectoral Policy Directorate, Strategic Policy and Performance Branch, Canadian International Development Agency and acting chair of the OECD Strategic Environmental Assessment Task Team on Climate Change Adaptation, (in personal communication, October 30, 2010)

economic growth, increasing food security and securing the future of children and youth). Croal also takes note that:

There is a need to explore more how our new Sustainable Economic Growth (SEG) strategy announced last week (will affect climate integration). Climate change is recognized in the SEG and the Ministers speech at the Munk Centre on CIDA's new SEG strategy. All 3 thematic priorities have now been announced.

Canadian International Development Minister Bev Oda has offered the following on the recent announcement of the Sustainable Economic Growth Strategy:

“Focusing Canadian development assistance on sustainable economic growth, along with CIDA's two other priorities of increasing food security and securing the future of children and youth, is key to delivering tangible results and helping to better lives in the developing world. Sustainable economic growth is the engine for developing countries to rapidly and sustainably reduce poverty.”<sup>69</sup>

The recent unveiled \$155.3 million strategy will support 12 sustainable economic growth projects along the three paths of the SEG strategy including: 1. building economic foundations, 2. growing businesses and 3. investing in people. The strategic objective is to help developing countries increase their productive capacity and provide new opportunities for their citizens.

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<sup>69</sup><http://stockmarketsreview.com/pressrelease/2010/10/26/minister-oda-unveils-cidas-sustainable-economic-growth-strategy/>



Croal also notes that “CIDA is working very closely right now with the International Institute for Sustainable Development to develop a suite of environmental indicators that can be used in any environment integration process at CIDA”. Also, he further notes “CIDA is currently reviewing the 1992 (environmental sustainability) policy and we hope to have a response to that review soon.”

These are signs of progress and internal improvement on incorporating environment as a cross-cutting theme, thus underscoring the importance of SEA within CIDA’s policy frameworks to guarantee consistency with domestic and international policy obligations and commitments. However, bridging gaps between planning and policy still remain before fully and effectively integrating climate change adaptation into Canadian development cooperation can be realized.

### ***Critique 8.2:***

A brief analysis of this recent SEG data reveals the following:

- 82.5 million of this funding is being delivered by NGO partnerships, while 72 million will be delivered through international financial institutions.
- The ‘sustainable economic growth’ project funding is broadly targeted at:
  - Increasing markets and participation by decreasing trade barriers
  - Improving municipal governance, including:
    - ‘enhancing the impact of extractive industries expenditure management and accountability,’

- Providing support for local economic growth and development planning at the municipal level
  - Supporting integrated coastal resource management,
  - Supporting business competitiveness, small and medium sized enterprises and micro-finance,
  - Supporting agricultural market development,
  - Supporting youth, education and vocational skills and entrepreneurship,
  - Supporting higher education relations

Generally speaking on the SEG, instead of productive capacity, CIDA should consider how adaptive capacity can act as the underlying foundation of sustainable economic growth and future productive capacity in the developing world. CIDA should utilize this strategic approach to sustainable economic growth to deeply consider, strategically, the implications of climate change within each of the proposed development project interventions. Please see *Appendix 4D* for further analysis of the SEG through an adaptation perspective.

***Key Finding 9:***

The OECD has served a leadership role in developing policy analysis and implementation tools on strategic environmental assessment, in support of adaptation and green growth development pathways.

***Critique 9:***

These OECD tools require donor countries, including Canada, utilize them to the fullest extent possible in order to meet high-level development commitments such as the Paris Declaration on Aid Effectiveness, Accra Action Plan and OECD Declaration on Climate Change Adaptation while contributing to green growth and strengthening adaptive capacity building in the developing world.<sup>70</sup>

**Summary**

Canada<sup>71</sup> has a mixed record on climate, international policy and development. The Commission on Climate Change and Development (2009, Online)<sup>72</sup> reports that:

Adaptive capacity results from reduced poverty and human development.

Adaptive measures require the *institutional infrastructure* that development

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<sup>70</sup> See Online: [SEA and Climate Change Adaptation](http://www.seataskteam.net) ; [www.seataskteam.net](http://www.seataskteam.net)

<sup>71</sup> See *Appendix 4C: Findings, Critiques, Recommendations*

<sup>72</sup> [http://www.ccdcommission.org/Filer/report/CCD\\_REPORT.pdf](http://www.ccdcommission.org/Filer/report/CCD_REPORT.pdf)

brings. Action must be fast, scaled, focused, and integrated across sectoral divides [emphasis added].

The Commission recommends the following four cornerstones for effective climate adaptation development assistance:

1. Speed: Wasting no time – climate change is happening faster than science predicted.
2. Scale: With growing numbers of people in danger, responses must match the scale of change.
3. Focus: Managing risks, building the resilience of the poorest, and enhancing the ecosystem functions upon which they depend.
4. Integration: Uniting environment, development, and climate change, and managing synergies between mitigation and adaptation.

Considering these four cornerstones, the data supports that Canada could do much more in support of adaptation within development co-operation, including building the institutional infrastructure to support long-term adaptation and mitigation priorities. This is further discussed in Chapter Five. While Canada has had some successes in showing some degree of environmental leadership on development policy interventions for adaptation and strengthening adaptive capacity through ODA development policy and practice, and these successes are to be celebrated and integrated into Canadian ODA; as the data has shown there appears to be considerable room for improving the speed, scale, focus and integration of Canadian aid remains.

For example, CIDA has claimed it will assist, in a targeted manner, developing countries to enhance their capacity to implement international environmental agreements. This would include greater efforts to strengthening institutional capacity and accountability in relation to the management of environment and natural resources in recipient partner countries, through for example, greater significance on strategic environmental assessment policy and application as well as results based management frameworks that increasingly target the implementation and monitoring of adaptation and vulnerability reduction efforts and valuation of ecosystems. While current efforts show signs of promise, as the evidence shows, greater integration of environmental frameworks into Canadian ODA decision-making, as well as emphasis on increasing the capacity of developing countries to manage their environment and natural resources are required to strengthen climate resilience through adaptation measures. For example, Canada could supporting the UNFCCC-GEF-SCCF 1.9 billion budget for NAPA implementation. This could help Canadian ODA bridge the gap on this claim and enhance LDCs abilities to implement national and international climate and development priorities.

Ultimately, Canada's financial commitments must match and exceed high-level climate financing commitments through new and innovative approaches. The good news is the institutional infrastructure on climate financing already exists through the UNFCCC process and the GEF-trust funds. What is needed is for Canada to be more active participant within these funding mechanisms.

Of course underscoring the entire discourse is meaningful and rapid domestic mitigation action on the part of Canada to reduce GHGs in fulfillment of international policy objectives as the pre-requisite and dual priority to reduce future vulnerability and potential for climate chaos. Canada's reputation and international legitimacy is directly co-related to Canadian inconsistencies to domestically mitigate GHGs through better regulation of the oil and gas sector. Regulator reform could include eliminating domestic subsidies and tax-breaks to oil and gas corporations from the federal government and requiring that carbon be considered in all development and regulatory environments of the Canadian and provincial government regulators and regulatory boards.

Clearly, Canada has roles to play domestically and internationally, the question remains: is the political will and public support sufficient to garner real and practical actions in support of ongoing integrated approaches to development cooperation that includes adaptive capacity and adaptation at the forefront of development priorities and practices? Is the leadership and productive capacity of Canadian political leaders and embedded bureaucracy sufficient to draw linkages between the non-exclusionary realms of domestic mitigation, long-term development effectiveness, climate change adaptation and global economic and ecological sustainability? Only time will tell... yet, the poignancy of this critical junction in history remains. Canada must take a leadership role on strong climate mitigation and adaptation measures, as the world is watching and waiting for us to lead and, if the science is correct, time may be running out.

Canada must build on its rich history as a global leader, peace-broker and contributor to innovative development policy and program approaches to better strengthen adaptive capacity to climate change for LDCs and facilitate low-carbon development pathways for rapidly industrializing nations. There are plenty of opportunities for Canada to strategically integrate environmental values, assessments, indicators and approaches into development cooperation that can capture the full potential for low-carbon, high-adaptive capacity and climate resilience development pathways. That should be the future of Canadian aid targeted at building food security, securing the future of global youth, and supporting sustainable economic growth. Canada's leadership on domestic mitigation must accompany international response. Anything less would be in neglect of the abundant opportunity that Canada has to take a global climate leadership role. Such a Canadian diplomatic and climate policy 'about-face' would send clear and positive signals to the international community that Canada takes climate change mitigation seriously and will do its fair share to support long-term and increasing costs of adaptation financing, through international development co-operation mechanisms and bilateral assistance approaches.

## **Chapter Five: Conclusions and Recommendations**

### **Summary & Contribution to the Advancement of Knowledge & Practice**

The central intention of this study was to critical analyze Canadian international development co-operation and domestic policy approaches for strengthening adaptive capacity within low-income and resource-dependent societies of the developing world, in light of climate change.

This research has sought to reflect on the barriers and opportunities for practical application of adaptation measures within Canadian domestic and international policy approaches to development policy, aid and development cooperation practice. This research has offered a broader critical analysis and suggestions on how Canadian bilateral and multi-lateral approaches to mainstreaming adaptation in development cooperation and domestic mitigation can enhance and capture of essential equity dimensions of climate change within Canadian development interventions. Fundamentally, I have argued that both current and future generations are dependent on the support of holistic development approaches to spur low-carbon, climate adaptive and climate resilient pathways for LDCs and rapidly industrializing nations.

It has been argued that at the nexus of developing nations vulnerability and differential adaptive capacity to climate change and developed nations historical responsibility for greenhouse gas emissions, that clearly there is a role for international development



cooperation to play in addressing the complex and interconnected 'cause and effect' relationships within the broader realm and scope of development and equity issues or dimensions of climate change.

Within the context of Canadian development co-operation policy and practice there is an imperative need to bridge gaps between rhetoric and action on climate change. Whether as forward thinking policy makers, as development practitioners, as academics, climate change activists, parents, grandparents or as Canadians with a sense of responsibility to do something for one's fellow and future humanity, clearly there is a role for us to play in living up to international obligations to assist not only developing countries in adapting to the inevitabilities of climate change but really to undertake the far more onerous tasks of addressing the long-term and complexly inter-connected development dimensions of inter-generational equity and climate change. We all have a role to play. Truly this particular niche of development studies is a lifetime of work and the opportunity of lifetime for those up to the reality of working on the climate change policy challenge.

Future generations this world over fundamentally depend on strong action today to adapt and mitigate to the reality of a climate changed world. Canadians can mitigate their fair share of greenhouse gases and contribute their fair share to adaptation efforts within the confines of the carbon-constraints of the 21<sup>st</sup> century and exponential adaptation financing costs associated with a climate changed world, where *the most vulnerable are*

*the least responsible, and the most responsible are the least accountable.* Without consolidated domestic mitigation action by Canada today, any Canadian adaptation and development equity efforts could be undermined in the future and furthermore, from the cynical long-view, could be viewed as incoherent, hypocritical or trite. Inter-developmental and inter-generational equity dimensions demand action on climate change today. This research has reflected on the Canadian context and found that there is vast potential for improvement in contributing to adaptation and adaptive capacity in the context of development cooperation. I recommend a whole of government ‘equitable climate change in development’ paradigm shift. The Commissioner on Environment and Sustainable Development and Office of the Auditor General have offered numerous and relevant critiques and recommendations that underscore this particular vantage point (2004, 2006, 2009, and 2010 – see *Chapter 4: Key Findings*).

### **Key Findings: Multi-lateral Co-operation**

In terms of multi-lateral co-operation to strengthen adaptive capacity in the developing world, Canada could do more. Much more.

Various sources estimate that the overall rising costs of adaptation in the developing world will be between \$ US 28-86 billion per year. It is hoped that the Copenhagen Accord will provide \$ US 30 billion between 2010-2012, and \$US 100 billion as of 2020. Canada has pledged to support adaptation fast-start financing with \$ CAD 400

million dollars in 2009 development dollars (the majority of which will go to the IFC at the World Bank in a loan arrangement). Based on the data, total Canadian multi-lateral commitments and contributions to adaptation and green growth in the developing world are estimated to be in excess of \$ CAD 1 billion dollars over the past 10 years and the next 5 years.

Through a comprehensive review current and historical data of international and Canadian domestic climate and development policies, practices and initiatives, I have found that while Canada states support in principle for contributing to meeting this increasing imperative, and while there has been sustained signs of progress on adaptation including funding and support, there are still considerable gaps between the political rhetoric and real action in terms of holistically addressing the issues of strengthening adaptive capacity to climate change in the developing world through international cooperation, particularly when looking at development program choices and spending patterns and the need for ramping up spending on adaptation and adaptive capacity climate change initiatives.

I have found that Canada contributed a combined total of CAN \$ 27 billion in 2008-09 aid and development funds, and it is difficult to accurately determine the portion of this recent aid that will be targeted at climate/development areas of interest. Pre-emptive from deeper analysis, the majority of this funding (CAN \$ 22 billion) was targeted at debt relief and servicing through international lending agencies, such as the World Bank

and International Monetary Fund. Notwithstanding recent MDB & IFI climate initiatives, such a 100 million dollar Climate Investment Funds project at the World Bank, the majority of this funding is bound to service debt in the developing world.

This disproportionate spending on debt underscores the need for debt relief reform and amnesties in the developing world to first and foremost relieve the ridiculous expenditure of 22 billion Canadian taxpayer dollars on servicing the debt of developing countries instead of contributing to relieving it all together. To not do so, is a missed opportunity that undermines the institutional strengthening prospect that could have better supported developing countries in building adaptive capacity through fiscal strengthening and fulfillment of long-term debt relief efforts. The idea here is that more broadly trading debt for adaptation could free developing countries national budgets and domestic taxation resources and revenues towards the task of managing national infrastructure and climate adaptation development needs, on top of other related areas such as health, agriculture, water and education. It could also free the dependency factors of developing countries to IFIs and contribute to building domestic adaptive capacity in all areas of society (social, cultural, environmental, economic pillars of sustainability that create sustainable social infrastructure). 'Debt for adaptation' seems a reasonable and socially just consideration in a time of growing fiscal constraint among donor countries and the need to support decentralization approaches to development that better facilitates urgent adaptation priorities. Putting greater power and resources in the hands of those most vulnerable populations in the low-income societies by freeing them from their debt

servitude could enhance the abilities of developing countries to, theoretically, use their own domestic resources first, before even considering development cooperation.<sup>73</sup> Not spending Canadian development dollars on Third World Debt when a better solution has long-been advocated is just common sense, particularly in times of mounting domestic deficits in donor countries and other pressing international cooperation imperatives, like supporting developing countries abilities to strengthen adaptive capacity. This is also consistent with CESD recommendations.

The astonishing fact that Canada contributed \$CAD 22 billion dollars in debt-relief funds as a part of the G-20's \$USD 5 trillion dollar effort to mobilize unconventional monetary policy instruments in response to global recession exemplifies just what an incredible missed opportunity this was.

One would think if the world's leaders could manage to achieve such an extraordinary consensus on the multi-lateral mechanisms required to avert the global economic crisis, the same momentum could have been harnessed to achieve action on the global climate crisis in Copenhagen, including greater consideration of the interesting and opportune intersection of adaptation financing with debt relief and ways and means to harness green economic growth, low carbon pathways and adaptation responses in economic recovery responses. However, this was not the case. At the very least, one would hope that the accountability frameworks for this unprecedented international lending to IFIs

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<sup>73</sup> There is subtle subtext here as well, if equity dimensions were to be considered: Canada's carbon debt to the developing world could be reimbursed for international debt forgiveness to developing countries.

and MDBs would be inclusive of vulnerability and adaptation assessment criterion in multi-laterally acceptable results-based management frameworks that support development best practices, transparency and accountability to strengthen adaptive capacity.

While Canada has committed to pursue adaptation through multi-lateral development initiatives including: high level policy commitments, policy development and support, project and program implementation initiatives, and various other mechanisms that include provisions for adaptation financing, the evidence shows considerable gaps. For instance, the 2010 Canadian speech from the throne stated that, together with other industrialized countries, “Canada will provide funding to help developing economies reduce their emissions and adapt to climate change,” including a funding commitment to assist in “provide up to US \$30 billion for the 2010-2012 period” to help developing economies reduce their emissions and adapt to climate change, as part of a collective developed country commitment under the auspices of the Copenhagen Accord.

Canada’s 2008-09 \$ CAD 5 billion dollar aid budget is dwarfed by the \$ CAD 22 billion debt relief and financing contributions (a difference of 77%).

The ODA Summary Report states that in particular the Department of Foreign Affairs and International Trade (DFAIT) international assistance programming “supports effective international action to strengthen the capacity of the poorest and most

vulnerable to adapt to the impacts of a changing climate.” DFAIT is responsible in large part for Canadian engagement in international agreements, and DFAIT spent 277.7 million for ODA in 2008-09. In fact, a very small portion of this supports international policy mechanisms under the UNFCCC, including no voluntary contribution from Canada to the Adaptation Fund under the Kyoto Protocol.

In total for 2008-09, it is estimated that Canada spent under 200 million dollars on environment and climate change development initiatives. It is roughly estimated that Canadian pledged spending and/or contributions on climate change adaptation and green growth, through multi-lateral mechanisms has reached upwards of 1.5 billion dollars between 1998 and 2015 (not including G-20 financial mechanisms). Averaged over this period of 17 years, this would be roughly be equivalent to a Canadian contribution of 86 million (or greater) per year, to support adaptation through multi-lateral mechanisms.

If comparing 200 million dollars in 2008-09 to the 86 million + average over the past 10 and next 5 years, then I suppose Canadian policy-makers should be commended for greater support to climate and development initiatives.

However, the Pembina Institute (2009) has argued that a fair share for Canada’s contribution to adaptation financing should be approximately 3 to 4 per cent of the global effort, since our greenhouse gases are roughly similar values. Applying this financing formula to current estimates of the need indicates Canada’s fair contribution would range

between \$1-3 billion per year, over and above all Official Development Assistance (ODA).

Since Canada has recently frozen its \$CAD 5 billion development assistance envelope until 2015, and there are considerable abilities for higher levels of government to intervene in the development budget allocations through review mechanisms, ODA spending on climate and development is by no means a certainty, nor is the prospect that substantial gains in new and additional federal funding support for ODA are to be had to the levels that are recommended by Pembina.

Recent Canadian pledges of 400 million dollars do not include contributions to support the UNFCCC Adaptation Fund, in spite of recommendations by the UNFCCC Copenhagen Accord and Kyoto Protocol, and as already modeled as good development practice by other donor partners, and as consistent with broader principles of climate change, equity, financing and development. This presents multi-lateral opportunities for Canada to show greater leadership and support for adaptation.

It would seem that Canada's under performance internationally fails to match high level political rhetoric on proposed development spending commitments. Realistic support for the policy implementation actions that will best facilitate adaptation and strengthened adaptive capacity in the developing world is lacking. It would be hoped that the political



will is to found within the Canadian government to do more to support development cooperation and climate change financing, at the multi-lateral level.

### **High-Level Policy Recommendations**

Canada gives high-level recognition of the importance of climate change in development, as well as participation and financial support to various international policy vehicles such as the UNFCCC, OECD and World Bank. Canada participates in multi-lateral partnerships, capacity building and research initiatives to support adaptation and adaptive capacity in the developing world through various multi-lateral mechanisms.

As the international climate policy negotiations move forward towards the next round of negotiations in Cancun, Mexico, I recommend that Canada undertake a climate diplomacy position that supports the rapid implementation of meaningful action on adaptation including increased support for UNFCCC mechanisms. One would expect that given Canada's past record and current foreign policy positions, that Canada would and could do a better job in leading the way to ensuring that the current UNFCCC adaptation funding processes (such as AF, LDC, SCCF & GEF Core Fund) are complementarily integrated into the post-2012 financing regime and furthermore that currently these GEF funding mechanisms are adequately replenished if not exceeded, as a matter of expediting climate adaptation financing to the developing world. Indeed, in light of the argument presented, Canada should demonstrate greater leadership.

Specifically, the UNFCCC Adaptation Fund recently reported 160 million USD total. An estimated 317-434 million USD is minimally projected to be needed for the Adaptation Fund budgets in the next two years<sup>74</sup>. Canada could contribute voluntarily a minimum \$10-50 million dollars as other donor countries have already modeled as good practice for new and additional funding to the Adaptation Fund to complement the stalled Certified Emissions Reductions (CER) funding mechanism. Such a Canadian contribution would be the minimum to complement and contrast with Canada's 100 million dollar support to the World Bank's climate change investment funds project. Such support for the Adaptation Fund would further assist in facilitating adaptation by providing greater funds to fulfill international obligations and imperatives of strengthening adaptive capacity. Such a signal would be a positive contribution to international financing needs and Canadian best practices for climate and development-equity diplomacy.

Canadian leaders could signal support for the continuation of the CDM-CER support and for other novel sources of adaptation funding by galvanizing Canadians' support for the proposed international airline travel tariffs and/or imposition of levies on long-distance bunker fuels for shipping, or other potentially more radical adaptation financing means within the Canadian domestic sphere (i.e. oil and gas regulatory reform, carbon taxation, particularly on resource-intensive, domestic fossil fuel industrial development

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<sup>74</sup> See Online:

[http://adaptation-fund.org/system/files/AF\\_Financial\\_Status\\_Report\\_Jul%2031%202010%20-%20Final.pdf](http://adaptation-fund.org/system/files/AF_Financial_Status_Report_Jul%2031%202010%20-%20Final.pdf)

stakeholders with large carbon footprints). This could lend further credibility to Canadian leadership on adaptation financing in development cooperation while further contributing to meeting the global mitigation imperative, through novel and potentially more radical domestic means. It is unfortunate to note that that Canada is not currently participating in the UN Secretary General's High Level Advisory on Innovative Climate Financing<sup>75</sup> with 10 other of it's G-20 partners, including major power brokers such as the USA, China and the UK.

In terms of international financing mechanisms, it is clear that the Adaptation Fund (AF) is particularly important to developing countries. AF assistance is novel in that it is based on the needs and priorities of vulnerable-countries, in a developing country driven implementation process. The Adaptation Fund was set up under the UN Framework Convention on Climate Change's (UNFCCC) Kyoto Protocol to finance tangible adaptation projects and programs in vulnerable developing countries. It has several specific features that make it stand out among multilateral funds including direct access for developing countries, with a provision for accredited domestic implementing entities.

Given the stakes, bold, innovative leadership and political will combined with international consensus building seem ancillary to making progress on these complex multi-lateral policy matters of climate, finance and development. Given the record,

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<sup>75</sup> Available Online:

[http://www.un.org/wcm/webdav/site/climatechange/shared/Documents/LondonMeetingReport\\_31%20Mar%202010.pdf](http://www.un.org/wcm/webdav/site/climatechange/shared/Documents/LondonMeetingReport_31%20Mar%202010.pdf)

Canada clearly could have a more constructive role to play in the international sphere, particularly on matters of ensuring that domestic political rhetoric on mitigation measures ‘measure up’ to practical action for strengthening adaptive capacity in the developing world in such a way that is consistent with international consensus’ on climate science, adaptation/development best practices and already proven development assistance and adaptation supporting multi-lateral funding and financing mechanisms. As noted above, there are recent Canadian examples of rhetoric and practice that seem incongruous with this proposed approach. To further underscore this point, Canada’s G-8/G-20 opposition and global campaign against the idea of the global financial transfer ‘Robin Hood’ tax<sup>76</sup> on banks, hedge funds and other finance institutions was truly a lost opportunity for Canadian leadership to raise billions of dollars, through innovative financing measures, to tackle poverty and climate change. For example, if Canada implemented a small transaction tax on international financial transactions it could raise over \$700 million a year from the Toronto Stock Exchange, alone. In a time of growing domestic fiscal constraint and soaring international adaptation costs, Canadian leaders should think more carefully and creatively about novel development and climate funding approaches that support domestic fiscal sustainability and international adaptation financing for development interventions. Canadian tax-payers should not always foot the bill, Canadian corporations and private sector stakeholders clearly could do more to support corporate social and climate responsibilities consistent with staggering 21<sup>st</sup> century development behemoths and ecological challenges like climate change.

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<sup>76</sup> Available Online: <http://www.publicvalues.ca/ViewArticle.cfm?Ref=00642>

In sum, while Canada supports multi-lateral lending to international financial institutions to unprecedented levels, Canada has failed to show leadership on international financing for climate change. This status-quo Canadian approach to international diplomacy fails to exhibit the leadership, creativity and imagination that is required to generate the finances to cover estimated costs of the green energy revolution and climate adaptation.

However, I have found that the Canadian multi-lateral case data supports several of the climate lens criteria of the OECD climate lens. At the national level, OECD climate adaptation interventions recommended are nominally supported by Canadian country and joint assistance strategies, Canadian support for capacity building & awareness-raising (high-level policy dialogues, monitoring & assessment of future climate change impacts and adaptation priorities); as well as Canadian inclusion of budgetary support mechanisms and better donor co-ordination and harmonization on adaptation at the country level.

### **Key Findings & Recommendations: Bilateral Co-operation**

As Canadian International Development Agency (CIDA) is the Canadian government agency primarily responsible for the implementation of bilateral cooperation policies and practices in the developing world and by extension, potentially contributing to strengthening adaptive capacity; it has been found that CIDA has not adequately integrated performance management indicators for fulfilling environmental sustainability

and international commitments into development (CESD, 2004). As such CIDA lack a holistic plan that adequately captures the roles and responsibilities of the Agency to fulfill climate adaptation/development imperatives. Obviously, CIDA should heed its own watchdog's criticisms and do more to holistically integrate environmental sustainability within its own development practice.

When the OECD climate lens are applied, the Canadian case data shows both some consistencies and room for improvement options for sectoral interventions for adaptation. *Canada can do more to continue to mobilize additional resources; support capacity building & awareness-raising among both sectoral planners and their counterparts within donor agencies; provide support for capacity development; and encourage and support the monitoring and evaluation of progress towards holistically integrating climate adaptation into sectoral strategies, plans and programs.* This would create the institutional infrastructure required to holistically mainstream climate change adaptation into development.

There are strategies, policies, plans or programs that appear to be considering vulnerability to risks arising from climate variability and change, at least to a certain degree; most notably through the Strategic Environmental Assessment frameworks and mechanisms through CIDA practice. The evidence suggests that climate change risks are being taken into consideration within Canadian development cooperation, at least to a

certain minimal degree, in the course of the formulation of development policy and measures.

Consistent with OECD best-practice development recommendations and CESD recommendations, CIDA could provide greater support for development options that channel funds directly to stakeholder engagement for building local adaptive capacity (e.g. by supporting municipal infrastructure funds); as well as support for decentralization processes that transfer authority to elected local governments and enhances local governments capacity to take up the responsibilities afforded by decentralization; as well as increasing support to civil society organizations as they represent a key constituent in local-level adaptation. These are all are more greatly required within Canadian bilateral aid to boost adaptive capacity effectiveness in development interventions. Some of the recently announced Sustainable Economic Growth strategy projects signals a promising start to this process (i.e. NGO partners sharing skills through development cooperation on integrated coastal resource management and sustainable local economic development). However fundamental disconnects remain. Canadian development minister, Bev Oda:

Today (October 25, 2010)<sup>77</sup>, I'm pleased to bring you the strategy supporting CIDA's third thematic focus, *sustainable economic growth*—a focus that addresses the *undeniable link between development and economic growth*.

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<sup>77</sup> <http://www.acdi-cida.gc.ca/acdi-cida/ACDI-CIDA.nsf/eng/HEL-1027152651-QTD>

Nations that better position themselves to integrate into the global economy are far more inclined to reap its rewards. As China, India, and others in Asia, Africa, and Latin America have shown us, *growing the economy is the best way to help people lift themselves out of poverty*. A dynamic, growing economy creates jobs and higher incomes. It also generates the financial resources required to finance the education and health systems that help societies thrive. Ultimately, this will *allow people to fully capitalize on their potential and enjoy a higher quality of life*. When governments create the right conditions, they can spur investment and innovation, training and trade, and provide the foundation for a fair, open, equitable, and inclusive marketplace—a *marketplace in which enterprises can grow and succeed* and the women and men behind them can prosper [emphasis added].

At a far deeper level than present, I have argued that Canada could show greater integrative development practice in support of adaptation by factoring climate change sustainability into all: strategies, sectoral-policy frameworks, poverty reduction strategies, long-term investment plans, technical consultations and sector reviews, as well as strategic and project-level environmental impact assessments. Such a process would support the development of the institutional infrastructure required to fundamentally mainstream adaptation into all Canadian development cooperation.

Oda's recent comments on the Sustainable Economic Growth strategy, that:



First, above all else, sustainable economic growth cannot possibly happen without political stability. And a government that sees that a robust economy must benefit all people.

Sustainable economic growth cannot possibly happen without a *strong economic framework, where rules and regulations are fair*, known to all, and applied for the benefit of the economy as a whole.

Sustainable economic growth cannot possibly happen where the *basic infrastructure to support it are lacking* — the needed transportation and communications systems, water, and stable power sources. And sustainable economic growth needs strong support systems, *access to financing tools and incentives to stimulate innovation*. Sustainable economic growth cannot possibly happen with a weakened workforce, where people are uneducated or illiterate and lack the basic skills required to do the job.

This in particular, is an approach that believes 'growing the economy is the best way to help people lift themselves out of poverty... allowing people to fully capitalize on their potential and enjoy a higher quality of life'. Unfortunately this is also the same paradigm that precipitated the global climate crisis, and development cooperation in support of sustainable economic growth must radically underscore the importance of greater valuing ecosystem services, and supporting adaptation and mitigation priorities in

strategic approaches to reduce long-term vulnerability and build adaptive capacity. However, this is not to say that politically stable economic frameworks based on improving infrastructure and access to financing cannot play a role in better supporting adaptive capacity. The major point is that greater explicit recognition must be given to climate change, by CIDA, within its strategic approaches to sustainable economic growth and this requires re-configuring the dominant paradigms of development within a capitalist framework of 'economic growth' to be consistent with climate imperatives. This is further discussed below.

### **Canada's Fair Share: Time for Domestic Action on GHGs**

Beyond adaptation, Canadian domestic rhetoric on mitigation needs to be aligned with international policy and international action (i.e. UNFCCC processes, Kyoto Protocol obligations etc.). This is required to support long-term Canadian commitments to holistically address climate change through international development cooperation on mitigation, while supporting increased efforts for adaptation. It also requires broader paradigmatic shifts about the nature and meaning of development and the subsequent approaches to institutional infrastructure (policies, programs etc.). For example, as I have found, Canada's disproportionate efforts to fund debt relief to unprecedented levels, while aid funding has been frozen, indicates that deeper issues of international cooperation continue to plague the rules that transfer wealth from the industrialized countries to the developing world through debt-servicing loan structures. The continued

dominance of international financial institutions setting the agendas for the prescriptive strategies of debt financing and development that donors and recipients must follow is problematic to sustainable development consistent with ecological climate thresholds. Given the demonstrated need for adaptation financing, Canada must do more. Much more. And this will require paradigmatic and institutional infrastructural reform at a whole of government level, to be more consistent with ecological paradigms of development premised on equity, effectiveness and long-term thinking.

The government estimated that Canada's greenhouse gas emissions are likely to be more than 30 percent above its Kyoto Protocol commitments (6% below 1990 levels by 2012) and further the CESD has reported that the government does not know whether environmental assessments conducted under the *Canadian Environmental Assessment Act* are of good quality (including cumulative effects). This becomes an important concern in cases such as the oil sands development in Alberta, where multiple projects are undertaken in a concentrated geographic area. As a nation, we must ask: are the oil sands developments compromising local/regional ecological integrity and Canada's reputation as a green-energy superpower? When viewed through a long-term climate change lens, what are the global impacts of these sorts of intensive resource development, like the oil sands?

Without strong mitigation and domestic regulatory frameworks that aggressive target greenhouse gas reductions within developed countries like Canada today, adaptation

measures and development investments, particularly in LDCs & SIDS, may be perfunctory, irrelevant and ineffective in the future.

Canada must act more quickly and more meaningfully to rapidly reduce GHGs from polluting sources of fossil-fuels used in electricity generation, oil and gas production, transportation, heating and other sources. This is required meet consistencies with long-range targets like 80%+ below 1990 GHG levels by 2050. As Newell (2004) has argued poignantly,

Ultimately it means recognizing that if trade, energy, transport and agricultural policy are more substantively oriented to the goal of sustainability, there should be no need for a separate climate policy. This might require us to revisit our faith *in a model of economic development that appears to be increasingly at odds with the goal of stabilizing the climate system*, which so directly impacts on the lives of the poor (IDS In Focus, p.126) [emphasis added].

Fortunately it is the case that Canadian climate-ambition and political will is a renewable resource so we best get on with our fair share of GHG reductions in order to remain competitive domestically while recovering our tarnished 'Fossil of the Year' international reputation. Action on climate change is an opportunity to do things differently and make things right for the world and for the future. As a country driven to meaningful action on the climate crisis, Canada lacks credibility.

Canada must decisively evolve from its hypocritical domestic record on climate mitigations policies to meet the fundamental need for integrated and holistic approaches to development policy, at home and abroad, that are ecological sustainable and contributive to mitigating and adapting to an increasingly different and hostile world, the warming decades of the 21<sup>st</sup> century and all that they may bring for the future of humankind.

### **Recommendations For Future Research**

This research has attempted to 'baseline' Canadian development cooperation and adaptive capacity. In the absence of a more thorough and comprehensive analysis, it is difficult to appropriately ascertain the degree of comprehensiveness for adaptive capacity integration in Canadian bilateral and multi-lateral ODA. I have attempted to highlight key facts and figures arguing for the opportunities within Canadian development cooperation to strengthen adaptive capacity.

In future research and analysis, considering CIDA sectoral and country joint assistance strategies may yield a more comprehensive picture of Canadian development aid and adaptive capacity. Also, undertaking further analysis of the effectiveness of SEA in Canadian ODA could provide greater insight into this particular niche area of development research.

The RBM reporting measure at CIDA also presents an interesting a relevant data set for further analysis of climate change adaptation integration into Canadian ODA.

Key questions for further consideration beyond this study include:

1. What is Canada's current and historic record, in comparison to other nations on matters of climate adaptation financing and assistance?<sup>78</sup>
2. What is an appropriate amount of aid that Canada should be internationally obligated to contribute to adaptation in the developing world, going forward?
3. How should this be equitably determined?
4. How could this aid money most effectively disbursed and distributed through multi-lateral and bi-lateral arrangements?
5. What is the required 'Road-Map' for Canadian Adaptation & Equitable Development?
6. How can Canadian bilateral development assistance ensure that adaptive capacity is considered in all aspects of program and project design and implementation?
7. How can SEA be more effectively mainstreamed in Canadian aid?
8. How can ecosystem services be valued and sustainable economic growth strategies be made truly sustainable?

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<sup>78</sup> See for example: [http://pdf.wri.org/climate\\_finance\\_pledges\\_2010-08-12.pdf](http://pdf.wri.org/climate_finance_pledges_2010-08-12.pdf)

**Recommendations for Canadian Government and Development Policy**

Canada has a mixed record on climate, international policy and development. The key point to be made is that appropriate, long-term and holistic consideration of global social justice imperatives demands that both sides of the climate change coin (mitigation and adaptation) be considered when taking a broad view of Canada's domestic and international responses on these matters. Adaptation and mitigation are not to be considered mutually exclusive domains and greater institutional infrastructure is required to adequately address climate change mitigation and adaptation within the Canadian government responses, domestically and internationally. Ultimately, this requires shifts in governing paradigms.

While Canada has had some successes in showing some degree of environmental leadership on development policy interventions for adaptation and strengthening adaptive capacity through ODA development policy and practice, and these successes are to be celebrated and integrated into Canadian ODA; however as the data has shown considerable room for improving the speed, scale, focus and integration of Canadian aid remains.

For example, CIDA has claimed it will assist, in a targeted manner, developing countries to enhance their capacity to implement international environmental agreements. This would include greater efforts to strengthening institutional capacity and

accountability in relation to the management of environment and natural resources in recipient partner countries, through for example greater significance on strategic environmental assessment policy and application as well as results based management frameworks that increasingly target the implementation and monitoring of adaptation and vulnerability reduction efforts. While current efforts show signs of promise, as the evidence shows, greater integration of environmental frameworks into Canadian ODA decision-making, as well as emphasis on increasing the capacity of developing countries to manage their environment and natural resources, are required to strengthen climate resilience through adaptation measures.

Ultimately, Canada's financial commitments must match and exceed high-level climate financing commitments through new and innovative approaches. Underscoring the entire discourse is meaningful and rapid domestic mitigation action on the part of Canada to reduce GHGs; thus reducing future vulnerability and potential for climate chaos.

In the 21<sup>st</sup> century, the developed nations of the world, including Canada, must take responsibility for resolving the paradoxical and inequitable burden placed upon the shoulders of the world's poor. Clearly there is a role for international development cooperation to address the differential vulnerabilities of marginalized populations of the low-income and resource-dependent societies in the developing world, by supporting development activities that can strengthen developing nations' adaptive capacity to climate change, with the goal of ensuring climate resilience to inevitable changes.



Simultaneously, developed nations must internalize their own historic responsibilities for the climate change issue by domestically mitigating climate-changing GHGs on an aggressive timeline to avoid catastrophic interference with the global climate system. This is ultimately what is required worldwide in order to avert a calamitous future with serious implications for future generations the world over. Within this complex context, clearly Canada has a role to play. There is the need for Canadian development approaches to build enduring solutions for the inevitabilities of a climate-changed world, particularly for those populations in the developing world who are most vulnerable to the impacts, with have the least capacity to adapt to inevitable climate change, and for which they bear little historic responsibility. It is arguable that climate change is ultimately an issue of development equity between nations that requires fair and binding policy solutions and timely development actions, based upon principles of historic responsibility and social and environmental justice. Ensuring inter-generational equity, and, equity between and within nations demands unprecedented action on the climate crisis. Worldwide, generations to come depend on it.

Unprecedented climate change challenges face our collective human societies. Ultimately, Canada must seize every opportunity to become an internationally recognized climate change mitigation and adaptation super-power, leading the way forward towards low-carbon, 'climate-proof' development, so that others may expediently follow. This will require paradigmatic shifts about the nature and meaning of development, which in turn is dependent on cogent political will and popular support.

Is development about GDP growth, ad infinitum, or should it be targeted at sustaining human well-being within the ecological thresholds of our planet? After decades of development interventions, the 'rising tide lifting all boats' philosophies of capitalistic economic growth and development have not adequately delivered, and if continued, place development in the dangerous situation of wildly surpassing ecological thresholds instigating catastrophic climate change. Practically speaking, Canadian institutional and infrastructural reform is required to better support domestic mitigation and development/adaptation priorities. This must evolve to be aligned with paradigmatic shifts in understanding about the nature and meaning of development, a development that is climate-savvy and forward-looking. There is no need to re-invent the wheel for mainstreaming adaptation into development cooperation. Already, the multi-lateral mechanisms exist and international best practices have been developed. The broader challenge is to integrate and harness the necessary political will to boldly address the systemic dysfunctions of Canadian democracy and the gaps that exist between rhetoric and action when it comes to Canadian action on international climate change cooperation.

In 2010, as a country, Canada still does not have climate change mitigation strategies for domestic greenhouse gases that are consistent with adequately responding to the nature and scale of the problem. Canada is the only country in the world to have changed its base year for the Kyoto Protocol, which is now of little relevance anyways since Canada will not meet its targets, due to decades of inaction on mitigation.

Fundamentally, the future ecological state of our planet is dependent on rapid and sustained mitigation of greenhouse gases. This requires paradigm shifts about the nature and meaning of development and changes to institutional infrastructure in support mitigation and adaptation broadly across societies, in Canada and abroad. Development equity demands that Canada do its fair share to support the needs of vulnerable developing countries that are differentially exposed to climate change impacts. Prudent and effective development interventions require Canada to prioritize low-carbon development pathways and strengthened adaptive capacity as the underlying premises of durable, sustainable development. Immediate action, focused on both sides of the climate change coin, scaled-up across government, and geared towards maximizing efficiencies through integrated policy approaches, can support the necessary action on climate change that is required for current and future generations, worldwide.

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**APPENDICES**

## Chapter Two Appendices

### Appendix 2A: Carbon co-relations to warming temperatures. (UNFCCC, 2007 & UNDP-HDR, 2007).

#### *Appendix 2Aa: Increasing concentrations of GHGs and radiative forcing effect*

Changes in Greenhouse Gases  
from ice-Core and Modern Data

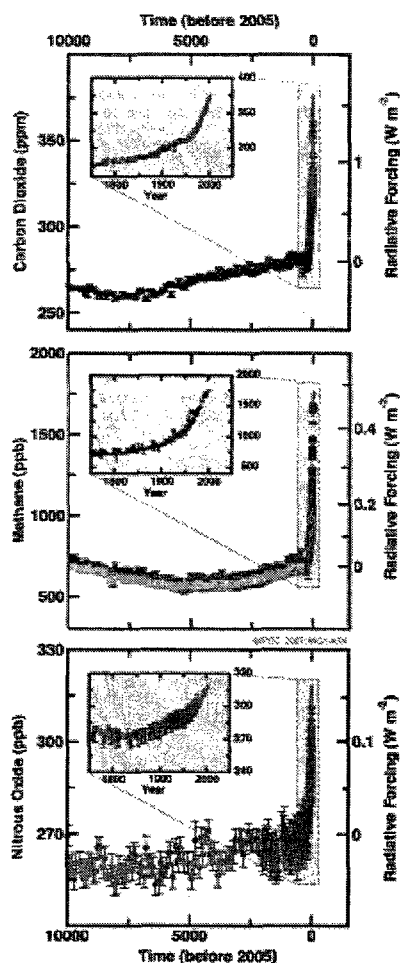


FIGURE SPM-1. Atmospheric concentrations of carbon dioxide, methane and nitrous oxide over the last 10,000 years (large panels) and since 1750 (inset panels). Measurements are shown from ice cores (symbols with different colours for different studies) and atmospheric samples (red lines). The corresponding radiative forcings are shown on the right hand axes of the large panels. (Figure 6.4)

Source: IPCC WGI Fourth Assessment Report Climate Change 2007: The Physical Science Basis Summary for Policymakers, p.4

### Appendix 2Ab: Climate Change Effects

#### Changes in Temperature, Sea Level and Northern Hemisphere Snow Cover

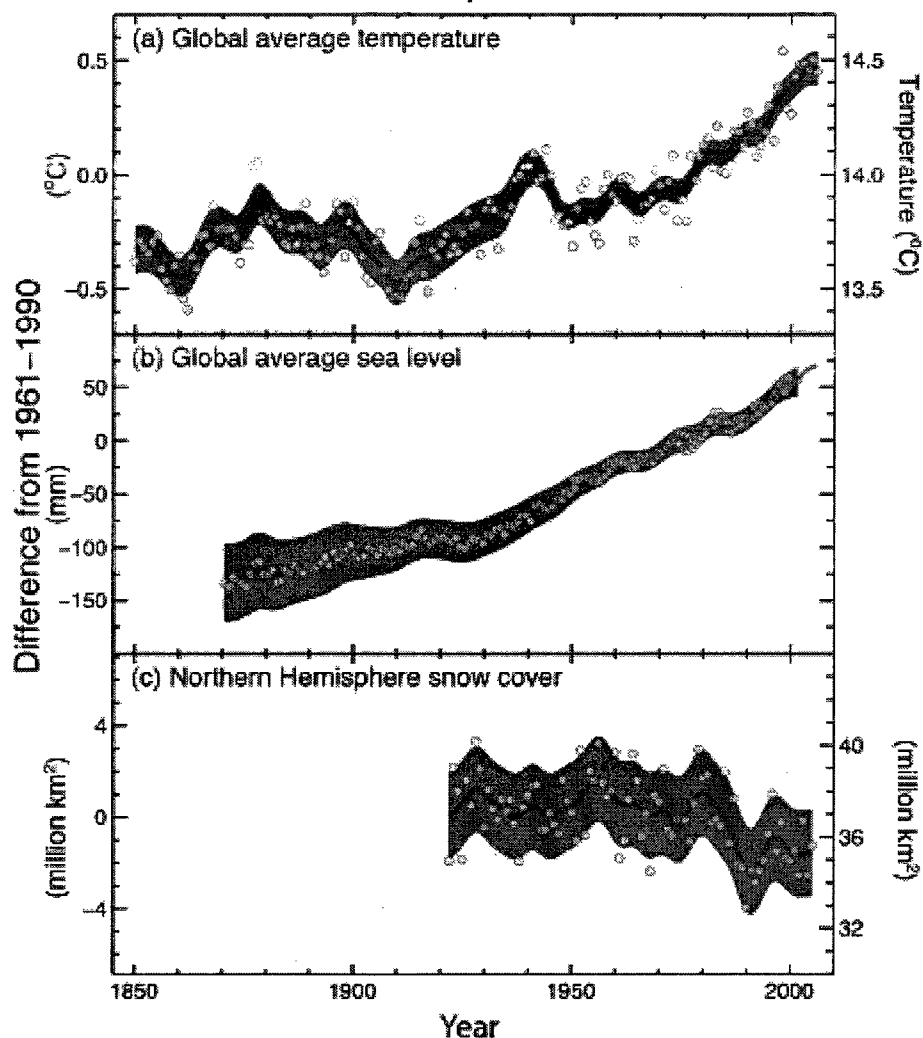
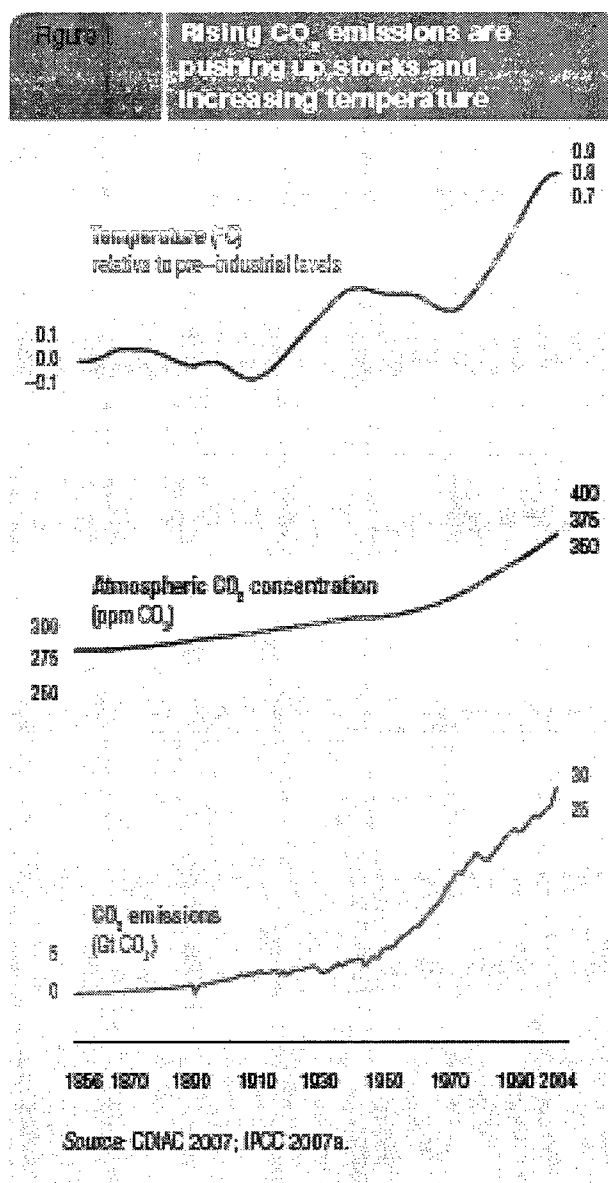


FIGURE SPM-3. Observed changes in (a) global average surface temperature; (b) global average sea level rise from tide gauge (blue) and satellite (red) data and (c) Northern Hemisphere snow cover for March-April. All changes are relative to corresponding averages for the period 1961-1990. Smoothed curves represent decadal averaged values while circles show yearly values. The shaded areas are the uncertainty intervals estimated from a comprehensive analysis of known uncertainties (a and b) and from the time series (c). {FAQ 3.1, Figure 1, Figure 4.2 and Figure 5.13}

Source: IPCC WGI Fourth Assessment Report Climate Change 2007: The Physical Science Basis Summary for Policymakers, p.6

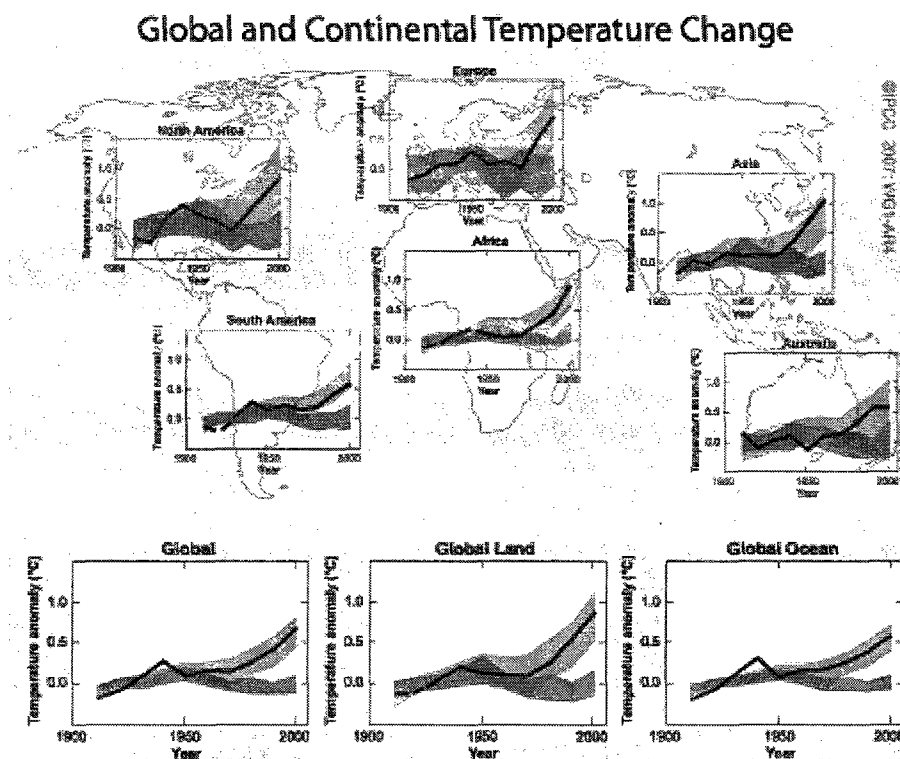


### Appendix 2Ac: Rising CO<sub>2</sub> Levels



Source: UNDP HDR, 2007

Appendix 2B: Climate Impacts - Global and Continental Temperature Change.  
(IPCC, 2007).

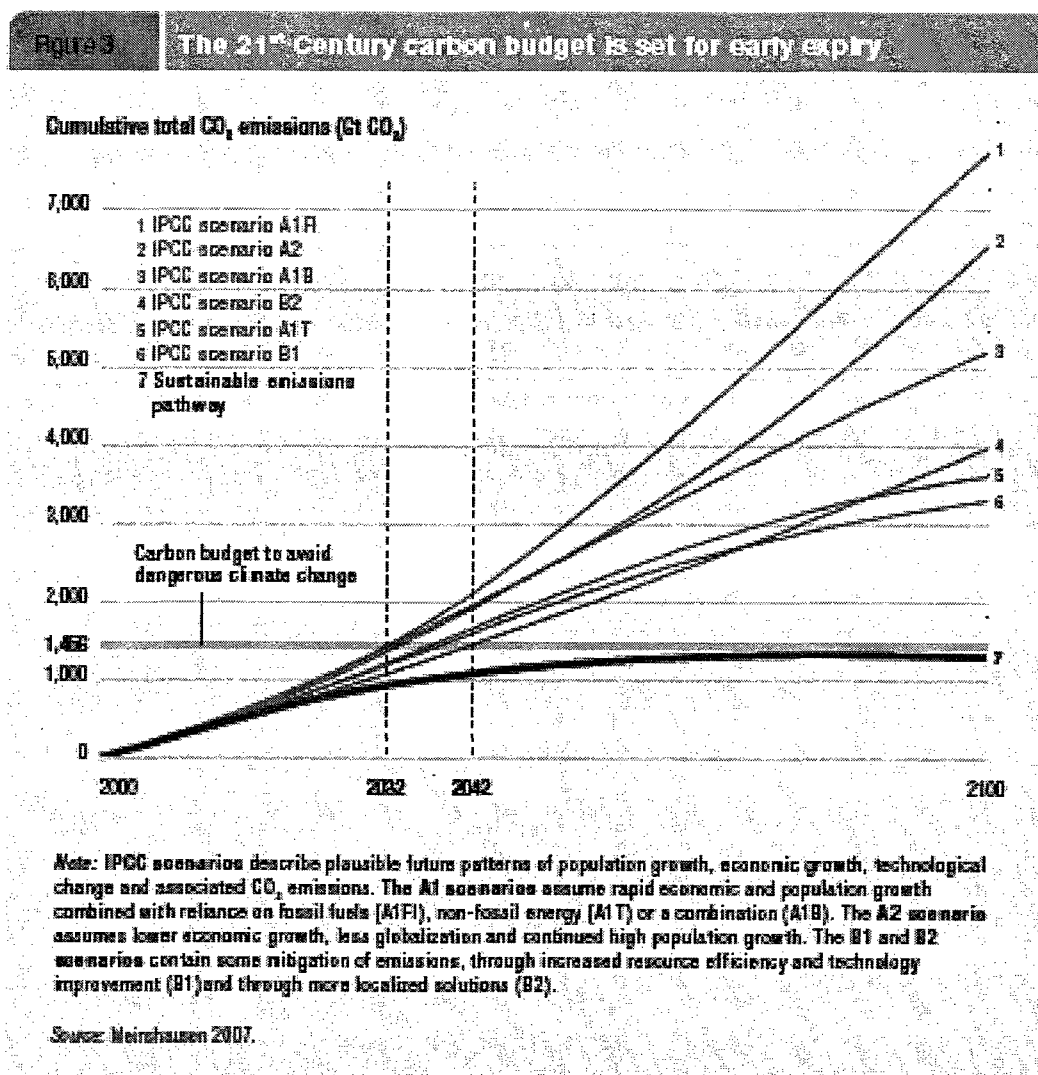


**FIGURE SPM-4.** Comparison of observed continental- and global-scale changes in surface temperature with results simulated by climate models using natural and anthropogenic forcings. Decadal averages of observations are shown for the period 1906–2005 (black line) plotted against the centre of the decade and relative to the corresponding average for 1901–1950. Lines are dashed where spatial coverage is less than 50%. Blue shaded bands show the 5–95% range for 19 simulations from 5 climate models using only the natural forcings due to solar activity and volcanoes. Red shaded bands show the 5–95% range for 58 simulations from 14 climate models using both natural and anthropogenic forcings. (FAQ 9.2, Figure 1)

Source: IPCC WGI Fourth Assessment Report Climate Change 2007: The Physical Science Basis Summary for Policymakers

**Appendix 2C: Dangerous Anthropogenic Interference Climate Thresholds. (UNDP, 2007).**

*Appendix 2Ca: Climate Change Science: Global Development Scenarios*



Source: UNDP HDR, 2007

*Appendix 2Cb: Dangerous Anthropogenic Interference Thresholds*

**Table 2.1** Proposed numerical values of 'Dangerous Anthropogenic Interference'.

Vulnerability	Global Mean Limit	References
Shutdown of thermohaline circulation	3°C in 100 yr 700 ppm CO <sub>2</sub>	O'Neill and Oppenheimer (2002) [44] Keller et al. (2004) [28]
Disintegration of West Antarctic Ice Sheet (WAIS)	2°C, 450 ppm CO <sub>2</sub> 2–4°C, <550 ppm CO <sub>2</sub>	O'Neill and Oppenheimer (2002) [44] Oppenheimer and Alley (2004, 2005) [45, 46]
Disintegration of Greenland ice sheet	1°C	Hansen (2004) [17]
Widespread bleaching of coral reefs	>1°C	Smith et al. (2001) [67] O'Neill and Oppenheimer (2002) [44]
Broad ecosystem impacts with limited adaptive capacity (many examples)	1–2°C	Leemans and Eickhout (2004) [30], Hare (2003) [19], Smith et al. (2001) [67]
Large increase of persons-at-risk of water shortage in vulnerable regions	450–650 ppm	Parry et al. (2001) [49]
Increasingly adverse impacts, most economic sectors	>3–4°C	Hitz and Smith (2004) [22]

Source: Oppenheimer and Petsonk, 2005 [47].

Source: Schneider & Lane, 2005, p.16

**Appendix 2D: Projected Regional Impacts of Climate Change for 2020 and 2050. (OECD, 2008).**

Regions	Impacts by 2020	Impacts by 2050
Africa	<p><u>Agriculture</u> In some countries crop yields may be reduced substantially</p> <p><u>Water</u> Population at risk of water stress is projected to be between 75-250 million</p> <p><u>Ecosystems</u> The ice cap on Mt Kilimanjaro could disappear for the first time in 11,000 years</p>	<p><u>Agriculture</u> In Egypt national production of many crops will be reduced: ranging from -11% for rice to -28% for soybeans</p> <p><u>Water</u> Population at risk of water stress is projected to be between 350-600 million</p> <p>Increase in number of people experiencing water stress in Northern and Southern Africa</p> <p><u>Coastal Areas</u> In Guinea, between 130 and 235km<sup>2</sup> of rice fields (17% and 30% of existing rice field area) could be lost</p> <p><u>Health</u> A large part of Western Sahel and much of southern-central Africa likely to become unsuitable for malaria transmission</p> <p>Previously malaria-free highland areas in Ethiopia, Kenya, Rwanda and Burundi could experience modest incursions of malaria</p> <p><u>Ecosystems</u> Loss of almost half of the Fynbos and Karoo biomes in South Africa</p> <p>Loss of over 50% of some Southern African bird species</p>
Asia and Central Asia	<p><u>Agriculture</u> An additional 49 million people projected to be at risk of hunger</p> <p>Some projections suggest a 7-14% increase in risk of hunger</p> <p><u>Ecosystems</u> 24% of coral reefs may be lost during next 10 years</p>	<p><u>Agriculture</u> An additional 132 million people projected to be at risk of hunger</p> <p>In Bangladesh, rice and wheat production might drop by 8% and 32% respectively</p> <p>Some projections suggest a 14-40% increase in risk of hunger</p> <p><u>Water</u> Freshwater availability in Central, South, East and South-East Asia, particularly in large river basins such as Changjiang, is likely to decrease due to climate change, along with population growth and rising standard of living. This could adversely affect more than a billion people in Asia by the 2050s</p> <p><u>Coastal Areas</u> More than one million people may be directly affected by sea level rise in each of the Ganges-Brahmaputra-Meghna delta in Bangladesh and the Mekong delta in Vietnam</p> <p><u>Ecosystems</u> 30% of coral reefs may be lost in the next 30 years</p>
Latin America and the	<p><u>Agriculture</u> Generalised reductions of rice yields</p> <p>an increases in soybean yields (with</p>	<p><u>Agriculture</u> Desertification and salinization projected to affect 50% of agricultural lands</p>

Latin America and the Caribbean	<p><u>Agriculture</u> Generalised reductions of rice yields and increases in soybean yields (with CO2 effects considered) An additional 5 million people could be at risk of hunger (CO2 effects not considered) In temperate areas such as the Argentinean and Uruguayan Pampas pasture productivity could increase by between 1 and 9%</p> <p><u>Water</u> Net increase in number of people experiencing water stress is likely to be between 7 and 77 million A highly stressed condition is projected between 2015 and 2025 in the water availability in Colombia Over the next decades Andean inter-tropical glaciers are projected to disappear, affecting water availability and hydropower generation</p> <p><u>Health</u> Nicaragua and Bolivia have predicted a possible increase in the incidence of malaria in 2010</p>	<p><u>Agriculture</u> Desertification and salinization projected to affect 50% of agricultural lands An additional 26 million people could be at risk of hunger (CO2 effects not considered) For smallholders a mean reduction of 10% in maize yields could be expected by 2055</p> <p><u>Ecosystems</u> Potential for extinction of 24% of 138 tree species of the Central Brazil savannas (Cerrados) for a projected increase of 2°C in surface temperature Tropical cloud forests in mountainous regions will be threatened if temperatures increase by 1°C to 2°C</p>
Small Island States	<p><u>Water</u> In the Pacific a 10% reduction in average rainfall is likely to correspond to a 20% reduction in the size of the freshwater lens on Tarawa Atoll, Kiribati.</p>	<p><u>Ecosystems</u> Coral bleaching may become an annual or biannual event in the next 30 to 50 years or sooner In the absence of adaptation, a high island such as Viti Levu, Fiji, could experience damages of US\$23 million to 52 million per year (equivalent to 2-3% of Fiji's GDP in 2002).</p>
Eastern Europe	<p><u>Water</u> In Southern Europe annual river runoff decreases by 0 to 23% (compared to 1961-90 baseline) Snowmelt floods are likely to increase Annual run-off is projected to decline by up to 20-30%</p>	<p><u>Agriculture</u> In Southern Europe, for spring sown crops, general decreases in yield (e.g. for legumes -30 to +5%; sunflower -12 to +3%; and tuber crops -14 to +7%) and increases in water demand (e.g. for maize +2 to +4% and potato +6 to +10%) are expected.</p>

Adapted from IPCC (2007).

Source: OECD: Development Assistance Committee / Environmental Policy Committee (2008). OECD guidance on integrating climate change adaptation into development cooperation

## Appendix 2E: Linking Adaptation/Development. (Schipper, 2007).

### Box 1. Different Approaches to Linking Adaptation and Development

#### *Adaptation Approach*

Adaptation to Climate Change Impacts → Vulnerability Reduction → Development

In this view, adaptation is carried out in response to the observed and experienced impacts of climate change on society (including ecosystems). These responses ensure that the vulnerability to the impacts is reduced. This in turn ensures that less is lost each time a climate-related hazard takes place, which means risk is reduced. With reduced risk, development can be more sustainable.

#### *Vulnerability Reduction Approach*

Development → Vulnerability Reduction → Impact Reduction → Adaptation

In this view, development processes help reduce vulnerability to climate change. By reducing the vulnerability, impacts of climate hazards are also reduced, as there is less sensitivity and exposure to the hazards. This translates into a process of adaptation to climate change.

Source: Schipper, E.L.F., (2007) Climate Change Adaptation and Development: Exploring the Linkages. Tyndall Centre for Climate Change. Research Working Paper 107

Available Online at: [http://www.preventionweb.net/files/7782\\_twp107.pdf](http://www.preventionweb.net/files/7782_twp107.pdf) -

## Appendix 2F: Perspectives on Sustainable Development and Climate Change 7Initiatives. (Grist, 2008).

796 N. Grist

Table 1. Perspectives on sustainable development, paradigms and goals, with examples of climate change response

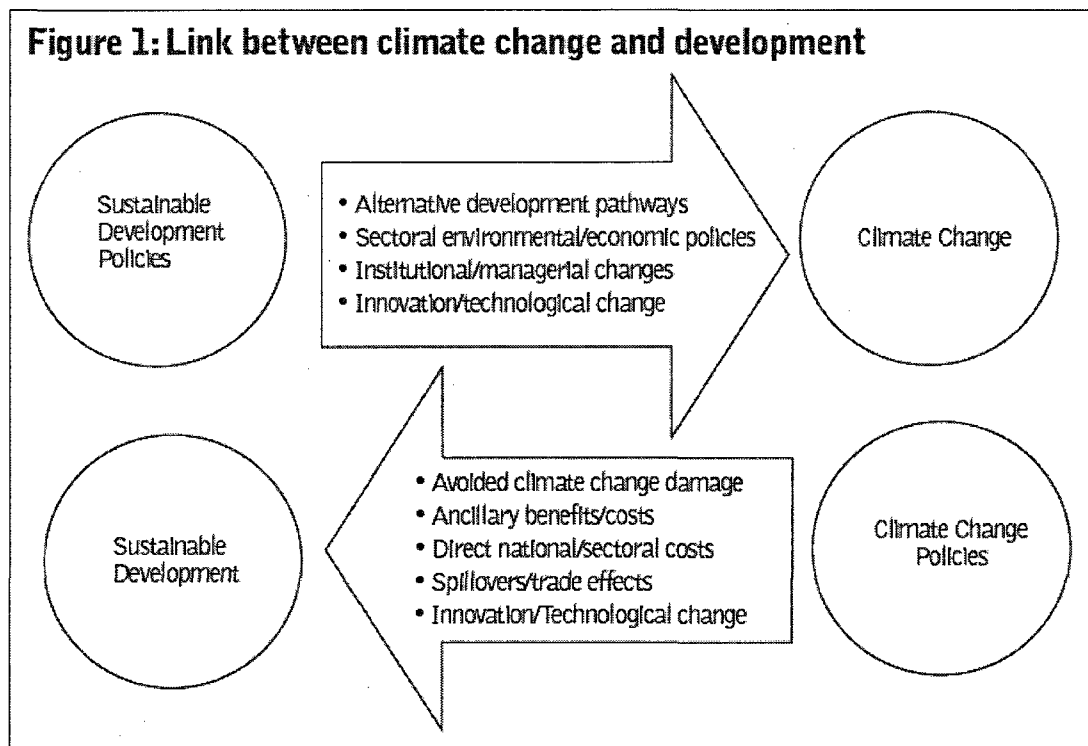
	Mainstream sustainable development			Radical sustainable development		
	Market environmentalism	Ecological modernisation	Environmental populism	Neo-Malthusian	Deep ecology	Eco-anarchy
Perspective on economic growth and development	Growth with environmental add-ons	Growth with resource use efficiency; techno-centrism	Growth	Limits to growth; environmental limits	Steady-state, holistic ecology	Alter-globalisation
Paradigmatic approach	Neo-liberal	Neo-liberal	Participatory	Scientific/ environmental limits	Eco-centric	Anti-hierarchy
Key goals	Incorporation of full costing of environmental services into economy	Resource use efficiency; decreasing pollution to output	Individual rights	Equity (humans) limits to consumption and population	Equity (biosphere beings)	Decentralised society; humanistic technology
Approach to capital substitution	Natural capital can be substituted by equal amounts of generated industrial capital. Trade-offs must be costed and judged carefully with appropriate tools					
Key policy goals relating to CC	Environmental accounting	Regulatory frameworks; energy efficiency	Local inclusion in decision-making and empowerment; adaptation	Lower consumption and lower population	Change perspectives to eco-centric; low carbon low consumption sustainable future	Low consumption sustainable future
Practice	Carbon markets green GDP, environmental impact coefficient (EIC) accounting frameworks (SSEA) voluntary carbon offsetting; Stern Review (2006); Asia-Pacific Partnership (APP) (voluntary reductions)	UNFCCC and related CDM technology transfer; energy-efficient household appliances and industrial limits; IPCC process (regulation) and regulated offsets APP partnership (focus on technology transfer)	Adaptation and livelihoods research stakeholder multi-criteria analysis; perceptions of climate change in communities; empowerment and local action and lobbying around climate change civil society campaigns for example NGOs Stop Climate Chaos	Mitigation voluntary low consumption initiatives in developed world for example Christian 'Live simply' campaign; CRed	Ecotopia; small-scale community living; spiritual oneness with nature	Rising Tide; small-scale community living
						Community-based low consumption global sustainable future
						Rising Tide; small-scale community living

Source:

Journal of International Development. 20, 783–803



**Appendix 2G: Co-Evolution of Climate Change and Development. (Huq et al. 2006)**



Source: Swart *et al.*, 2003

Source:

Huq, S., Murray, L., & Reid, H (2006). Climate change and development links. Gatekeeper Series: 123. Climate Change Group. International Institute for Environment and Development.

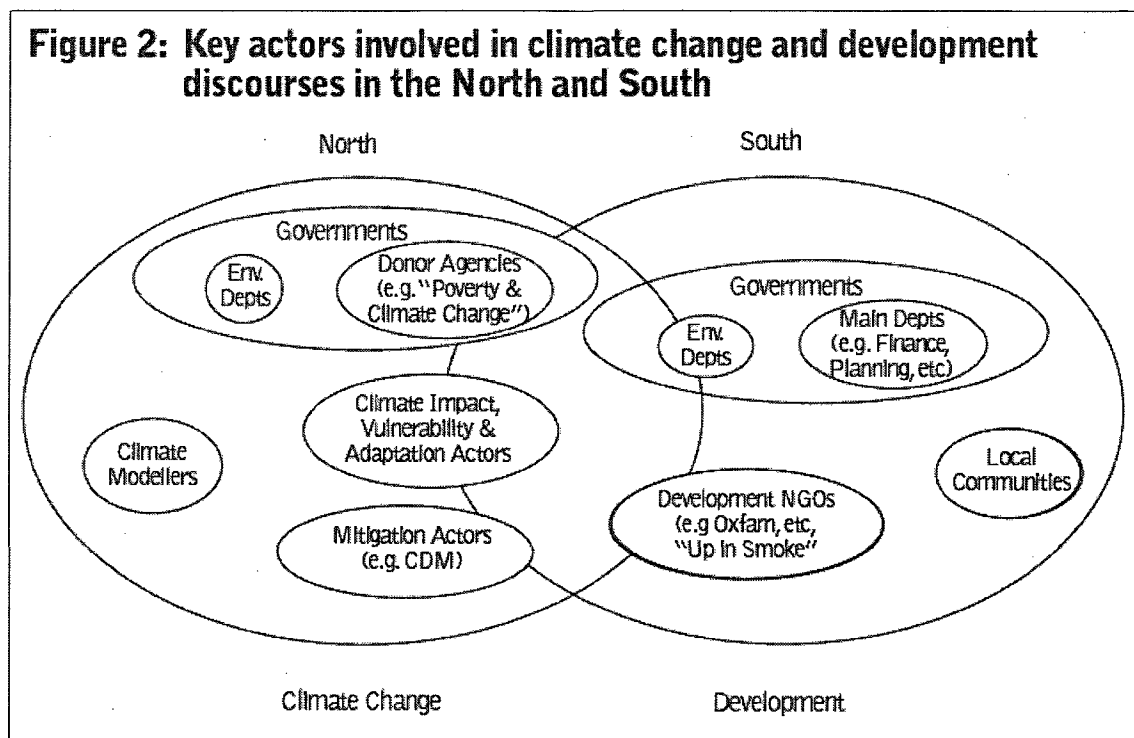
Available

Online

at:

[www.iiied.org/pubs/display.php?o=14516IIED&=34&tuq=1&a=Saleem](http://www.iiied.org/pubs/display.php?o=14516IIED&=34&tuq=1&a=Saleem)

Appendix 2H: Key Actors in Climate Change and Development. (Huq et al. 2006).



Source:

Huq, S., Murray, L., & Reid, H (2006). Climate change and development links. Gatekeeper Series: 123. Climate Change Group. International Institute for Environment and Development.

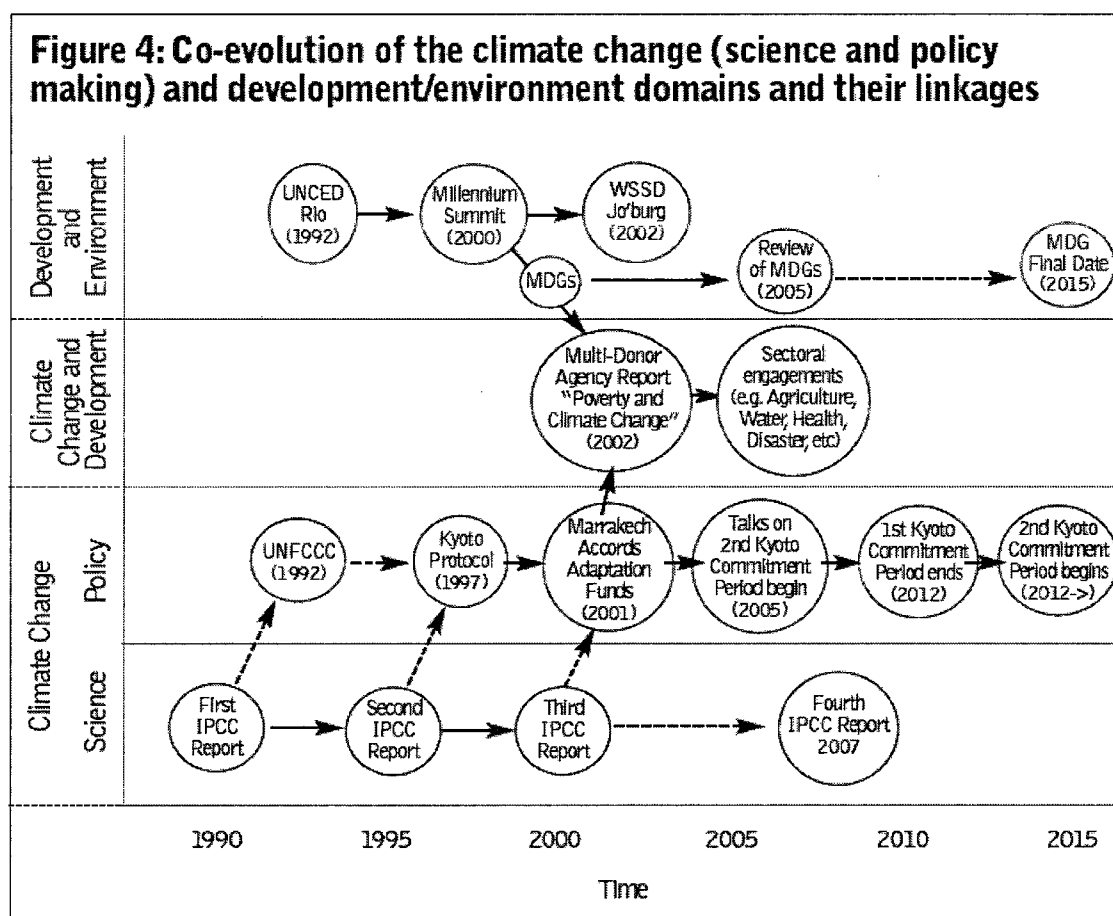
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[www.iied.org/pubs/display.php?o=14516IIED&=34&tuq=1&a=Saleem](http://www.iied.org/pubs/display.php?o=14516IIED&=34&tuq=1&a=Saleem)

**Appendix 2I: Co-Evolution of Climate Change and Development. (Huq et al. 2006).**



Source:

Huq, S., Murray, L., & Reid, H (2006). Climate change and development links. Gatekeeper Series: 123. Climate Change Group. International Institute for Environment and Development.

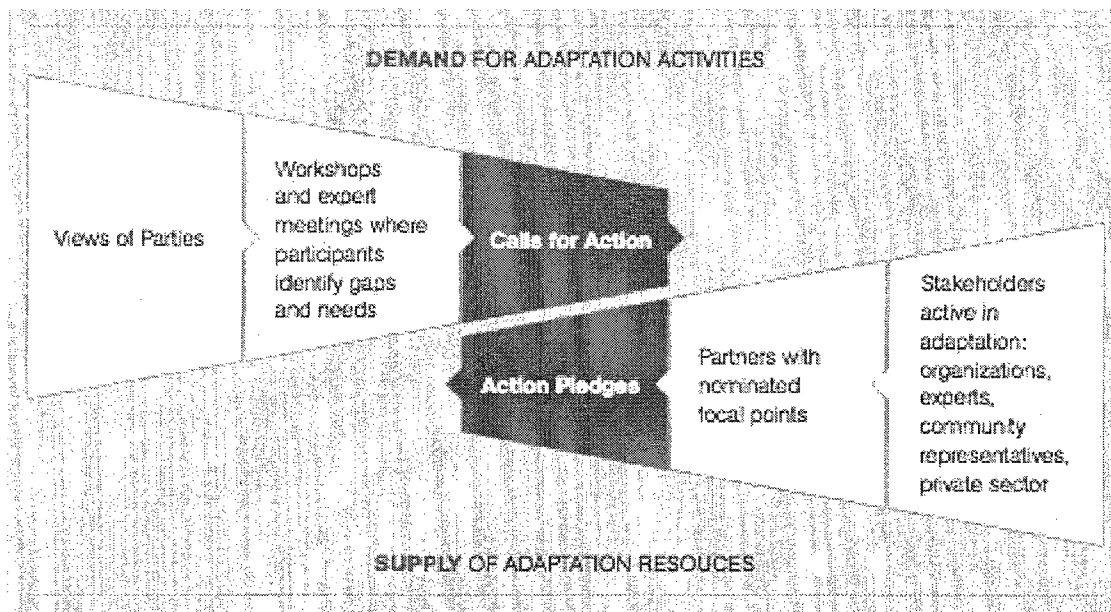
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[www.iied.org/pubs/display.php?o=14516IIED&=34&tuq=1&a=Saleem](http://www.iied.org/pubs/display.php?o=14516IIED&=34&tuq=1&a=Saleem)

**Appendix 2J: Adaptation: Supply and Demand & Nairobi Work Plan.  
(UNFCCC, 2005).**



The NWP identifies nine work areas to enable practical consideration of current and planned work, gaps and needs and potential action:

- (1) Methods and tools;
- (2) Data and observations;
- (3) Climate modelling, scenarios and downscaling;
- (4) Climate related risks and extreme events;
- (5) Socio-economic information;
- (6) Adaptation planning and practices;
- (7) Research;
- (8) Technologies for adaptation;
- (9) Economic diversification.

Source:

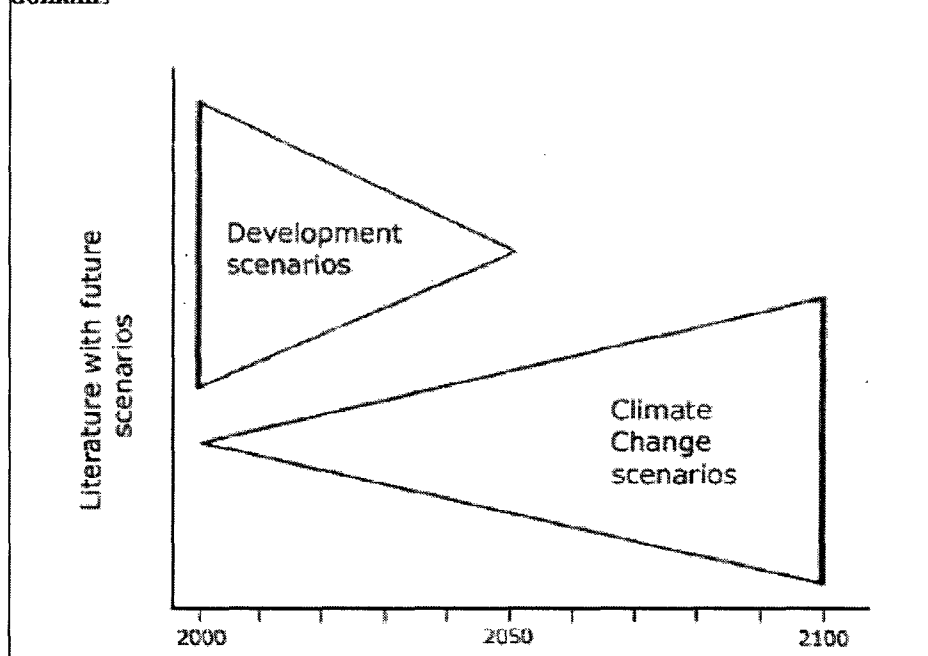
UNFCCC. (2005). Adaptation Assessment, Planning and Practice: An Overview from the Nairobi Work Programme on Impacts, Vulnerability and Adaptation to Climate Change.

Available Online at:

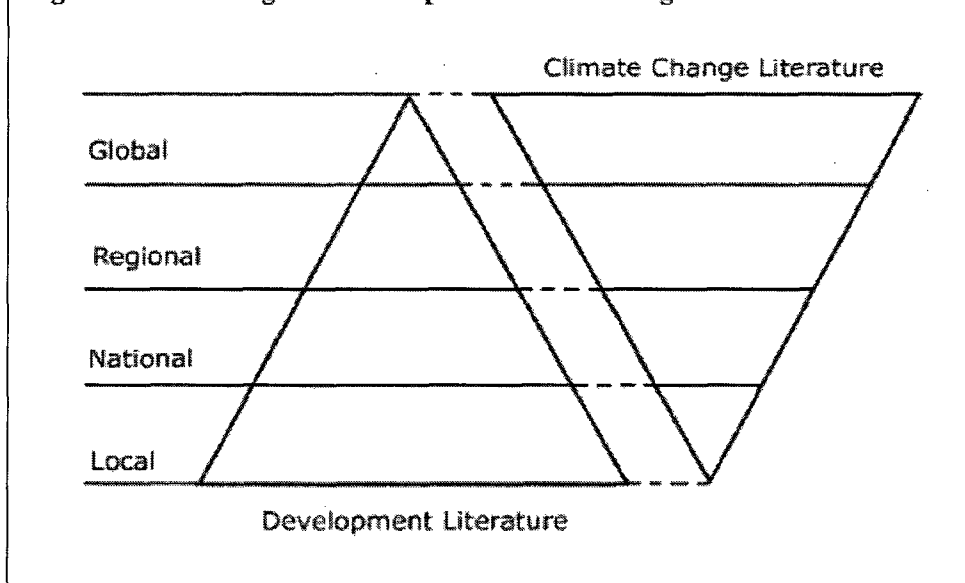
[unfccc.int/resource/docs/publications/10\\_nwp\\_adap\\_assess\\_en.pdf](http://unfccc.int/resource/docs/publications/10_nwp_adap_assess_en.pdf)

**Appendix 2K: Time & Scale Issues of Climate Development Responses. (Huq et al. 2003).**

**Fig 2: Time dimensions of scenarios in the climate change and development domains**



**Fig 3: Climate change and development literature at global to local scales in**



Source:

Huq, S., Murray, L., & Reid, H (2004). Climate change and development: consultation on key researchable issues. Climate Change Group. International Institute for Environment and Development. Available Online at: <http://www.iied.org/pubs/pdfs/G00045.pdf>

### **Chapter Three Appendices**

#### **Appendix 3A: Letter re: Canada's Fair Share. (Pembina et al. April 2010)**

April 5, 2010

Minister Flaherty and Minister Prentice,

As representatives of international development and environmental organizations, we write to ask that Canada fulfill its commitment to provide new funding to support action on climate change in developing countries.

To contribute its fair share, we believe that Canada should provide at least US\$300–400 million each year from 2010 to 2012, over and above our Official Development Assistance (ODA) commitments. From what we could tell, Budget 2010 does not provide any new support for this important international priority.

As you know, the parties to the United Nations Framework Convention on Climate Change (UNFCCC) “took note” of the Copenhagen Accord in December. The Government of Canada has since indicated its strong support for that accord.

The Copenhagen Accord specifies that developed countries will provide “approaching” US\$30 billion for the three-year period from 2010 to 2012 in “new and additional resources” to developing countries. The funds would support adaptation to climate change and efforts to reduce emissions, including through reduced deforestation.

While this first step is very far from meeting the needs of the world’s poorest and most vulnerable citizens, it is essential that this commitment be fulfilled and built upon over the coming months. Adequate and effective near-term financial support for developing countries will help to build capacity for further financing efforts after 2012 and increase trust and goodwill in the global climate negotiations.

The Government of Canada has acknowledged its responsibility to provide financing for climate action on numerous occasions. Most recently, the 2010 Speech from the Throne stated that, together with other industrialized countries, “Canada will provide funding to help developing economies reduce their emissions and adapt to climate change.”

Many of Canada’s peers have already announced their contributions. Canada must join them. As G8 President and G20 co-host this year, Canada can also play a key role in supporting initiatives towards mobilizing longer-term finance for climate change.

Our analysis of Canada’s contributions to other international financing efforts on environment, health and humanitarian response demonstrates a fair share for Canada in the range of 3–4% of the global total. (For example, Canada’s assessed contribution to the Global Environmental Facility was 4.28% of the total in 2006.) It is worth noting that Canada has contributed 5% or more to recent global efforts in humanitarian relief,

research and education.

Thus, in the context of the Copenhagen Accord's short-term financing initiative, Canada should provide at least US\$300–400 million per year in new funds, over and above our ODA commitments, from 2010 to 2012. This represents a first step towards a larger financing commitment in the post-2012 period.

The need to provide new, additional funding is all the more essential in light of Budget 2010's announcement of a cap on the international assistance envelope at C\$5 billion in ongoing annual support.

We believe that the Least Developed Countries Fund (LDCF) would be an excellent destination for a portion of Canada's short-term adaptation support. This UNFCCC fund is designed to address the urgent and immediate adaptation needs of the 48 least developed countries, and is currently seeking new funds to implement the National Adaptation Programmes of Action that these countries have prepared. In addition, Canada could demonstrate leadership by directing short-term funding to the Adaptation Fund.

Thank you in advance for your consideration of these matters, and we would be very happy to answer any questions you may have.

Sincerely,

Gerry Barr, President-CEO, Canadian Council for International Co-operation  
Robert Fox, Executive Director, Oxfam Canada  
Marlo Raynolds, Executive Director, The Pembina Institute  
Keith Stewart, Director, Climate Change, WWF-Canada

CC : Len Edwards  
David McGuinty, MP  
Bernard Bigras, MP  
Linda Duncan, MP  
Elizabeth May

1

See, for example, Appendix IV of the briefing note entitled "How to Finance Support for Climate Adaptation in Vulnerable Countries,"

*Appendix 3Aa: Canada's Fair Share of Adaptation Financing (in current C\$ billions)*

Clare Demerse Associate Director for Climate Change  
The Pembina Institute

Contribution calculations by the Pembina Institute are based on estimates from the UNFCCC, Oxfam, and the UNDP. Canada's ODA in 2008 was US\$4.725 billion, equivalent to Cdn\$5.1 billion.

See <http://stats.oecd.org/index.aspx>.

By multiplying that percentage by estimates of the finance needed for adaptation in developing countries shows Canada's fair annual contribution to be between C\$1 billion and C\$5 billion, with the average of the estimates included being C\$2.6 billion, nearly half of Canada's total development assistance today.

Table 1: Calculations of Canada's Fair Share

Canada's Percentage Share of Total		Share of Low Estimate (\$39.7 billion)	Share of High Estimate (\$116.3 billion)	Share of Oxfam Estimate (\$67.6 billion)
Low Share	2.7%	1.1	3.1	1.8
High Share	4.3%	1.7	5.0	2.9
Average Share	3.5%	1.4	4.1	2.4
Average Fair Share Contribution	2.6			

According to Pembina, the lowest currently applicable estimate of adaptation costs is the lower bound of the UNFCCC's 2008 estimate. Converted to current Canadian dollars, this estimate is equivalent to \$39.7 billion/year. This is referred to as "low estimate" in Table 1.

According to Pembina, the highest currently applicable estimate of adaptation costs is the UN Development Program's estimate. Converted to current Canadian dollars, this estimate is equivalent to \$116.3 billion/year. This is referred to as "high estimate" in Table 1.

Oxfam's estimate of adaptation costs is equivalent to \$67.6 billion/year in current Canadian dollars. This is referred to as the "Oxfam estimate" in Table 1.



Of the five assessed contribution methods included in the Pembina Institute's financing calculations, the lowest percentage assessed to Canada is 2.7%, the highest is 4.3%, and the average is 3.5%.

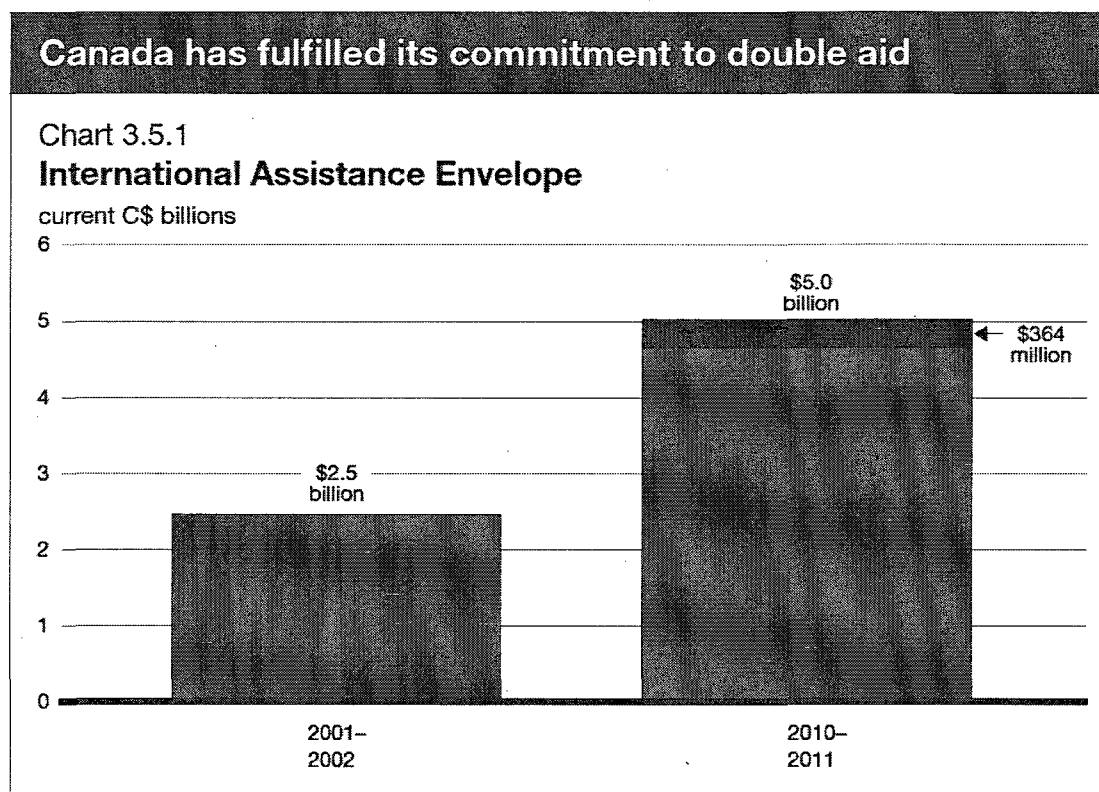
All estimates and calculations from *Our Fair Share: Canada's Role in Supporting Global Climate Solutions*, Appendices A and B. (The World Bank's 2006 estimate, which was then the lowest, has now been superseded by the World Bank's 2009 estimate.)

Source:

Available Online at:

<http://www.pembina.org/media-release/1816>

**Appendix 3B: Government of Canada Baseline Analysis**  
**Appendix 3Ba: Government of Canada International Aid & Fiscal Planning**



*International Assistance*

In 2002 Canada committed to double international assistance by 2010–11. Budget 2010 fulfills this commitment by increasing the International Assistance Envelope (IAE) by \$364 million or 8 per cent, in 2010–11, bringing it to \$5 billion (see Chart 3.5.1). There is no new fiscal impact from this measure. Furthermore, Canada has already met its commitment to double aid to Africa.

For planning purposes, the Government had provisioned for annual growth in the IAE of 8 per cent. With the achievement of the \$5-billion aid target, future IAE spending levels will be capped at 2010–11 levels and will be assessed alongside all other government priorities on a year-by-year basis in the budget. Relative to the planning track in the September 2009 Update of Economic and Fiscal Projections, which assumed automatic ongoing growth for international assistance spending of 8 per cent per annum, this results in savings of \$438 million in 2011–12, rising to \$1.8 billion in 2014–15.

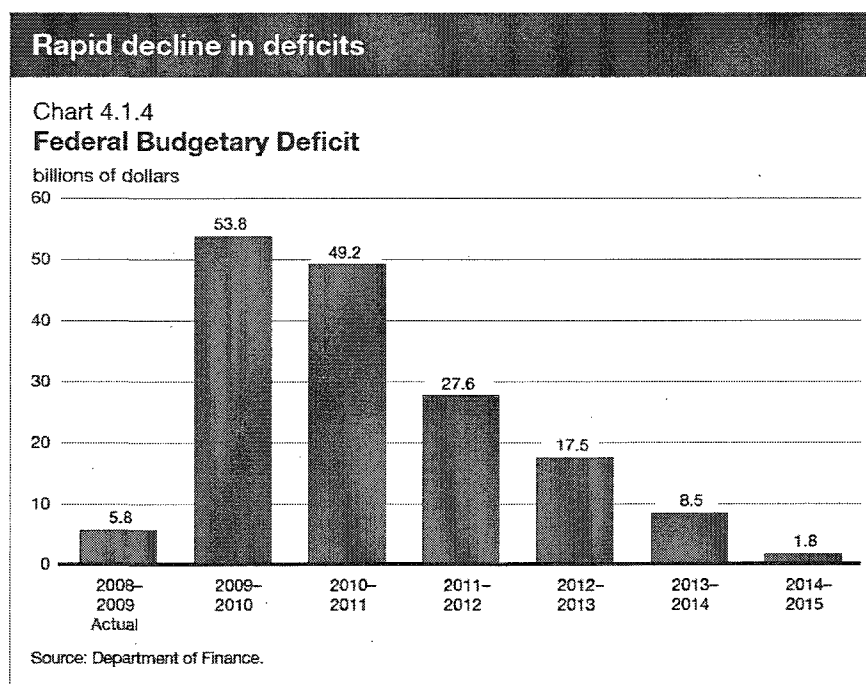
## Government of Canada: Fiscal Planning 2010-2015

Table 4.1.1

**Budget 2010 Savings Measures—Expected Savings**

	2009– 2010	2010– 2011	2011– 2012	2012– 2013	2013– 2014	2014– 2015	Total
(millions of dollars)							
Restraining growth in National Defence spending				525	1,000	1,000	2,525
International Assistance Envelope			438	869	1,337	1,842	4,486
Containing the administrative cost of government		300	900	1,800	1,800	2,000	6,800
2009 strategic reviews		152	248	287	288	288	1,262
Tax fairness—closing tax loopholes	20	355	440	500	565	625	2,505
<b>Total</b>	<b>20</b>	<b>807</b>	<b>2,026</b>	<b>3,981</b>	<b>4,990</b>	<b>5,755</b>	<b>17,578</b>

Note: Totals may not add due to rounding.

**SOURCES:**

Government of Canada (2009). Canada's Official Development Assistance: 2008-09 Summary & Statistical Reports. Canadian International Development Agency.

Available Online at:

<http://www.acdi-cida.gc.ca/acdi-cida/ACDI-CIDA.nsf/eng/NAT-9288209-GGP>

Government of Canada, (2010): 2010 Budget

Available Online at: <http://www.budget.gc.ca/2010/pdf/budget-planbudgetaire-eng.pdf>

### ***Appendix 3Bb: Canada's Participation in International Climate Negotiations***

A key part of Canada's approach to combating climate change involves active participation in international negotiations to reach consensus on a new global climate change regime. In 2010, Canada will continue to work with the United States and other like-minded countries to develop a fair, effective and comprehensive post-2012 international climate change regime, guided by the following five principles:

1. balance environmental protection and economic prosperity;
2. maintain a long-term focus;
3. develop and deploy clean technologies;
4. engage and seek commitments from all major economies; and
5. support constructive and ambitious global action.

The Copenhagen Accord – the main outcome of the 15th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) – provides the foundation for an environmentally effective post-2012 international climate change agreement. As of March 15, 118 countries representing over 83% of global emissions have associated themselves with the Accord and 77 countries have submitted mitigation commitments in the appendices of the Accord. These commitments comprise nationally-determined economy-wide mitigation reductions targets for 2020 by developed countries and nationally-appropriate mitigation actions by developing countries.

Canada has associated itself with the Copenhagen Accord and is committed to its full implementation. In accordance with this commitment, Canada has submitted an economy-wide emissions target of 17% below 2005 levels by 2020 that is fully harmonized with the emissions target of the United States and remains subject to change to align with the final emissions target of the United States in enacted legislation.

Canada will provide funding to help developing economies reduce their emissions and adapt to climate change, as part of a collective developed country commitment under the Copenhagen Accord to provide up to US \$30 billion for the 2010-2012 period.

Throughout 2010 Canada will continue to work with its international partners to maintain political momentum to enhance global action on climate change, including through the full implementation of following provisions of the Copenhagen Accord:

- development of a transparent and effective process for international review of mitigation and financing commitments;
- strengthening long-term financial architecture, including through the establishment of the Copenhagen Green Climate Fund and a High Level Panel to review options for long-term financing;
- establishment of a new international adaptation program that prioritizes the needs of the poorest and most vulnerable countries; and
- establishment of mechanisms to facilitate technology transfer and the reduction of emissions from deforestation and forest degradation.

The UNFCCC will remain the main forum for negotiations of a new, comprehensive, legally-binding global climate change agreement that builds on the Copenhagen Accord. A number of other informal ministerial meetings are likely to be held to help build consensus in the ongoing negotiations and to enhance global action on climate change.

Canada will remain actively and constructively engaged in the international negotiations and related meetings, in line with our key principles and objectives. As President of the 16th Conference of the Parties to the UNFCCC (CoP16), Mexico will play a particularly important role in the international negotiations on climate change in 2010. Canada and Mexico have a close and productive working relationship in the area of climate change. Canada will work closely with Mexico to achieve a successful outcome at CoP16.

SOURCE: A Climate Change Plan for the Purposes of the *Kyoto Protocol Implementation Act* 2010 — pp38- 39

Available Online at:

[http://www.climatechange.gc.ca/Content/4/0/4/4044AEA7-3ED0-4897-A73E-D11C62D954FD/KPIA\\_2010.pdf](http://www.climatechange.gc.ca/Content/4/0/4/4044AEA7-3ED0-4897-A73E-D11C62D954FD/KPIA_2010.pdf)

## Chapter Four Appendices

### Appendix 4A: OECD Climate Lens Toolkit

PARIS DECLARATION ON AID EFFECTIVENESS				
<i>Ownership</i>	<i>Alignment</i>	<i>Harmonization</i>	<i>Managing For Results</i>	<i>Mutual Accountability</i>
<i>Partner Countries Exercise Effective Leadership Over Their Development Policies And Strategies And Co-Ordinate Development Actions</i>	<i>Donors Base Their Overall Support On Partner Countries' National Development Strategies, Institutions And Priorities</i>	<i>Donors' Actions Are More Harmonized, Transparent And Collectively Effective</i>	<i>Managing Resources And Improving Decision Making For Results</i>	<i>Donors And Partners Are Accountable For Development Results</i>

OECD CLIMATE LENS (HIGH LEVEL SCAN)			
<i>Climate Change Risks Consideration In The Formulation Of The Measure</i>	<i>Increased Vulnerability, Maladaptation, Missed Opportunities</i>	<i>Pre-Existing: Amendments Warranted In Order To Address Climate Risks And Opportunities</i>	<i>Actual Enforcement Of Decisions, And Implementation Of Activities And Investments On The Ground</i>

## NATIONAL LEVEL

### *Donor-Recipient Options*

- Budgetary support mechanisms
- Country and joint assistance strategies
- Capacity building & awareness-raising (high-level policy dialogues, monitoring & assessment of future climate change impacts and adaptation priorities)

### *Donor-Donor Options*

- Better co-ordination and harmonization on adaptation at the country level

## SECTORAL LEVEL

### *Donor-Recipient Options*

*Mobilization of the additional resources required to integrate the needed adaptation measures in the context of sectoral strategies, plans and programmes in sector-level budget support and sector-wide approaches.*

- Capacity building & awareness-raising among both sectoral planners and their counterparts within donor agencies of the implications of climate change on their specific areas of activity & supporting their abilities to evaluate the implications of climate change for specific sectors;
- Provide support for capacity development needed to apply climate lenses (including climate information gathering and monitoring at the sectoral level) and for the implementation of the different interventions (i.e. the development and application of sector-specific methodologies to identify, assess, cost and prioritise the needed climate adaptation measures and investments)
- Encouraging and supporting the monitoring and evaluation of progress towards integrating climate adaptation into sectoral strategies, plans and programmes. (i.e. financial and technical support for the implementation of reporting tools and indicators as well as performance assessment frameworks.)

## PROJECT LEVEL

*The project level is critical for the integration of adaptation considerations, and indeed much of the recent progress in this direction has been made at that level. The project cycle can be used as a framework to integrate the assessment of climate risks and the identification, analysis and prioritization of adaptation options. In order to integrate adaptation at the project level, a number of interventions are identified along the project cycle.*

### *Recipient Options*

- Incorporating considerations of climate risks and adaptation throughout the project cycle;
- Developing, pilot testing and implementing climate risk assessments;
- Developing appropriate metrics and indicators to assess the effectiveness of efforts to better integrate climate risks and adaptation considerations;
- Engaging a wide variety of stakeholders to identify adaptation options and indicators that monitor progress and success.
- Several recommendations and key priorities for action are suggested at this level: increase emphasis on testing, comparing and reconciling the diverse tools for climate risk assessment;
- improve the availability and reliability of downscaled climate change projections

and ensure that the uncertainties associated with various projections are communicated to project managers in transparent ways;

- increase analytical work on methodologies for prioritising and costing of adaptation measures;
- evaluate systematically the effects and effectiveness of implemented adaptation measures;
- invest more in capacity development and piloting of initiatives that can help project managers as well as other relevant decision makers to better understand the implications of climate change on their projects and to be better equipped to incorporate adaptation considerations within their decision frameworks.

## **LOCAL LEVEL**

### ***Recipient Options***

Four entry points are identified to facilitate the integration of climate change adaptation into local development planning processes:

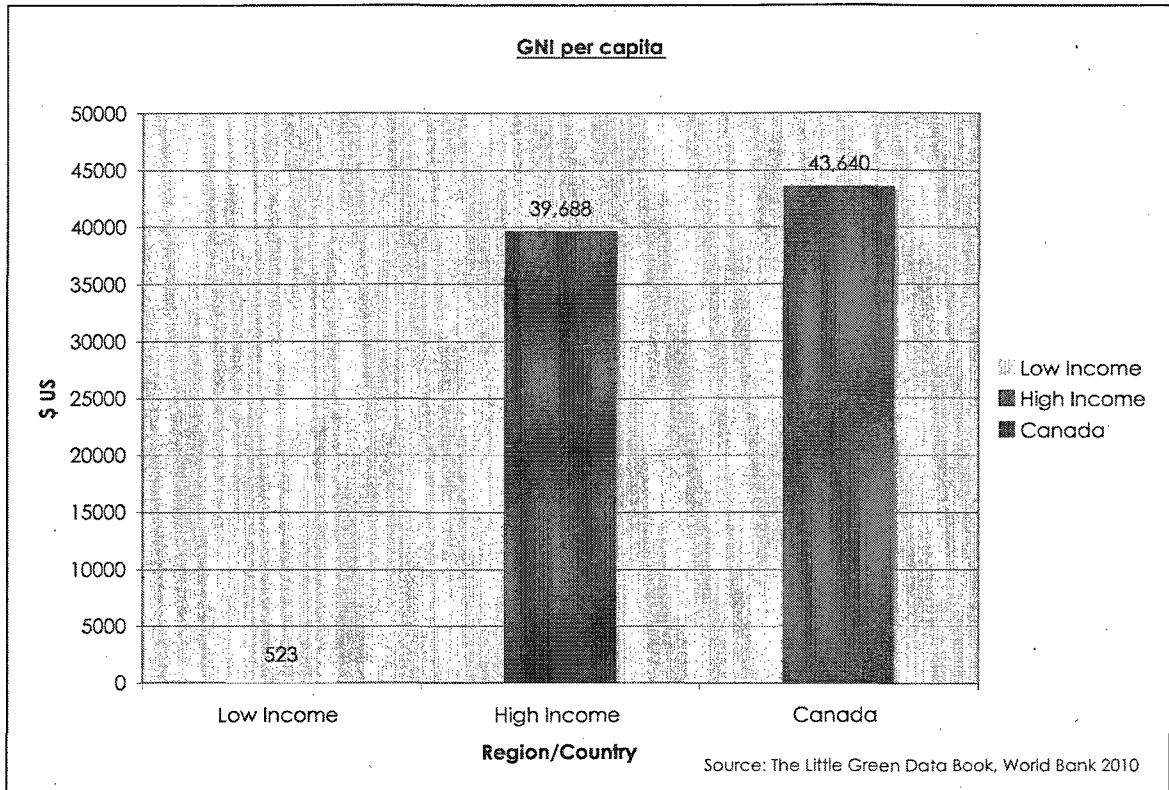
1. consideration of the implications of climate change in development planning processes of local governments (village action plans and rural or district development plans, as well as city development plans or strategies);
2. adjustment of local regulatory and service provision frameworks, to include provision of information based on likely local impacts of climate change;
3. adjustment of local government accountability mechanisms; and
4. engagement of private-sector and civil society organisations and processes, which can support adaptation at the local level by internalizing and institutionalizing climate risk management into their own decision-making processes and operations.

### ***Donor-Recipient Options***

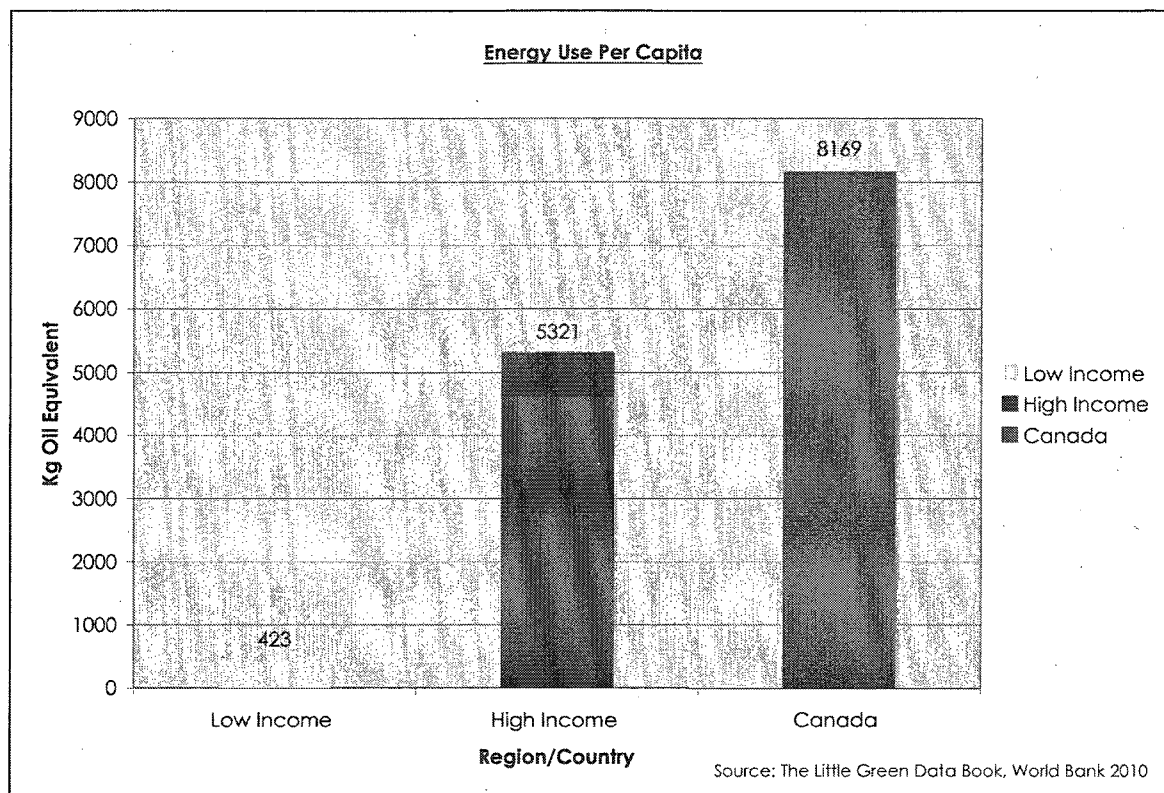
- Sectoral priorities in light of climate change (i.e. urban infrastructure provision and maintenance; agriculture and rural development, sustainable land and water management)
- Options for channeling funds and stakeholder engagement to build local adaptive capacity (e.g. by supporting municipal infrastructure funds).
- Decentralization processes that transfer authority to elected local governments and enhance local government capacity to take up the responsibilities afforded by decentralization.
- Increase support to civil society organizations as they represent a key constituent in local-level adaptation



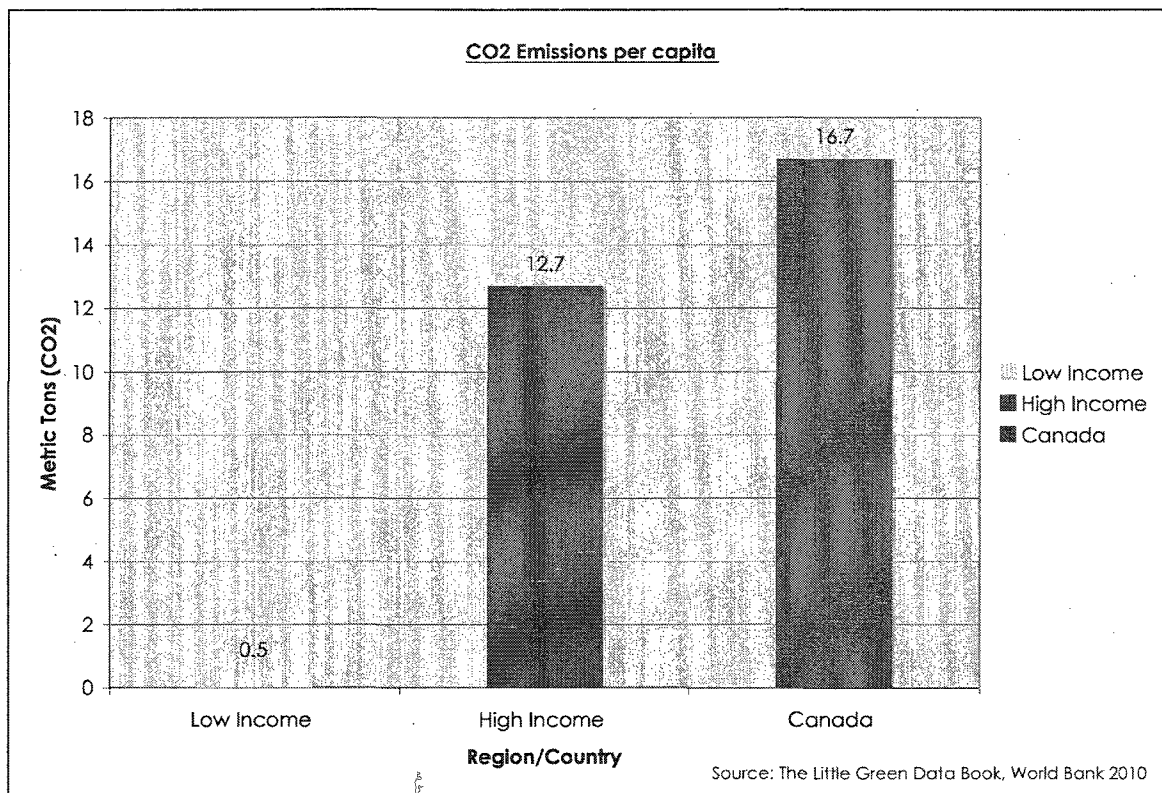
**Appendix 4B: Canada's International Record on Climate Change.**  
(World Bank Little Green Data Book, 2010).



Gross National Income Per Capita



Energy Use Per Capita



CO2 Emissions Per Capita

**Appendix 4C: Findings Critiques, Recommendations. (Vogel, 2010).**

Findings	Critiques & Recommendations
<p>Canada's ODA shows promising signs of support for mainstreaming adaptation such as by supporting capacity building and research activities to support adaptation and adaptive capacity in the developing world and the development and application of strategic environmental assessment tools within Agency practices.</p>	<p>Canada could always show greater integrative development practice in support of adaptation by factoring climate change into all: thematic choices, strategic economic growth approaches, country assistance strategies, sectoral-policy frameworks, poverty reduction strategies, long-term investment plans, technical consultations and sector reviews, as well as strategic and project-level environmental impact assessments and environmental indicators within the agency.</p> <p>An international development agency must not only strengthen sustainable economic development and growth in the developing world, but also contribute to countries long-term ecological sustainability, low-carbon development pathways and enhanced capacity to adapt to inevitable climate change impacts. This must be the underlying premise of development cooperation in the 21<sup>st</sup> century. Only a holistic viewpoint that adequately incorporates green growth, low-carbon development and adaptive capacity considerations into development practice will capture the scale and essence of responding to the global climate crisis through international development cooperation responses.</p>
<p>Canada shows a high level of international support and involvement for action on adaptation and development issues, mostly through multi-lateral channels. Canada participates and supports UNFCCC processes (including federal support, in principle, for the recently announced 2012 Copenhagen Green Climate Fund).</p>	<p>The government and Canadian environmental groups agree that a \$400-million pledge to fast-start financing is a good place to start. However, San Francisco-based Climate Works Foundation reports that: 72 per cent of the recently announced 400 million in fast-start financing money is going toward loans. This percentage is higher than any other developed country according an analysis of funding pledges (Climate Works Foundation. June, 2010, Online). The study was produced before Canada had provided a breakdown of its own spending.</p> <p>In total, it was found that \$285.7 million would be provided by the Canadian government as loans through the International Finance Corp. a member of the World Bank Group that would distribute the loans to private-sector recipients managing clean-energy projects that help reduce pollution in developing countries.</p> <p>Only 11 per cent of Canada's \$400-million package is going toward helping developing countries adapt to the impacts of climate change, according to an analysis by the Pembina Institute, an Alberta-based environmental research group. Canada has not positively signaled its commitment to increasing funding for climate adaptation and low-carbon growth in the developing world, thus failing to bridge the gap</p>

	<p>between political rhetoric and real climate action.</p> <p>"In our opinion, Canada is overstating their (pledge's) true value," said Clare Demerse, associate director of climate change at the Pembina Institute. "What part of that loan constitutes a grant? What's the grant element? And we don't know from Canada what the grant element of these loans would be, but we do know that it's less than their face value. The idea of contributing \$400 million for Canada we think is Canada's fair share. We just don't think the government really hit it this year because of doing loans rather than grants."<sup>79</sup></p>
Canada has yet to honor its Kyoto Protocol obligations of reducing Canada's GHGs contribution 6% below 1990 levels by 2012. In 2006, Canada was 29% higher than the Kyoto target, largely attributable to exponential growth in the oil and gas energy sector (UNFCCC, 2007).	<p>It is arguable that Canada is in international violation of this global environmental treaty and should be held accountable to its missed Kyoto Protocol targets, perhaps through carbon debt compensatory means and penalization for missed targets.<sup>80</sup> Much more must be done domestically within Canada to combat rising GHGs and work towards these inter-generational sustainability goals. As the Commissioner on Environment and Sustainable Development particularly noted, there is a need to address mitigation of domestic GHGs within the environmental regulation of the western Canadian oil and gas energy sector. This will require radical domestic measures to complement radical international measures to finance the climate adaptation crisis and green-growth imperative through other multi-lateral means. But first, Canada needs to redeem its credibility and sincerity to pursue low-carbon development pathways at home, before it heralds the benefits of green growth abroad.</p>
Canada supports international development cooperation mechanisms and actions, through the	<p>Averaged over a period of 17 years (1990-2015), Canadian development co-operation has contributed on average 86 million (or greater) per year, to support adaptation through multi-lateral mechanisms. However, the data shows an increasing emphasis on multi-lateral climate change pledges and contributions in recent years.</p>

<sup>79</sup> Source: "Environmental group says Canada falling short on climate-change funding" by Mike de Souza, PostMedia News. October 22, 2010, available at: <http://www.canada.com/business/Environmental+group+says+Canada+falling+short+climate+change+funding/3714240/story.html>

<sup>80</sup> As a party to the Kyoto Protocol, Canada committed to reduce emissions 6% below 1990 levels by 2010-2012. In 2006, Canada was 29% higher than the Kyoto target, largely attributable to exponential growth in the oil and gas energy sector (UNFCCC, 2007). In 2006, Canada became the only country in the world, to change its reduction base year and target to 20% below 2006 levels by 2020, with an aspirational target 60-70% by 2050 (less than G-8 objective of 80%+). Environmentalists have claimed that this change will lead to a 2.5% increase in Canada's GHG levels as compared to the 1990 base year, by 2020. Thus, it is arguable that Canada is in violation of its international mitigation responsibilities under the Kyoto Protocol and should be subject to appropriate penalization and environmental enforcement for failed compliance with GHG reductions. Canada is among the most energy-intensive nations (per capita) and ranks within the top three (per capita) emitters in the world. For more details see Appendix 4Ba

<p>World Bank, GEF Trust Funds, OECD Development Assistance Committee, as well as various funds and groups within the UNFCCC and through various other multi-lateral and bilateral mechanisms.</p>	<p>As a suggested complementary action, Canada could signal strong support for the Adaptation Fund (AF) as a key cornerstone of the UNFCCC process and post 2012 climate financing architecture by ensuring new and additional funds are voluntarily contributed by Canada to meet current AF funding needs. Canada could take a leadership role in the continued long-term support for the LDC Fund, GEF Core Funding and SCCF. Canada could always be more of an active and voluntary participant, or leader, in these multi-lateral climate measures, including participating in high level forums on climate financing.</p>
<p>It is important to reiterate that Canada's 2008-09 ODA budget of \$CAD 5 billion dollar for aid is dwarfed by the \$CAD 22 billion Canada contributed to debt relief and financing through IFIs and MDBs, which in all fairness, do implement adaptation actions, to a small degree. However, the 2008-09 aid: debt ratio shows a difference of 77% more Canadian aid spending on debt relief and financing capital, granted through the extra-ordinary global financial crisis global government response.</p>	<p>Adaptation and financing in a time of global economic crisis and increasing uncertainty underscores the need for debt relief to free developing country partners who are unnecessarily burdened with debt obligations that preclude them from capitalizing on opportunities to utilize their own domestic resources for domestic adaptation efforts.</p> <p>It should be ensured that the accountability frameworks for this unprecedented international lending to IFIs and MDBs would be inclusive of vulnerability and adaptation assessment criterion in multi-laterally acceptable results-based management frameworks that support development best practices, transparency and accountability.</p> <p>Lifting the current \$CAD 5 billion cap on Canadian ODA, while increasing the ongoing ODA donations and to meet long-term climate commitments (\$USD 30 billion by 2012, \$USD 100 billion per year, by 2020) through new and innovative approaches (relieving debt lending to enhance domestic adaptation support in developing countries) can further support adaptation through Canadian development cooperation.</p>
<p>Bi-lateral assistance diversification could better support CIDA's three priorities of health, food security/agriculture and youth/children, through multi-lateral and</p>	<p>If a third of bilateral assistance is currently targeted at two countries, and we take into account the billions of dollars in Canadian funds devoted to maintaining a Canada's military presence in Afghanistan and Haiti, a deeper analysis of CIDA strategic development cooperation priorities is required. Climate change and security cross-cutting issues are an interesting consideration to Canada's dual humanitarian and military roles in Haiti and Afghanistan. From a broader foreign policy perspective, are there strategic resource</p>

<p>bilateral aid mechanisms that are also a better match of Canada's domestic and international policy commitments. Development interventions in Haiti and Afghanistan must not become a drain on CIDA's long-term policy directions that include supporting adaptation in LDCs and SIDS.</p>	<p>advantages for Canada to remain engaged in both civilian and military capacities in Haiti and Afghanistan? Obviously building security and democratic institutions, education and health services and economic development opportunities are important considerations, particularly in post-war, post-disaster situations (as in Afghanistan and Haiti). In a sense this does contribute to adaptive capacity, a pillar of which is social institutions and governance. However, it remains highly problematic that Canada has dual roles as a humanitarian and military presence in these two nations. There are uncomfortable and overlapping roles between development cooperation, military occupation, and long-term strategic considerations - the least of which should be financial burdens upon Canadian tax-payers resource allocations and the type of development that can truly impact long-term sustainability considerations such as post-carbon growth models and climate adaptation and resilience to inevitable climate impacts.</p>
<p>At the bilateral level, there is evidence that Canadian development interventions are supporting adaptation through sectoral approaches that contributes to strengthening LDC capacity in: agricultural policy, strengthening civil society, environmental engagement and management (i.e. water, forestry), institutional capacity building, and sustainable energy policy – all of which are reasonably aligned with domestic development policy objectives and international recommendations for integrating climate change adaptive</p>	<p>Greater integration of environmental frameworks and strategic tools into Canadian ODA decision-making, as well as emphasis on increasing the adaptation capacity of developing countries, particularly LDCs and SIDS, to manage their environment and natural resources is required within Canadian bilateralism to strengthen climate resilience through adaptation and development measures. Limits of planetary boundaries signal of the need for precaution and encouragement to environmental innovation and new thinking within the constraints of significantly diminished stock of environmental and ecological services, increased pressures on dwindling resources, further over stressed by a changing climate. Development cooperation must at every opportunity work to ameliorate the dangerous limits currently placing immense stress on the Earth's atmosphere, oceans, forests and eco-system services. This requires drastic changes to conceptual frameworks of development cooperation to place greater value on eco-system services with the long-term climate impacts and mitigation of climate changing GHGs in mind. However, CIDA and the Canadian government's approach is sincerely limited in its capacity to successfully implement these 'climate filters' within strategic environmental and development planning, monitoring and evaluation work and more broadly at the departmental, inter-departmental or all-of-government level. The reasons for this are innumerable, but include:</p> <ul style="list-style-type: none"> <li>• Long-standing issues in federal coordination including the scoping of projects and other related issues need to be resolved</li> <li>• The effectiveness environmental assessment process in protecting the environment, collaborating with public</li> </ul>

<p>capacity development cooperation</p> <p>into</p>	<p>participation and implementing quality assurance measures</p> <ul style="list-style-type: none"> <li>○ Challenges of coordinating public consultation and obtaining information in developing countries, and planning and delivering aid in a manner that avoids environmental harm, now and for future generations.</li> <li>• A lack of indicators of environmental sustainability nor incorporation of them into country programming and project design nor integrative results-based management approaches within its own projects <ul style="list-style-type: none"> <li>○ Holistic post-project assessment of environmental and sustainable development results is required to guide future sustainability efforts, particularly in support adaptation and mitigation to climate change</li> </ul> </li> </ul> <p>Canada's bilateral aid focus, efficiency, and accountability that is targeted at increasing food security, securing the future of children and youth, contributing to health and sustaining economic growth by untying aid, having a limited geographic focus, and supporting decentralization - can do much more to support the key issues of adaptive capacity and challenges of development that partner countries are faced with by systematically and explicitly integrating environmental considerations into decision-making across all policies, programs, and projects. CIDA's strategic priorities that pertain to climate change in the past and, somewhat, in the present, have included, for example: sustainable land management, sustainable integrated water management, and building the poor's adaptive capacity to address their vulnerability to environmental stresses and change (i.e. agriculture &amp; food security). CIDA may develop a longer term approach that enhances sustainability and results through more 'lessons-learned' efforts to capture successful examples of capacity development at the community level where project benefits are maintained through more effective monitoring and evaluation techniques (including measurable environmental indicators at the project level</p> <p>Climate change adaptive capacity and adaptation are neither direct products nor services, but rather a long-term development outcome based on development outputs that take the form of a sustainable change of state among beneficiaries to be more resilient to climate change over time. Timescales of climate change require pro-active development choices to build adaptive capacity and mitigate GHG emissions.</p>
<p>Strategic Environmental Assessment (SEA)</p>	<p>The agency needs better integrated approaches to designing and implementing development interventions to fully capture climate change adaptation and mitigation opportunities and liabilities. SEA</p>



<p>plays an important role within CIDA's policy frameworks contributive to CIDA showing consistency with domestic and international policy obligations and commitments. However SEA is limited in its capacity to affect systemic changes required to better support adaptation to climate change as a cross-cutting developing theme.</p>	<p>presents a strategic tool to capture elements of climate change, but competing expectations regarding the integration of many priorities limit the influence it can have on CIDA programming.</p>
<p>The OECD has served a leadership role in developing policy analysis and implementation tools on strategic environmental assessment, in support of adaptation and green growth development pathways.</p>	<p>These OECD tools require donor countries, including Canada, utilize them to the fullest extent possible in order to meet high-level development commitments such as the Paris Declaration on Aid Effectiveness and OECD Declaration on Climate Change Adaptation while contributing to green growth and strengthening adaptive capacity</p>

**Appendix 4D: Sustainable Economic Growth Strategy Adaptation Analysis. (Vogel, 2010).**

**SUSTAINABLE ECONOMIC GROWTH STRATEGY & PROJECT ANALYSIS**

***Building Economic Foundations (millions)***

**25.8 – NGO administered**

**52 – IFI administered**

**77.8 – TOTAL**

- **Trade Reform ‘Aid for Trade’: 40 million** Enhancing “participation in the global economy, raising awareness on the implication of sanitary and phytosanitary standards and trade barriers, capacity building with governments and the private sector in the regions to monitor the impact of trade rules and standards on female and male producers”

Administered by : IFIs (WB, WTO, AFB, IADB)

**Climate Adaptive Capacity Analysis:**

- This would seem an unlikely development top priority from a climate change in development perspective. Consideration as an indirect measure to boost domestic fiscal capacity in developing countries thereby enhancing further domestic capital and capacity to strengthen domestic self-sufficiency and long-term sustainability in other areas of interest such as education, health care, food security and water management as well as infrastructural climate proofing. However, trade barrier impacts on producers is not considered an explicit example of a climate adaptation approach.

**Sectoral Reform: Mining & Municipal Administration: 12 million** to enhance the development impact of extractive industries expenditure management and accountability capacity of 30 municipal governments sector revenues and improve access to finance for rural populations by providing local financial institutions with know-how, advice, and training to extend microcredit services to rural municipalities in areas where extractive industries are active.

Administered by: IFC (International Finance Corporation)

**Climate Adaptive Capacity Analysis:**

- None, except consideration of sustainability dimensions of supporting mining extraction as a development issue of priority. In contrast, Peru stands to be

adversely affected in the areas of water resource management as global climate change places further pressure on montane sources of glacial water supplies. Agricultural sustainability in high-altitude regions and sustained water supply to Lima is dependent on glacial run-off. Increased water competition factors from the extractive industry do not coincide with strategic environmental priorities in a climate changed world. Micro-finance to populations vulnerable to climate impacts is hardly compensatory for continued indirect capacity support to extractive industries that increase long-term vulnerability to climate change from water and supply-chain impacts. By indirectly subsidizing development interventions that support Canadian mining interests in their work abroad, CIDA has not fully considered the implications of this strategic sustainable economic growth project.

***Integrated Coastal Resource Management: \$7.3 million*** to restore coastal livelihoods in Indonesia with a focus on building social and ecological resilience in mangrove ecosystems. Some 86,000 natural resource-dependent people in 60 vulnerable communities in Indonesia to develop alternative livelihoods, sustainable aquaculture, small enterprises for fisheries and other natural resource products, women's leadership role and access to productive resources, and the capacity of local government and non-government stakeholders in coastal resource management.

*Partner: Oxfam Canada.*

Climate Adaptive Capacity Analysis:

- This is an excellent example of climate change adaptive capacity building in Canadian development cooperation.

***Municipal Governance 18.5 million*** over five years to the *Municipal Partners for Economic Development* to support local economic growth: development planning, political leadership, enhanced municipal services to businesses, and increased revenue generation or access to financing in up to 45 local governments in Vietnam, Cambodia, Mali, Burkina Faso, Tanzania, Nicaragua, and Bolivia. up to 15 demonstration projects will be undertaken to model municipal services in economic development. Technical assistance to local government associations will be provided to increase their capacity for policy development and political representation so that that national legislation, regulations, and policies are supportive of an increased local government role in economic development.

*Partner: Federation of Canadian Municipalities.*

Climate Adaptive Capacity Analysis:

This is an excellent example of how climate change adaptive capacity building could be supported by Canadian development cooperation. Increasingly Canadian municipalities are recognizing the importance of sustainability planning and sustainable local economic development in light of global climate change mitigation and adaptation imperatives and the Federation of Canadian Municipalities is widely recognized for its sustainability leadership. The federal government led Integrated Community Sustainability Planning (ICSP) and gas tax transfer agreement between Infrastructure Canada and provincial Infrastructure Secretariats provides a clear template and leadership example of how national government can encourage decentralized municipal approaches to planning for sustainability at the local level through a national taxation approach that expedites financial transfers (in Canada, from the excise taxes on gasoline) to boost planning capacity at the local level, in municipalities where it matters most (Phase One: 2005-2010). Unfortunately Phase Two of the ICSP and Gas Tax agreement between the federal government and provincial governments (2010-2014) has been undermined in its ability to fund sustained positions for sustainability planners at the municipal level (at least in Nova Scotia). Recent policy changes disallow gas tax funds from paying salaries to sustainability planners, despite there being a stated intention on the part of provincial and federal government officials to require municipalities to develop climate change mitigation and adaptation plans by 2014 in order to remain eligible for ongoing Gas Tax transfers. 'Competitiveness' and opportunities for municipalities to procure sustainability planning services on the open market seems a contrary direction to building human resources capacity at the municipal level to support sustainable economic growth and development processes. Regardless of the minutia of this observation, clearly this recent policy change was a lost opportunity to support Canadian domestic adaptive capacity through federal government funding initiatives. However, Canadian government support for 15 demonstration projects to model municipal services in economic development by providing technical assistance to local government associations thereby increasing their capacity for policy development and political representation and increased local government role in economic development, if done correctly with climate change mitigation and adaptation and building local adaptive capacity (including human resources) could very well provide a template that would provide a framework for sustainable economic growth to 45 municipal associations in Vietnam, Cambodia, Mali, Burkina Faso, Tanzania, Nicaragua, and Bolivia. CIDA's leadership on this project is an integral element in transferring Canadian policy approaches to support sustainability planning and economic development at the municipal level must include 'lessons-learned' in wide consideration of adaptation and development pathway choices that will support climate resilience at the local level, and the human resources required to sustain these investments in sustainability planning for sustainable growth.

*Growing businesses (millions)*

**20 – IFIs (IADB)****35.2 – NGO**

**20 million** to support business competitiveness in a Caribbean comprehensive regional private sector development technical assistance endeavor to strengthen the business enabling environment, and establishing a challenge fund to create business clusters of small businesses to help them compete more effectively in international markets. Administered by IADB.

**13.2 million** for agriculture production market development to 35,000 households in Mozambique, administered by Aga Khan Foundation

**10 million** small to medium sized enterprises development in Vietnam Partner: People's Committee of Soc Trang Province.

**\$12.1 million** in support for Benin's microfinance sector strengthen the capacity of microfinance professional associations Partner: Développement international Desjardins

**Climate Change Adaptive Capacity Analysis:**

Each one of these development interventions can support adaptive capacity by ensuring that climate change mitigation and adaptation variables are holistically integrated into the project development and implementation. Micro-finance, and sustainable economic growth is about building locally autonomous and self-sufficient entities, better capable of weathering the volatility of global markets and servicing local needs for sustainable energy (i.e. solar, wind), sustainable food and agriculture (local markets), sustainable water, sustainable transportation and sustainable infrastructure. Supporting capacity building to enable these climate-oriented activities, through development interventions must be exemplified through CIDA's implementation.

**Investing in people (millions)****NGO -21.5**

**\$15.7 million** to promote African grassroots economic security through education and skills in Ethiopia, Ghana, Mali, Senegal, and Tanzania basic education and sustainable livelihoods by reducing household poverty through access to microfinance systems and skills training for micro-entrepreneurship, the access of girls and marginalized children to quality basic education, and the provision of vocational and entrepreneurial skills for youth and women. Partner: Plan International Canada

**\$3.6 million** to skills training for youth employment Haiti and West Africa. Partner: Fondation Paul Gérin-Lajoie.

**\$2.2 million** to strengthen higher education stakeholder relations in Africa Association of African Universities (AAU). Up to 27 African universities will benefit as experts from Canadian universities work with African counterparts to improve university–industry linkages to work with external stakeholders, governments, private sector (with a focus on industry) and donors. Partner: Association of Universities and Colleges of Canada.

## **DATA ANNEX**

*Note to Reader: You will find enclosed with this Volume a CD-ROM containing the following data and resources that have been referenced throughout this thesis.*

### **Current UNFCCC Negotiation Texts**

Advance draft of a revised text to facilitate negotiations among Parties, to be issued as an official document (FCCC/AWGLCA/2010/8) for consideration at the eleventh session of the AWG-LCA, PDF only

AWG-LCA In-session draft texts and notes by the facilitators prepared at the twelfth session of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention, October 2010, PDF only

### **Adaptation Fund decision, COP-13, Bali, Indonesia 2007**

UNFCCC, AF decision, COP-13, 2007 PDF only

### **Adaptation Fund decision, COP-14, Poznan, Poland 2008**

UNFCCC, AF decision, COP-14, 2008 PDF only

### **Copenhagen Accord, COP-15, Copenhagen, Denmark 2009 & Copenhagen Outcomes**

UNFCCC, Copenhagen Accord, 2009 PDF only

Outcomes, COP-15, 2009 PDF only

### **CIDA Data Analysis Results**

Priority Themes, 2010

CIDA Report on Plans and Priorities (for the Period Ending March 31, 2010)

Sustainable Development Strategy (2004-2006)

Sustainable Development Strategy (2007-2009)

CIDA's Policy for Environmental Sustainability (January, 1992)

Canada Making A Difference In The World A Policy Statement On Strengthening Aid Effectiveness Canadian International Development Agency (September 2002)

Complete Case Study Data Results (2010)

Collated Baseline Data Analysis, DOC only

CIDA'S Climate Change Integration Tool for Policies, Plans and Programs (Croal, April 2010)