Layout and design by Operativ, Inc.
www.makeitoperativ.com

This book is printed on FSC certified, post-consumer recycled paper.
www.fsc.org

Photography by Wim Kok.
www.wimfoto.com

Table of Contents

1. Introduction

On October 6-7, 2005, the Governments of The Netherlands and Canada held a multi-stakeholder conference on "Innovation in Combating Climate Change." This conference was convened in Ottawa and preceded the 11th Meeting of the Conference of the Parties to the UN Framework Convention on Climate Change/1st Meeting of the Parties to the Kyoto Protocol, which the Government of Canada will host in Montreal, November 28-December 9th. This conference report summarizes the substantive issues that were addressed throughout the DC4 conference.

The origins

The Dutch-Canadian Climate Change Conference (DC4) stems from a desire by the Dutch and Canadian Governments to strengthen their bilateral relationship. This was most recently expressed in the 60th anniversary of the liberation of The Netherlands by the Canadians, as well as a 2003 joint declaration signed in New York by the Prime Ministers of both countries, which committed to strengthening bilateral cooperation on a range of socio-economic issues of common concern.

Our close relationship

The Dutch and Canadian Governments share a close relationship with historical roots stemming from Canada's liberation of The Netherlands during World War II. Ties between the two countries have grown over the years, fostered by shared values, trade and investment, educational and cultural exchanges, not to mention the regular celebration of the bond between our two countries. As such, the long-standing bilateral relationship provides a potentially good basis for the exchange of innovative approaches in combating climate change.

DC4 format

Five separate plenary sessions were convened over the two days of the DC4 Conference. The first and last plenary sessions (chaired by Como van Hellenberg Hubar, Dutch Ambassador to Canada and Jacques Bilodeau, Canada's Climate Change Ambassador) included keynote addresses by high-level government, private sector and NGO representatives from both The Netherlands and Canada (e.g. Canadian Foreign Affairs Minister Pierre Pettigrew, Canadian Environment Minister Stéphane Dion, Dutch State Secretary of the Environment Pieter van Geel, Dave Chomiak, Manitoba Minister of Energy, Science and Technology, Sheila Watt-Cloutier, President of the Inuit Circumpolar Conference and Hans Alders, former Dutch Environment Minister and Clive Mather, CEO of Shell Canada).

The three thematic panels

The three thematic panel sessions (moderated by The Honourable David Anderson, P.C., M.P., and former Environment Minister of Canada) which were convened between the opening and closing plenary sessions brought together Dutch and Canadian experts from government, the private sector and civil society to address the specific challenges related to the climate policy national responses, the development and use of economic and market-based mechanisms and technology innovation challenges for combating climate change.

Acknowledgements

This conference was made possible with the generous support

of both the Dutch and Canadian Governments. As well, support for the official conference dinner was provided by Shell Canada and Alcan Ltd. The DC4 Steering Committee, co-chaired by ourselves, and comprised of officials from both governments, together with the Royal Netherlands Embassy Economic Counselor Dirk Knook, his officer Hanneke Kal, and external consultant Johannah Bernstein, all worked tirelessly over the past five months to ensure the success of the conference. And finally, we wish to thank the participants and speakers who shared important insights and lessons learned in the climate policy challenge.

Important inputs for COP-11

Since the DC4 Conference was designed to address several of the key substantive challenges on the COP-11 agenda, we hope that the DC4 outcomes will provide constructive and instructive input for that important meeting, but will also serve to deepen our shared understanding of the challenges that lie ahead and prompt both our governments to improve their climate policy approaches in the critical path leading up to and beyond 2012.

In light of the 2003 joint declaration, we will look forward to future opportunities to share experience in the climate change, most notably in the area of technology innovation.

Karen Kraft Sloan Canadian Ambassador for the Environment
Co-Chair of the DC4 Steering Committee

Como van Hellenberg Hubar Netherlands Ambassador to Canada
Co-Chair of the DC4 Steering Committee

Conference Panel, Friday, October 7

Conference dinner at Chateau Laurier.

The Honourable David Anderson, P.C., M.P.; The Honourable Stéphane Dion, Minister of the Environment, M.P., Canada; Pieter van Geel, State Secretary of Housing, Spatial Planning and the Environment, Netherlands; Gertjan Storm, Netherlands Ambassador to Luxemburg

Jacques Bilodeau, Ambassador for Climate Change of Canada

2. Conference Programme

2. Programme

Day One Thursday, October 6, 2005

Coffee and Registration	"*Climate of Opinion*," a 15-minute video on climate change prepared for DG Environment's 2005 Green Week will be shown during the registration period and during all the other breaks.
Welcome and Overview of Conference Objectives	**Como van Hellenberg Hubar**, Ambassador of The Netherlands to Canada, Co-Chair of the **DC4** Steering Committee and Co-Chair of the **DC4** Conference (The Netherlands) **Ambassador Jacques Bilodeau**, Ambassador for Climate Change of Canada and Co-Chair of the **DC4** Conference (Canada)
Keynote Address One	**Sheila Watt-Cloutier** Chair, Inuit Circumpolar Conference (Canada)
Keynote Address Two	**The Honourable David Chomiak**, MLA Minister of Energy, Science and Technology of Manitoba (Canada)
Keynote Address Three	**Pieter van Geel** State Secretary for Housing, Spatial Planning and Environment of (The Netherlands)
Panel Response and Debate	**Moderated by Conference Co-Chairs** **Jim Fulton**, Executive-Director, David Suzuki Foundation (Canada) **Daniel Gagnier**, Senior Vice-President and CEO, Alcan Inc. and Chair of the International Institute of Sustainable Development (Canada) **Sible Schöne**, Climate Director, WWF-Nederlands (The Netherlands) **H.E. Philip Patric Smith**, High Commissioner for the Commonwealth of the Bahamas to Canada (Bahamas)
Audience discussion	**Moderated by Conference Co-Chairs**

Thematic Panel One Innovation in National Implementation and the Critical Path Forward	**Moderated by The Honourable David Anderson, P.C., M.P. (Canada)**
The Canadian Approach	**Alex Manson**, Acting Director-General, Climate Change Bureau, Environment Canada
The Dutch Approach	**Hans Bolscher**, Director, Climate Change and Industry, Ministry of Housing, Spatial Planning and the Environment (The Netherlands)
Private Sector Approaches	**Karen Lagendijk**, Manager, Green Portfolio, Nuon Energy Sourcing (The Netherlands) **Christian van Houtte**, CEO, Aluminium Association of Canada (Canada)
NGO Approaches	**Elisabeth May**, Sierra Club of Canada, Officer to the Order of Canada (Canada) **Hans Jager**, Climate Director, Stichting Natuur en Milieu (The Netherlands) **Annie Petsonk**, International Counsel, Environmental Defense Fund (United States)
Local Approaches	**Mary Jane Middelkoop**, Senior Policy Analyst, Federation of Canadian Municipalities (Canada) **Christian van Houtte**, CEO, Aluminium Association of Canada (Canada)
Panel and Audience Discussion	

Thematic Panel Two Putting the Market to Work	**Moderated by The Honourable David Anderson, P.C., M.P. (Canada)**
Opportunities for Strengthening the Global Carbon Market	**Andrei Marcu**, President and CEO, International Emissions Trading Association (IETA) (Canada)
Expectations and Challenges Ahead for Emission Trading	**Jos Delbeke**, DG Environment, European Commission (video statement) **Maurits Blanson Henkemans**, Manager, Dutch ET and JI Program, Ministry of Economic Affairs (The Netherlands) **Mike Beale**, Acting Director-General, Greenhouse Gas Reductions Directorate, Environment Canada (Canada) **Annemarie van der Rest**, Manager, SN-EA Shell Nederlands (The Netherlands)
CDM Lessons Learned and Future Challenges	**Sushma Gera**, President, CDM Executive Board and Director, Climate Change and Energy Division, Foreign Affairs Canada (Canada) **Lex de Jonge**, Head, CDM Division, Ministry of Housing, Spatial Planning and the Environment (The Netherlands) **Ken Newcombe**, Director of the Prototype Carbon Fund, World Bank
Panel and Audience Discussion	

2. Programme

Day Two Friday, October 7, 2005

Keynote Addresses	**The Honourable Pierre Pettigrew**, P.C., M.P. Minister of Foreign Affairs (Canada) **Hans Alders**, Queen's Commissioner and former Minister, Housing, Spatial Planning and the Environment (The Netherlands) **Clive Mather**, President and CEO, Shell Canada
Thematic Panel Three Business Opportunities in Technology Innovation	**Moderated by The Honourable David Anderson, P.C., M.P. (Canada)**
The State of Climate-Friendly Technology and Future Challenges	**Richard Bradley**, Division Head, Energy Efficiency and Environment, International Energy Agency, OECD
Generating New Innovation Opportunities	**Hugo Brouwer**, Director, Project Energy Transition, Ministry of Economic Affairs (The Netherlands) **Graham Campbell**, Director-General, Office of Energy R&D, Natural Resources Canada (Canada)
Strengthening Competitive Advantage in a Carbon Constrained World	**Vicky J. Sharpe**, President, Sustainable Development Technology Canada (SDTC) (Canada) **Mr. Albert Moens**, Executive Board, Province of North Holland (The Netherlands)
Panel and Audience Discussion	
Conference Co-Chairs' Summary	**Como van Hellenberg Hubar**, Ambassador of The Netherlands to Canada, Co-Chair of the **DC4** Steering Committee and Co-Chair of the **DC4** Conference **Ambassador Jacques Bilodeau**, Ambassador for Climate Change of Canada and Co-Chair of the **DC4** Conference

3. DC4 Discussion Paper

Conference Overview

This discussion paper provides an overview of the substantive issues and the concrete questions that will be addressed throughout the conference.

Global warming challenge

Rarely a day passes without an important lead news story in the international and national media describing how the long-term consequences of climate change are now manifesting in the immediate present. Hurricane Katrina is but the most recent in a devastating onslaught of possibly climate change-related natural disasters that have occurred this summer. Recently, UNEP's Executive-Director Klaus Toepfer stated in the Financial Times that the forest fires in southern Europe, the floods in parts of central Europe are signs that climate change is already occurring. And in late August the Guardian Weekly reported that atmospheric scientists are now warning that a vast expanse of western Siberia is undergoing an unprecedented thaw that may dramatically increase the rate of global warming.

Importance of COP-11

These recent events will no doubt provide a renewed sense of urgency as the international political community comes together this November at the "Montreal Conference on Climate Change". The Montreal Conference is a major stage in a long process that began with the signing of the United Nations Climate Change Convention at the 1992 Earth Summit and which culminated most recently with this year's entry into force of the Kyoto Protocol. One of the main aims of the Montreal Conference will be to begin the process of developing a new global climate change agreement for the period beyond 2012 (the point at which the current Kyoto Protocol targets expire).

Strengthening Kyoto

The Kyoto Protocol presently sets reduction levels at 5% for industrialised and transition economies up until 2012. However, far deeper reductions in global greenhouse gas emissions are seen as essential in order to avoid the dangerous environmental, economic and social impacts of climate change.

A new approach needed

While industrialised countries have taken the lead in reducing emissions, broader and more inclusive efforts need to be taken if climate change is to be addressed over the longer term. A more global approach is critical since reductions in carbon dioxide emissions in the atmosphere can only be achieved, if they are undertaken globally. The challenge is made even more difficult in light of the fact that carbon dioxide has an extremely long life span, lingering in the atmosphere for hundreds of years.

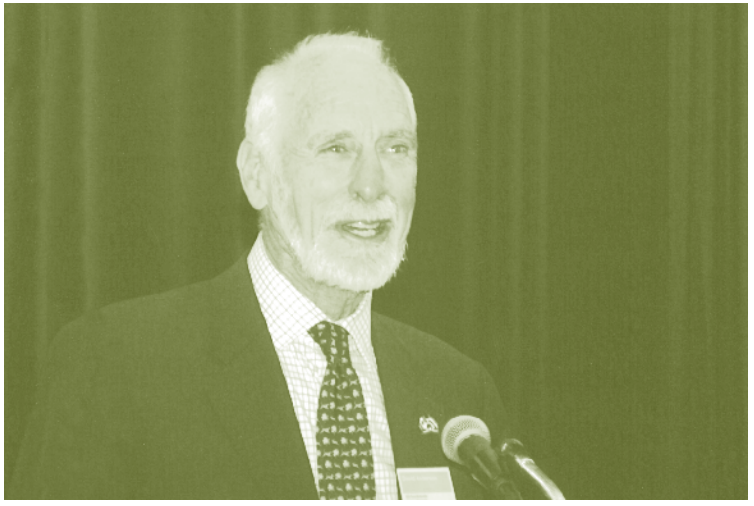
The reduction gaps

While consensus is developing within the scientific community regarding the factors contributing to global warming, the reality on the ground is that there is a considerable gap between the scale of reductions called for by climate scientists and the target levels that are contained in the Kyoto Protocol.

The urgency

There is also a considerable disparity in terms of the pace of response that is needed. The United States National Academy of Sciences has warned that climate change may only be gradual in the same way as the slowly increasing pressure of a finger on a light switch. When it flips, the result is revolutionary and not incremental. With industrialised countries finding it a challenge to meet their Kyoto Protocol targets, international efforts will have to be considerably broadened to fight a global battle that is no longer imminent, but one that is now staring us boldly in the face.

Como van Hellenberg Hubar, Ambassador, Royal Netherlands Embassy



The Honourable David Anderson, P.C., M.P., Canada

3. Discussion Paper

The Dutch Canadian Conference on Climate Change (DC4) has the following overarching goals:

1. To share concrete experience between the Dutch and Canadian Governments, the private sector and major group actors regarding climate policy implementation to date, and to highlight important lessons from the implementation challenges, which can be instructive for both sides in strengthening climate policy in the period leading up to and beyond 2012.
2. To examine specific experiences regarding the development and use of market instruments to reduce greenhouse gas emissions such as emissions trading and the Clean Development Mechanism, and as well, to explore how best to enhance the development and transfer of climate-friendly technologies.
3. To explore possible approaches for strengthening bilateral cooperation between the Governments of The Netherlands and Canada - leading up to and beyond the post-2012 period and to examine how joint efforts might contribute towards the overall strengthening of international cooperation on climate change in the longer-term.
4. To strengthen public-private partnerships between the Dutch and Canadian Governments, civil society, and the private sector, especially those corporate enterprises, which have demonstrated leadership and innovation in the reduction of greenhouse gas reductions.

Theme One

National Approaches in Climate Policy Implementation

The Canadian approach

Canada was one of the first countries to sign the Kyoto Protocol in1998 and ratified it in 2002. The Canadian Government issued its new climate change plan, "Moving Forward on Climate Change: A Plan for Honouring our Kyoto Commitment" in April 2005 following the entry into force of the Kyoto Protocol. The new Plan builds on Action Plan 2000 and the "2002 Climate Change Plan for Canada".

Canada's climate change plan

Canada's new Climate Change Plan is a major element of Project Green – a national project to improve environmental protection, preserve our natural capital while at the same time strengthening the economy through the combined efforts of all levels of government, the scientific community, business, NGOs and the general public. The approaches outlined in the plan, with an associated federal investment in the range of $10 billion through 2012, aim at reducing greenhouse gas emissions by 270 megatonnes per year from 2008 to 2012, the Kyoto commitment period. Canada's Climate Change Plan includes measures to create new market mechanisms, tax measures and incentives for private sector innovation and consumer action.

Canada's approach for large emitters

The first measure is aimed at reducing emissions from large industrial sources: the system for Large Final Emitters sets regulated emissions intensity improvement targets for facilities in the oil and gas, thermal power, mining and manufacturing sectors. In addition, there is an initiative to reduce emissions from vehicles: through an agreement reached with the Government of Canada, automakers have pledged to reduce greenhouse gas emissions from vehicles in Canada by 5.3 Mt in 2010, through actions such as improving the fuel efficiency of vehicles, making improvements in advanced vehicle emissions and diesel technology, and producing more alternative fuel and hybrid vehicles.

Canada's Offset System

The third element of the Plan involves tapping the emission reduction potential in all sectors of the Canadian economy. The Offset System will issue credits for verified reductions across Canada's economy. The Climate Fund will put a value on these by purchasing credits as well as investing in internationally recognized emissions reductions where they advance sustainable development in developing countries.

> "Increasing the awareness and engagement of Canadians will help to create a generation that understands and embraces sustainability."

Canada's Partnership Fund

Together, through the Partnership Fund, the Federal Government, the provinces and the territories will foster the

deployment of strategic new technologies and infrastructure projects and develop key national strategies in areas such as energy conservation. In order to help Canadian businesses and individuals diversify their energy sources and reduce their reliance on fossil fuels where appropriate, the Plan includes expanded incentives to increase production of renewable energy and to position our renewable energy industries in growing international markets.

Canada's One-Tonne Challenge

Increasing the awareness and engagement of Canadians will help to create a generation that understands and embraces sustainability. Programs such as the One-Tonne Challenge and Energuide for Houses Retrofit Incentive will provide citizens with the tools they need to do their part. The Government of Canada itself will strive to lead by example by greening its operations, with the cutting of emissions from its facilities, the construction of buildings with high environmental standards, the use of energy-efficient vehicles, and the purchase of 20% of its electricity from renewable sources by 2010.

The Dutch approach

The Netherlands was one of the first governments to take concrete steps to reduce its greenhouse gas emissions under the Kyoto Protocol, long before it actually entered into force this year. As well, The Netherlands was one of the first countries to use the Kyoto Protocol project mechanisms. Most recently, the Dutch Government, together with the International Finance Corporation of the World Bank signed two emission reduction purchase agreements worth more than $20 million to purchase greenhouse gas emission reductions from renewable energy projects in Brazil and India. The sale of these carbon credits will take place under the Kyoto Protocol's Clean Development Mechanism.

Dutch carbon tax

On the domestic front, carbon taxes have been an important mechanism for reducing small-scale energy consumption in The Netherlands. Since its introduction in 1996, the tax on gas and electricity prices paid by households and small businesses has been steadily increased each year, encouraging energy conservation and improving the market position of renewable energy.

Dutch Benchmarking Covenant

Another important track in the Dutch approach has been to work closely with large energy-consuming companies. Under the Dutch Benchmarking Covenant, signed by the national government, the provincial governments and large industrial and energy companies, these firms have committed themselves to becoming the most energy efficient in the world by 2012. Most of these companies also participate in the CO_2 emissions trading scheme launched in the European Union this year. About half of The Netherlands' CO_2 emissions are covered by the emissions trading scheme.

Dutch lessons

One of the key lessons that have been learned in The Netherlands is that the development of climate-friendly low emission technologies makes excellent business sense. There is no question that demand for these technologies will grow in an increasingly carbon-constrained world. Thus, the so-called "first movers" who capture the market share now, may gain an enormous competitive edge in the medium and long-term.

Dutch energy companies' successes

Dutch energy companies such as Shell and Essent and firms elsewhere in the world, most notably the UK's BP are at the leading edge of energy efficiency and emissions reductions and yet they have managed to maintain share value and long-term economic competitiveness. BP for example, found that it was able to reduce emissions by 10% below its 1990 levels, not only without any additional cost, but also with an increase of $650 million in shareholder value. What unites these energy companies is the belief that making fundamental shifts in recognising that climate change policy is not simply an issue of good corporate responsibility, it is a central strategic concern that will shift and shape markets with massive potential to impact shareholder value.

Como van Hellenberg Hubar, Ambassador, Royal Netherlands Embassy; Marjanne de Kwaasteniet, Ministry of Foreign Affairs Netherlands; Hans Alders, Queen's Commisionner, Province of Groningen, Netherlands

Theme Two

Putting the Global Carbon Market to Work

The importance of Kyoto

The Kyoto greenhouse gas reduction commitments up until 2012 are a first step but not sufficient in themselves to deal with the growing challenge of climate change. The international community now has a set of global rules, together with a range of implementation mechanisms, such as joint implementation, emissions trading, and the Clean Development Mechanism, all of which establish a framework for managing emissions.

Emissions trading

One of the most important elements of this new framework has been the establishment of emission trading schemes. These schemes have led to the creation of a global carbon market, whose value is now estimated at $10 billion US/year. The European Union's new emissions trading scheme is the only formalised regime currently in place. It gives GHG reduction a higher price and stimulates investment in reduction efforts. Although the EU scheme is only less than a year-old, already trading in carbon dioxide emissions has grown in liquidity and complexity well beyond initial expectations. One of the key insights gained from the EU scheme is that the success of trading in reducing emissions depends on the long-term durability of the carbon market. It is felt that the only way of achieving this goal is by tightening mandatory caps on permissible emissions. Mandatory caps would make carbon dioxide emissions scarcer and more valuable, thereby providing important incentives for businesses to control emissions. Emissions trading holds considerable promise for addressing the climate change challenge. It establishes a price for carbon and catalyses huge capital flows into climate friendly investments, which will be essential for developing carbon-free energy systems in the coming years.

> "The international community now has a set of global rules, which establish a framework for managing emissions."

The CDM

As regards the Clean Development Mechanism (CDM), there are a growing array of concerns regarding its early performance. The CDM allows countries with emission targets to buy emission credits from projects in developing countries in which developed countries or their firms have invested. The CDM has two basic objectives, namely to assist developing countries in achieving sustainable development, and secondly, to enable Annex I countries to acquire Certified Emission Reductions (CERs) from CDM project activities undertaken in developing countries and to count them towards their Kyoto targets. There is considerable criticism that the process leading up to the registration of a project and the issuance of CERs has become too complex and costly. As well, there are complaints that many CDM energy efficiency and renewables projects in host countries are not sufficiently competitive in the CDM market.

Theme Three

Stimulating Technology Innovation

The Consumption Challenge

It took the world 135 years to consume the first trillion barrels of oil. However, it is expected to consume the next trillion in less than 30 years. Given the world's rising demand for energy, substantial changes in how the world produces and uses energy are a high priority. Efficiency improvements are an important part of the climate change response, however they will not be enough. In addition, efforts must be directed towards transforming the current fossil fuels-intensive energy system into one that is based on low-carbon fuels and carbon-free energy sources.

Push and pull strategies

This essential transition will require a massive infusion of technological innovation and ingenuity. It will also require a so-called push and pull approach. "Pulling" technological change requires pricing fossil fuels to reflect their true external costs. "Pushing" technological change requires greater investment in climate-friendly technologies.

The innovation challenges

Part of the challenge related to technology development is that, on one hand, many climate technologies currently do exist, but their uptake has not yet been economically encouraged. In this light, additional resources are therefore needed to ensure that the technologies that do exist are ready and able to penetrate the actual market. On the other hand, it must be recognised that many important climate-friendly technology solutions, such as clean coal, still require considerable research and development and as such, are nowhere near the point of being ready to be deployed. Another challenge related to the technology innovation agenda is the importance of ensuring fair and equitable transfer of climate-friendly technologies to those countries who need them most. This is particularly problematic in light of the fact that the patents for many climate technologies are held by the private sector. Therefore, governments must implement the necessary incentive measures to stimulate the private sector accordingly.

New energy choices

Besides the significant levels of innovation needed at the macro-level, at the micro-scale, individuals and societies will have to make new energy choices. Here, governments also have an important role in motivating us to make sustainable energy choices. At the same time, individuals must recognise how their own energy choices not only impact the physical environment around them, but also constrain the ability of the world's poor to meet their most basic energy needs.

The Challenges for Kyoto and Beyond

The importance of DC4

The timing of the Dutch-Canadian Conference presents a strategically important opportunity to transmit concrete experiences into the Montreal Climate Conference as it embarks on the process of developing a new international framework for addressing climate change from 2013 onwards.

The Montreal Climate Conference needs to address a number of critical challenges. First, it must re-establish the urgency in dealing with what Sir David King, the UK Chief Scientist, calls it "the greatest challenge facing the world in the 21st century, a threat even greater than terrorism".

Strengthened response needed

While the Kyoto Protocol has been an important impulse to action in the battle against climate change, the international community must acknowledge that the climate change action to date has not been sufficient. The margins are increasingly limited. For example, the European Union has set itself the goal of ensuring that the average global temperature does not rise more than two degrees Celsius above the pre-industrial level. While only a limited rise in temperature, this target can only be met if the world reduces greenhouse gases in the atmosphere globally by up to 50% in 2050 compared with 1990 levels.

Political world challenges

Mobilising the political will among industrialised nations to agree to the Kyoto Protocol targets was an immense challenge that consumed several years of negotiating time and even more years thereafter in the ratification process. Moving to even deeper reductions will require nothing a major shift in the political dynamics, which currently dominate the climate change negotiations. Nevertheless, the international community must find solutions for the challenges of climate change, combining both push and pull strategies to induce technological change. At the same time, the international community must address other key interests of countries, such as development, energy security and air pollution, which have a bearing on climate change. The Montreal Conference must also help to build bridges by renewing the willingness of the international community to move beyond the current differences of opinion, which mark the political debate.

The equity challenge

On this particular note, the international political community faces the daunting challenge of creating "equity in the greenhouse". Developed countries will most likely be able to deal with rising sea levels in the next few decades. Indeed, most cities in The Netherlands already have state-of-the-art defences to hold back surging waters. But the developing world will fare much worse since they are less adaptive and are already struggling at the so-called climatic margin. Levelling the playing field in this context will require a truly global

political framework that allocates the burden of responsibility fairly and equitably. It will also require considerable technology support to enable developing countries to improve energy efficiency, reduce their own growing emissions, and ultimately leapfrog into the low-carbon future.

Engaging other large emitting nations

Besides focusing on the role of developing countries, the international community must consider the post-2012 period efforts that will also be needed to encourage the participation of other developed country greenhouse gas emitters, especially the US and Australia. These countries have decided not to ratify the Kyoto Protocol, nevertheless, they must be encouraged to undertake comparable efforts to those of other industrialised nations.

Responding to the impact

Equipped with increasingly sophisticated computer modelling tools, the scientific community can now predict with greater precision the "tipping points" – delicate thresholds where a slight rise in the Earth's temperature can cause a significant change in the environment that itself triggers a greater increase in global temperature. However the continuing progress in climate science has yet to be matched in scale and scope in the political arena. Perhaps the most critical challenge facing the international political community in this new millennium, is how it will in fact match the emerging scientific consensus with the necessary level of political will, collective action and resources to preserve a stable and secure climate for the 21st century.

"While the Kyoto Protocol has been an important impulse to action in the battle against climate change, the international community must acknowledge that the climate change action to date has not been sufficient."

The leadership challenge

It is time to act beyond short-term national self-interests and demonstrate responsible and principled global leadership. The global warming consequences are undisputable. The solutions to mitigate the impacts and to provide the world with a better chance of survival are within reach. The window of opportunity is beginning to close.

See Appendix A (pg 112) for References

Johannah Bernstein and Hanneke Kal, DC4 Conference Project Team

Response from the audience to the panel discussions.

Maurits Blanson Henkemans, Ministry of Economic Affairs, The Netherlands

4. Chair's Summary

1. Overarching Challenges for Improving the Climate Regime

The level of response needed

There is no past experience of a global society having to respond to an environmental threat so immense as the one we face from global warming. We need a level of response that is commensurate with the effort that both our countries undertook in face of the Second World War. We have been far too modest in describing the problem of climate change and in particular, in understanding how our global security is so closely linked to global warming.

We must be more convincing and more proactive in confronting the reality of how we make the shift to a carbon-constrained future. At the same time, radical reductions in energy consumption and corresponding GHG emission levels are essential if we are to avert the disastrous ecological, economic and social consequences, which will result from anything above a 2-degree Celsius increase in global temperatures.

The new focus

The focus of climate change policy in the coming years will have to be on the reduction of fossil fuel use. At the same time, we must recognise that fossil fuels will continue be the dominant energy source, therefore efforts must focus increasingly on enhancing energy efficiency and carbon capture and sequestration measures.

The linkages between climate policy and other sectors must be highlighted and strengthened. Most importantly however, the international community must deepen its understanding and strengthen its resolve to redress the enormous social impacts of climate change, and in particular the human rights impacts experienced by those local communities around the world whose livelihoods and survival are directly at stake.

As well, the international community must highlight the security dimension related to climate change, both in terms of the increasingly tenuous security of energy supply and the related implications for peace and security in politically unstable oil producing regions of the world.

Climate policy cannot be developed in a "one-size-fits" all manner. There are so many regional, national, and local concerns and considerations that must be addressed in properly adapting climate policy to ensure optimal effectiveness.

The need for regulatory certainty

There is no question that greater regulatory certainty is critical to keep the investment community on side. Indeed, a considerably strengthened regulatory framework is absolutely key if we are to achieve the necessary level of reductions that have been identified as essential to averting even more climate-related disasters.

However, certain industrial sectors assert that the current system is too heavy and complex and that it is not sufficiently "user-friendly". Nevertheless, the private sector is increasingly calling for increased regulatory certainty and convergence between regulatory frameworks and investment cycles—especially in light of the fact that energy-related investment deci-

sions taken now have important consequences that extend over 50-year time periods.

Kyoto omissions

We also need to address the current omissions of the Kyoto regime, notably the fact that it does not cover the single source of emissions that are generated in developing countries, namely the emissions from tropical deforestation.

Engage key actors

At the political level, we must do better at engaging the US and the emerging economies such as India and China in the current Kyoto regime, not to mention whatever new regime will be developed for the post-2012 period. As regards the US, it is clear that they will continue to oppose absolute emission caps, therefore, the international community must explore how to convince the US to accept instead the 2 degree Celsius target and to agree to take measures to ensure that temperature increases do not exceed that target.

Additionally, emissions trading is one of the most likely mechanisms to bring the US on board and efforts must be directed towards linking existing emissions trading regimes around the world, especially those which are currently in place at the sub-national level in the United States.

As regards China and India, it is clear that the coal will be the dominant fuel source in their energy mix, therefore international efforts must be directed towards stepping up the development of clean coal technology and ensuring that new climate-friendly technologies in the coal sector are quickly transferred to the big developing country emitters.

Daniel Gagnier, Vice President, Alcan Inc., Canada

2. The Challenges for Strengthening Implementation

Deep reductions

The primary challenge for improving implementation will be to ensure the deep level of reductions that are needed to achieve the ultimate environmental aim of averting the disastrous consequences of climate change, which are now manifesting themselves in the present.

Framework for the new regime

A judicious mix of market-based approaches (combined with strengthened regulatory frameworks) will be critical to the challenge, however their impact lies in large part in the creation of the necessary incentives to ensure their use, and in their continuing improvement to ensure their ultimate effectiveness. At the same time, the regime must be socially equitable and this means that as between countries, greater efforts are needed to ensure the necessary transfer of technology and know-how.

Strengthening market mechanisms

It is important to recognise that we have a set of market mechanisms that are neither sufficiently mature nor fungible. Many of these mechanisms do not function effectively, and if we are to be serious about making them work and in driving innovation, then we will have to ensure that they are more robust and user-friendly.

At the same time, we have learned that emission trade has been important for setting a clear cap for industry. But more must be done to strengthen and link existing emission trading regimes around the world. Indeed, the global carbon market will stand or fall depending on the success of the Clean Development Mechanism. The current reality is that problems aside, the CDM has considerable untapped potential, especially in face of the fact that there are over 50 million tonnes of GHG ready to be introduced into the global market.

Market-based approaches must be accompanied by capture and storage as well as adaptation strategies, which must be based on an agreed level of "acceptable" global warming (i.e. under 2 degrees Celsius).

Another element for improving implementation must include the development of clear national energy frameworks with energy market reform plans and energy efficiency targets.

The resource challenge

The mobilisation of the necessary level of financial and fiscal resources should be directed towards steering climate friendly activities in all sectors. Carbon finance must be improved for developing countries and here the World Bank has a leadership role to play in stimulating investment and finance communities around the world.

The investment challenge

The development of a clear regulatory framework is however critical to stimulating the investment climate. Investment cycles are extremely long and must be considered in the

development of both climate and fiscal policy. Investors are making decisions now that will extend over a 50-year life span, therefore the investment community needs to know now what the post-2012 framework will actually look like. It is important to consider that if by 2009, the international community cannot provide at least an overview of what the new post-2012 framework will look like, then we will lose the investment community and investments simply will not be made.

CDM challenges

At the same time, if the CDM has not been sufficiently strengthened for the 2012 period, future emission credits are at risk and this will certainly impede the development of new energy efficiency projects.

Important lessons

There is much that both of our governments can and must do to strengthen market mechanisms. For example, the Dutch approach in achieving green tax reform with a shift in the tax base from labour to energy consumption — is particularly insightful and should be examined closely by Canada.

The Dutch experience with benchmarking should also be considered for further development in Canada as it embarks on a new plan to bring large emitters on side.

Sectoral agreements should also be explored, especially as a vehicle for bringing developing countries on side.

As well, new implementation approaches must address the transport sector, which has been a “free-rider” in the current Kyoto regime.

The Honourable David Chomiak, MLA, Minister of Energy, Science and Technology of Manitoba; Pieter van Geel, State Secretary for Housing, Spatial Planning and the Environment of The Netherlands

3. The Challenges for Stimulating Technology Innovation

The technology challenge

Technology innovation must be a critical part of the overall strategy for meeting Kyoto targets. Staying within the 2-degree Celsius "target" will necessitate a level of technological innovation that will have to match the ingenuity that originally catalysed the industrial revolution.

Technology penetration

When we consider how we will meet the 60-80% reduction targets by 2050, it is important to acknowledge that many of the necessary technologies needed for that challenge do currently exist. The main challenges are to ensure that they are properly adapted, that they are able to penetrate the market effectively and efficiently, and that they are transferred on fair and equitable terms to those developing countries, which are positioned to outpace Annex I countries in terms of emission levels.

Resources for technology

However, the technology innovation breakthrough will not happen without a massive infusion of investment. This is why we need a long-term plan to inform the investment community and to ensure that the necessary investment climate is sufficiently conducive to meeting the technology challenge.

We must change government spending priorities on research and development. Government spending in energy research and development is falling precisely at a time when we need unprecedented rates of innovation.

Developing country needs

Another important challenge is that we are not as well informed as we should be on the receptive capacity of developing countries in terms of technology implementation. At the same time, we must ensure that poverty eradication efforts are focused in large part on improving energy access for the world's energy poor, while at the same time assisting developing countries to make the necessary changes in the capital structure of their energy sectors.

The transformation challenge

We need to focus on a radical transformation of fossil fuel use rather than on a mere transition to low carbon fuels. This is particularly important in light of the reality that fossil fuels will continue to be the dominant source of energy in the next 25 years.

Get the pricing right

Getting the pricing right is a critical part of supporting the technology innovation imperative. When the price of oil reaches $75 per barrel, renewable energy sources will become profitable. However, dismantling perverse subsidies in the fossil fuel sector must be accompanied by positive incentives to expedite the development of alternative fuel sources.

Compressing timelines

At the same time, it is important to note that the historical way in which technology has been developed and diffused over time must change significantly. We must compress the overall timeframe in which the overall technology development chain unfolds.

4. The Challenges for Strengthening Bilateral Cooperation

Relevance of DC4 to COP-11

Since the DC4 Conference has addressed two of the six elements that Canadian Environment Minister Stéphane Dion has proposed for a possible COP-11 Declaration (i.e. strengthening market mechanisms and enhancing climate technology development, deployment and diffusion)- we do believe that the DC4 outcomes that have addressed these important issues could provide constructive and instructive input for COP-11.

Lessons exchanged

Important lessons have been exchanged in terms of our similarities and our differences, in terms of what climate policy approaches have worked, which have not, how we cope with new and emerging climate-related problems and how we implement and will set about strengthening the Kyoto mechanisms.

Areas of common concern

The specific issues of common interest and concern to be further explored in terms of stepping up bilateral cooperation include: linking emission trading schemes, the experience with fixed versus variable emission caps, the importance of addressing the transport sector more effectively; the aviation industry imperative; the need to improve capture and storage approaches; green tax reform; energy efficiency agreements with industry; the development of sectoral agreements; progressive standards for building, plants and consumer products; the further integration of industrial and environmental policy; strategies for enhancing the use of renewable energy sources; and finally, public awareness raising and coalition building.

Influence in COP-11

COP-11 presents an historic opportunity for developing countries to leapfrog into the low-carbon future. Canada and The Netherlands should seize this opportunity and ground future bilateral cooperation in the common cause of exercising its common but differentiated responsibilities and in particular, in supporting developing countries in responding to their climate policy challenges.

More specifically, Canada and The Netherlands will examine which of the DC4 outcomes could best support the ongoing preparations for and ultimate success of COP-11, and as well, which could complement the informal discussions, which have been raised in domestic and international discussions (such as the Greenland Dialogue hosted by the Government of Denmark as well as last month's week's Ministerial Roundtable hosted by the Government of Canada).

The cooperation imperative

At the end of the day, if we go anywhere in the post-2012 period, we must literally "get our act together". We need to achieve a greater degree of regulatory consistency, we need market mechanisms that send the right price signals and we need a more robust global framework that not only sets out more ambitious reduction targets, but as well, which strengthens existing implementation mechanisms such as emissions trading, joint implementation and the Clean Development Mechanism. This is an immense challenge, however bilateral cooperation between our two governments will serve as an important impetus for COP-11.

The Honourable David Chomiak, MLA, Minister of Energy, Science and Technology of Manitoba, Canada

Marjanne de Kwaasteniet, Head of Economic & Environmental Affairs Department, Ministry of Foreign Affairs, The Netherlands; Dirk Knook, Counsellor, Royal Netherlands Embassy, Ottawa

Alex Manson, Acting Director General, Climate Change Bureau, Environment Canada

Graham Campbell, Director General, Office of Energy R&D, Natural Resources Canada

5. Conference Report

Executive Summary

The DC4 Conference

On October 6-7, 2005, the Governments of The Netherlands and Canada held a multi-stakeholder conference on "Innovation in Combating Climate Change". This conference was convened in Ottawa and preceded the 11th Meeting of the Conference of the Parties to the UN Framework Convention on Climate Change/ 1st Meeting of the Parties to the Kyoto Protocol, which the Government of Canada will host in Montreal, November 28-December 9th. This executive summary provides an overview of the main issues and conclusions that were raised in the two-day conference.

The DC4 format

Five separate plenary sessions were convened over the two days of the DC4 Conference. The first and last plenary sessions (chaired by Como van Hellenberg Hubar, Dutch Ambassador to Canada and Jacques Bilodeau, Canada's Climate Change Ambassador) included keynote addresses by high-level government, private sector and NGO representatives from both The Netherlands and Canada (e.g. Canadian Foreign Affairs Minister Pierre Pettigrew, Canadian Environment Minister Stéphane Dion, Dutch State Secretary of the Environment Pieter van Geel, Dave Chomiak, Manitoba Minister of Energy, Science and Technology, Sheila Watt-Cloutier, President of the Inuit Circumpolar Conference and Hans Alders, former Dutch Environment Minister and Clive Mather, CEO of Shell Canada).

The three thematic panel sessions

The three thematic panel sessions (moderated by The Honourable David Anderson, P.C., M.P., and former Environment Minister of Canada) were convened between the opening and closing plenary sessions. The panel sessions brought together Dutch and Canadian experts from government, the private sector and civil society to address the specific challenges related to the climate policy national responses, the development and use of economic and market-based mechanisms and technology innovation challenges for combating climate change.

Section One of the final report is entitled "Introduction". It provides an overview of the objectives and genesis of the Conference.

Overarching challenges

Section Two of the final report is entitled " Overarching challenges for climate policy". It provides an overview of the key issues that were raised in the opening and closing plenaries. The main observations and conclusions are summarised around four clusters: the climate change impacts; lessons learned in climate policy implementation; the broader political challenges; and specific challenges for COP-11.

The impacts

As regards the evolving scientific understanding of the climate change impacts, it is important to note recent studies such as the 2004 Arctic Climate Impact Assessment and the recently commissioned report by NASA. Of particular importance are the impacts that have already led to dangerous anthropogenic interference with the climate system for Arctic communities and small island developing countries around the world. However, the impacts of climate change on the Arctic are not just dangerous for the Inuit. Climate change consequences in the Arctic will have consequences for the rest of the planet. For example, the melting glaciers of the Arctic and the melting of the Greenland Ice Sheet could cause catastrophic interference with major ocean currents, leading to even greater levels of sea-level rise than have been predicted in the past.

Sheila Watt Cloutier, Chair Inuit Circumpolar Conference, Canada

Implementation lessons

Central among the common lessons learned in climate policy implementation include the following:

- The focus of climate change policy in the coming years will have to be on the prevention of dangerous levels of climate interference and this can only be achieved by deep reductions of GHG emissions.
- Since fossil fuels will continue be the dominant energy source efforts must focus increasingly on enhancing energy efficiency and carbon capture and sequestration measures.
- Conventional approaches to environmental policy-making have had limited success in combating climate change. Environmental policy must be firmly anchored in a sustainable development framework if we are to bring about the necessary level of reductions.
- New forms of partnership and cooperation with the main economic actors, the knowledge creation institutes and major groups.
- Public outreach and awareness-raising must improve considerably since climate change is declining as a front-line issue.
- The political community has been far too modest

in describing the problem of climate change and greater efforts are needed to demonstrate how climate change is linked directly with global security, human health, social development, energy security and economic competitiveness.
- While market and fiscal reforms are important, there is no question that greater regulatory certainty is critical to keep the investment community on side.
- A shared gap in climate policy approaches has been the limited attention to the transport and aviation sectors. Even if major reduction efforts were achieved in all the main GHG emitting sectors, the emissions produced by the aviation sector alone would offset these gains.

Overarching political challenges

The key overarching political challenges that were identified include the following:

- It is critical to scale up the level of political response needed and to re-energise multilateralism in order to promote a greater sense of collective responsibility.
- The overall timeframe for solving the climate change problem must be shortened since the problem must be solved within the next 40 to 50 years.
- Since the world's dependence on fossil fuels will not diminish and since fossil fuels will have a dominant role in the global fuel mix until the middle of this century, it will take tremendous political courage to implement the necessary fiscal instruments and policy directives to give renewable energy sources a fighting chance.
- Another key political challenge in terms of the deep reduction imperative will be to position both industrialised nations as well as emerging economies to compete in a carbon-constrained world.
- Greater efforts will be needed to engage the US and the emerging economies such as India and China in the current Kyoto regime, not to mention whatever new regime will be developed for the post-2012 period.
- As regards the US, it is clear that they will continue to oppose absolute emission caps, therefore, the international community must explore how to convince the US to accept instead the EU-proposed 2 degree Celsius target.
- Greater efforts are needed to convince the major emitting nations that the time for action is indeed right now and not at some undefined moment in the future.
- The post-2012 global framework must have at least the following elements: deep reductions to avoid

"Important decisions must be taken in order to operationalise implementation of the Kyoto Protocol."

the occurrence of even more dangerous climate-related consequences; inclusion of all greenhouse gases; economic and environmental viability; more robust market mechanisms to provide incentives for developing countries; integration of poverty eradication and social equity considerations; emphasis on developed countries to continue taking the lead but with greater attention to the need to differentiate responsibilities; agreement on global warming levels to ensure the effective design of adaptation policies; clear energy policy frameworks; the necessary level of financial and technological resources to support the transition to low and carbon free fuel energy systems.

As regards the specific challenges for COP-11, important decisions must be taken in order to operationalise implementation of the Kyoto Protocol. These include ratifying the Marrakech Accords (the detailed international rules that are at the heart of the Protocol) as well as setting up the implementation machinery, such as the Supervisory Board for Joint Implementation. At the same time, COP-11 will also have to explore options for post-2012 GHG reduction targets, including the second commitment period and beyond to 2050-2080 — in keeping with the objectives aimed at stabilizing concentrations of greenhouse gases in the atmosphere and minimising temperature increases.

COP-11 objectives

As host of COP-11, the Government of Canada has identified the following six key objectives to frame the new international agreement for the post-2012 period.

- Ensure broader participation with fair goals, including all industrialised and key emerging economies.
- Generate outcomes that will result in real progress over the longer-term.
- Provide incentives to invest in developing and sharing transformative environmental technologies to reduce emissions at home and abroad.
- Maximise the deployment of existing clean climate technologies.
- Support a streamlined and efficient global carbon market.
- Address adaptation as well as mitigation.

National responses

Section 3 of the final report provides an overview of the main issues raised in thematic panel 1, which addressed national responses. Dutch and Canadian experiences regarding government, business sector and NGO approaches to climate change were discussed and a number of specific recommendations were highlighted to improve national responses. These include the following:

- Governments must develop clear national energy frameworks with energy market reform plans and energy efficiency targets.

- Market-based approaches must be accompanied by capture and storage as well as adaptation strategies, which must be based on an agreed level of "acceptable" global warming (i.e. under 2 degrees Celsius).
- Step up green tax reform efforts.
- Regulatory certainty must be improved to ensure continued and sustained levels of investment in the energy sector.
- Subsidies to the fossil fuel industry must be dismantled with resources redirected towards the support of renewable energy sources.
- Links between climate change and security must be highlighted as a matter of high priority, including the human security dimensions of climate change.
- New implementation approaches must address the transport sector, which has been a "free-rider" in the current Kyoto regime.

Strengthening bilateral cooperation

In addition, discussion focused on how Dutch and Canadian bilateral cooperation could serve to deepen the exchange of experience that each has in the implementation of climate policy. Some of the key areas where further joint examination or cooperation could be useful include the following:

- The Dutch experience with benchmarking should be considered for further development in Canada and in other countries, as it embarks on a new plan to bring large emitters on side.
- The Dutch approach to green tax reform.
- Shared challenges in regaining a leadership role in capture and storage.
- Dutch experience with the development and refinement of market mechanisms.
- Dutch lessons in economic approaches to clean incineration efforts.
- Shared challenges in combining industrial and environmental policy.
- Dutch experience with pricing approaches for renewable energy sources.
- Shared challenges in effectively targeting the transport sector.
- Dutch success with waste to energy conversion processes.
- The shared challenge of raising public interest and engagement in the climate change agenda.
- Shared challenges in the development of smarter options in the heat sector.
- Sectoral agreements should be explored, especially as a vehicle for bringing developing countries on side.

"The Dutch experience with benchmarking should be considered for further development in Canada and in other countries, as it embarks on a new plan to bring large emitters on side."

Recommendations for strengthening market mechanisms

Section 4 of the final report addresses the challenges of strengthening the Kyoto based market mechanisms. Some of the key recommendations include the following:

- Emission trading targets must be updated to ensure that the market does not suffer from lack of certainty.
- The ET scheme needs to be adapted to other gases.
- There is a need to create methods to reduce the cost and allocation/approval time span of ET implementation.
- Governments must be encouraged to prepare to prepare more transparent emission allocation plans. the market will suffer if there is a lack of certainty regarding targets.
- The CDM must be sufficiently strengthened for the 2012 period. If this is not done, future emission credits are at risk and this will certainly impede the development of new energy efficiency projects.
- In national allocation plans for the first year, EU Member States have indicated their intentions to step up activity, therefore the CDM must be improved in order to sustain government engagement.
- The resource and human capacity of the CDM must be increased if inefficiencies are to be redressed
- The CDM must be grounded within a less risky and more effective form of capital creation that is climate friendly.
- Incentives are needed to stimulate credit committees to take into account carbon emission purchases.
- A more sectoral approach is needed to counter the project-by-project approach.
- The CDM's Executive Board should not be involved in the day-to-day running of the CDM machinery.

Technology innovation recommendations

Section 5 of the final report addresses the technology innovation challenge. Key recommendations include the following:

- Technology innovation must be a critical part of the overall strategy for meeting Kyoto targets.
- Innovation at all stages of technology development must carry on at a faster pace.
- Governments must increase funding for research and development, making spending in these areas a priority.
- Positive incentives for expediting the development of alternative fuel sources must be implemented at national and international levels.
- More focus needs to be directed towards the transformation of existing technologies, especially of fossil fuels, to ways that are cleaner and more energy-efficient.
- Governments need to lay out detailed national strategies to ensure not only the development of new forms of environmentally safe technology,

but also their implementation in the industrial and energy sectors.
- Governments must take measures to mitigate risks for business in order to provide an incentive for investment in climate change and in environmentally safe technologies.
- Perverse subsidies in the fossil fuel sector must be dismantled.
- Governments should create the necessary incentives to encourage better transfer of climate technologies to developing countries.
- Assisting developing countries in changing their energy sector needs to be coupled with overall improvement of energy access for the world's poor as part of a wider effort towards poverty eradication.

Forging bilateral cooperation

Section 6 of the final report addresses the broader challenge of forging bilateral cooperation between the Dutch and Canadian Governments. The specific issues of common interest and concern that were raised throughout the discussions include:

- Challenges and importance of linking emission trading schemes
- Experience with fixed versus variable emission caps
- Importance of addressing the transport sector more effectively
- The aviation industry imperative
- The need to improve capture and storage approaches
- Challenges and experiences with green tax reform
- Use of energy efficiency agreements with industry
- Development of sector-based agreements for GHG reductions
- Development of progressive standards for building, plants and consumer products
- The need for further integration of industrial and environmental policy
- Strategies for enhancing the use of renewable energy sources;
- Challenges for public awareness-raising around the climate challenge.

Elisabeth May, Sierra Club of Canada, Officer to the Order of Canada

I. Overarching Challenges for Climate Policy

The DC4 Opening and Closing Plenary Programme and Speakers

The DC4 Opening Plenary session included three keynote speakers:

- Sheila Watt-Cloutier (Chair of the Inuit Circumpolar Conference) who addressed the Arctic perspective, challenges and vulnerabilities related to climate change.
- The Honourable David Chomiak, MLA (Manitoba Minister for Energy, Science and Technology) who addressed the range of climate policy responses that the province of Manitoba has undertaken.
- Pieter van Geel (Dutch State Secretary for Housing, Spatial Planning and Environment) who outlined The Netherlands's experience in implementing climate policy and highlighted the broader political challenges to be addressed by COP-11.

The Opening Plenary keynote addresses were followed by an **expert panel** who responded to the key points raised and who identified the broader challenges for the strengthening of the global climate framework in the period leading up to and beyond 2012. The panel speakers included:

- Jim Fulton, Executive-Director, David Suzuki Foundation (Canada)
- Daniel Gagnier, Senior Vice-President and CEO, Alcan Inc. and Chair of the International Institute of Sustainable Development (Canada)
- Sible Schone, WWF Netherlands
- H.E. Philip Philip Patric Smith, High Commissioner for the Commonwealth of the Bahamas to Canada

The **DC4 Closing Plenary keynote addresses** were given by:

- The Honourable Pierre Pettigrew, P.C., M.P. Minister of Foreign Affairs of Canada
- Hans Alders, Queen's Commissioner and former Dutch Minister of Spatial Planning, Housing and Environment
- Clive Mather, President and Chair, Shell Canada Ltd.

Because of the linkages and overlap between the issues raised in both the opening and closing plenaries, the main points raised in these two sessions are summarised in the following section entitled *Key Issues Raised*.

Key Issues Raised

The key points raised in the opening and closing plenaries are summarised around the following headings:

1. The climate change impacts
2. Lessons learned in climate policy implementation
3. Broader political challenges
4. Specific challenges for COP-11

5. Conference Report

1. The climate change impacts

The Arctic Climate Impact Assessment

The 2004 Arctic Climate Impact Assessment (ACIA), which was chaired by Bob Corell of Harvard University and prepared by more than 300 scientists from 15 countries, projects significant climate-change related consequences for Arctic communities around the world. For example, there will be massive depletion of multi-year ice with a virtual ice-free summer by the middle to the end of this century.

The Arctic impacts

For the Arctic and Inuit peoples, the increase in GHG emissions have already led to "dangerous anthropogenic interference with the climate system". They assert that if action is not taken soon to dramatically curb GHG emissions, their culture will be threatened with extinction, as indeed projected by the ACIA. The ACIA further warns that marine species and birds dependent on sea-ice are very likely to decline, with some facing extinction. Moreover, for the Inuit, global warming is likely to disrupt or even destroy their hunting and food-sharing culture as reduced sea-ice will cause the animals on which their livelihoods depend, to either decline, become less accessible or even become extinct.

Global implications of Arctic impacts

The impacts of climate change on the Arctic are not just dangerous for the Inuit. Climate change consequences in the Arctic will have consequences for the rest of the planet. For example, the melting glaciers of the Arctic and the melting of the Greenland Ice Sheet could cause catastrophic interference with major ocean currents. Once started, such a deglaciation process may be irreversible, leading to a possible minimum of 4 to 6 cm to global sea level rise by the end of the century and eventually a total 7 metres of seal level rise. This will create massive consequences for the significant portion (200 million) of the world's population who live within 1 metre of sea level. Climate scientists believe that the probability of collapse of the thermohaline current will increase considerably with a global temperature warming above 4 or 5 degrees Celsius in the Arctic (which happens to correspond with a "moderate" 2 degree Celsius global warming).

European studies reveal that climate change effects in Europe have been greater than expected and that Europe is warming up more quickly than the rest of the world. This has been particularly evident in the recent wave of flooding and forest fires throughout the continent this past summer.

"The melting glaciers of the Arctic and the melting of the Greenland Ice Sheet could cause catastrophic interference with major ocean currents."

NASA reports

According to NASA has estimated that if the North Pole ice cap continues to melt at the present rate, the Arctic Ocean

will be ice-free in summer from 2060 onwards. NASA satellite images have concluded that the amount of ice in the North Pole ice cap was estimated at 5.31 million square kilometers in September 2005 as compared with the 7 million square kilometers of ice that were in place between 1978 and 2000.

> "Governments must be more convincing and more proactive in [making] the shift to a carbon-constrained future."

2. Lessons learned in climate policy implementation

The deep reduction challenge

The focus of climate change policy in the coming years will have to be on the prevention of dangerous levels of climate interference and this can only be achieved by deep reductions of GHG emissions, and of course, fossil fuel use. At the same time, it must be recognised that fossil fuels will continue be the dominant energy source, therefore efforts must focus increasingly on enhancing energy efficiency and carbon capture and sequestration measures. Provinces such as Manitoba have achieved considerable success in meeting Kyoto targets through energy efficiency and renewable energy initiatives. Manitoba's efforts to speed up implementation have been reflected in considerable GHG emission reductions.

Despite isolated success stories, governments must be more convincing and more proactive in confronting the reality of how we make the shift to a carbon-constrained future. At the same time, radical reductions in energy consumption and corresponding GHG emission levels are essential if we are to avert the disastrous ecological, economic and social consequences, which will result from anything above a 2-degree Celsius increase in global temperatures.

The new approaches needed

Conventional approaches to environmental policy-making have had limited success in combating climate change. Setting and enforcing environmental standards will no longer be sufficient. If governments are to be more effective, then environmental policy must be firmly anchored in a sustainable development framework if we are to bring about the necessary level of reductions. Governments cannot achieve this transition alone. This will require new forms of partnership and cooperation with the main economic actors, the knowledge creation institutes and major groups.

The public outreach challenge

In both Canada and The Netherlands, climate change is declining as a front-line issue. This is in part a function of the fact that the political community has been far too modest in describing the problem of climate change. Moreover, it has not satisfactorily demonstrated to the public how climate change is linked so directly with global security and economic competitiveness. Governments must highlight the security dimension related to climate change, both in terms of the increasingly tenuous security of energy supply and the related

implications for peace and security in politically unstable oil-producing regions of the world.

The human rights dimension
The current debate on the environmental impacts of climate change has lost sight of the human dimension and the specific human rights and social impacts to communities around the globe. For example for the Inuit, it is clear that climate change will threaten their traditional livelihoods and ultimately their future as a distinct people. They maintain that their collective human rights to chart their own paths are being ignored and violated. At the same time, many developing countries will be suffer devastating consequences in light of their minimal adaptive capacities and their particular vulnerabilities to sea level rise.

> "Climate policy cannot be developed in a 'one-size-fits' all manner."

Challenge the energy industry
Governments should do more to sufficiently challenge the energy industry to produce energy without generating greenhouse gas emissions. We need to understand how fossil fuel resources not only help but also hurt us. The policy community must recognise that the oil industry will not extract oil unless it is economically profitable, however it must be similarly challenged to consider the imperative of environmental sustainability along side the profit motive.

Highlight the linkages
The linkages between climate policy and other sectors must be highlighted and strengthened. Climate change is not simply an issue of resource protection. It also has deep roots in global economic and political activity. Therefore, addressing climate change also requires addressing issues of development, health, demographic change and energy security. In particular, governments must deepen their understanding and strengthen collective resolve to redress the enormous social impacts of climate change, and in particular the human rights impacts experienced by those local communities around the world whose livelihoods and survival are directly at stake.

Respond to the differences
Climate policy cannot be developed in a "one-size-fits" all manner. There are so many regional, national, and local concerns and considerations that must be addressed in properly adapting climate policy to ensure optimal effectiveness. In Canada for example, the different scales of governance and challenges of federal provincial cooperation have created numerous challenges in Canada's efforts to implement climate policy.

The importance of regulatory certainty
While market and fiscal reforms are important, there is no question that greater regulatory certainty is critical to keep the investment community on side. Indeed, a considerably strengthened regulatory framework is absolutely key in order to achieve the necessary level of reductions that have been identified as essential to averting even more extreme climate-

related disasters. However, certain industrial sectors assert that the current system is too heavy and complex and that it is not sufficiently "user-friendly". Nevertheless, the private sector is increasingly calling for increased regulatory certainty and convergence between regulatory frameworks and investment cycles—especially in light of the fact that energy-related investment decisions taken now have important consequences that extend over 50-year time periods.

The transport and aviation challenges

A shared gap in both Dutch and Canadian climate policy approaches has been the limited attention to the transport and aviation sectors. Even if major reduction efforts were achieved in all the main GHG emitting sectors, the emissions produced by the aviation sector alone would offset these gains. Therefore considerable efforts will have to be undertaken in these two sectors. However, it must be recognised as well that success is not necessarily immediately possible in all sectors and therefore reduction emission efforts must be targeted towards those sectors where there are cost effective possibilities for enhancing emission reductions.

3. Broader political challenges

Scale up the level of response needed

There is no past experience of a global society having to respond to an environmental threat so immense as the one we face from global warming. We need a level of response that is commensurate with the effort that both the Dutch and Canadian Governments undertook in face of the Second World War. As a first step, foreign policy frameworks must promote a new and invigorated form of multilateralism, one that is based on the collective responsibility to ensure the well-being of present and future generations.

Shorten the timeframe for solving the problem

Many climate scientists suggest that we can "buy some time" before we are confronted with the massive and irreversible consequences of climate change. However, the international community must be aware that it must solve the problem within the next 40 to 50 years. This means that the future long-term regime will have to ensure the necessary deep reductions in emissions while securing sustained economic growth for both industrialised and developing countries.

Address the energy transformation challenges

Meeting the deep reduction challenge will not be possible without a radical transformation of the energy sector and the development of new low carbon fuels and the creation of the necessary markets to ensure the investment in such resources as liquid natural gas, oil sands, oil shale and renewable energy sources such as wind, biomass and hydrogen. While the world's dependence on fossil fuels will not diminish and since fossil fuels will have a dominant role until the middle of this century, it will take tremendous political courage to implement the necessary fiscal reforms and policy directives to give renewable energy sources a fighting chance in the energy market.

Synergise reductions with sustained economic growth
Another key political challenge in terms of the deep reduction imperative will be to position both industrialised nations as well as emerging economies to compete in a carbon-constrained world. It will be essential to create the options for aligning policies and incentives to advance both the current and the next generation of major carbon emitting nations to a position of leadership in renewable energy, efficiency and conservation. We know that there are considerable consequences to bringing about radical changes in our carbon-based economies. However, the consequences of not acting are becoming clearer and these must be highlighted more forcefully in order to redress the inertia of the status quo.

The role of the 6-Nation Initiative
The G8 Summit at Gleneagles established an important step forward in asserting the importance of the Kyoto Protocol as the appropriate framework for moving forward. While the 6-Nation Initiative is an interesting approach, it lacks concrete details and could divert political attention away from the Kyoto regime. Greater efforts are needed to ensure the overall coherence and coordination of efforts around the world under one central policy framework.

Respond to the EU's 2 Degree Celsius Challenge
The EU took a strong position in March 2005 when it announced that average global temperatures should not increase by more than 2 degrees Celsius over pre-industrial levels. However, even global warming of 2 degrees will have considerable consequences and therefore the EU asserts that reduction targets should be set at 60 to 80% by the year 2050. While these are ambitious targets, the technologies needed to reach them currently do exist. They need to be better adapted to the climate change challenge and massive levels of investment are needed to ensure the necessary technological breakthroughs. This will however require a long-term plan to drive investment in technology development and diffusion.

> "Efforts must be directed towards linking existing emissions trading regimes around the world."

Engage key countries
Greater efforts will be needed to engage the US and the emerging economies such as India and China in the current Kyoto regime, not to mention whatever new regime will be developed for the post-2012 period. As regards the US, it is clear that they will continue to oppose absolute emission caps, therefore, the international community must explore how to convince the US to accept instead the 2 degree Celsius target and to agree to take measures to ensure that temperature increases do not exceed that target. Emissions trading is one of the most likely mechanisms to bring the US on board and efforts must be directed towards linking existing emissions trading regimes around the world, especially those which are currently in place at the sub-national level in the United States.

Address the China challenge
By 2020, China will outflank all of North America in terms of GHG emissions. As with India, it is clear that coal will be the dominant fuel source in its energy mix. Therefore international efforts must be directed towards stepping up the development of clean coal technology and ensuring that new climate-friendly technologies in the coal sector are quickly transferred to the big developing country emitters. As well, sectoral agreements will help to bring developing countries into the technology innovation arena.

The importance of urgency
Another major political challenge will be to convince the major emitting nations that the time for action is indeed right now and not at some undefined moment in the future. We must look beyond what the parties to the Kyoto Protocol have implemented to date. This is particularly important since the Protocol, while an important step forward, does not go far enough to stop the dangerous sea-level rise from imperiling millions of people around the world. In this regard, greater attention must be directed towards the particular vulnerabilities to climate change faced by communities, not only States around the world.

Possible elements for a post-2012 strategy
The post-2012 strategy must have at least the following elements: deep reductions to avoid the occurrence of even more dangerous climate-related consequences; inclusion of all greenhouse gases; economic and environmental viability; more robust market mechanisms to provide incentives for developing countries; integration of poverty eradication and social equity and human rights considerations; emphasis on developed countries to continue taking the lead but with greater attention to the need to differentiate responsibilities; agreement on global warming levels to ensure the effective design of adaptation policies; clear energy policy frameworks; as well as the necessary level of financial and technological resources to support the transition to low and carbon free fuel energy systems.

The investment challenge
It is important to consider that 2012 is not that far off in the time horizon and if by 2009, the international community cannot provide a clear indication of what the post-2012 framework will look like, investments in the climate change sector will simply not be made. Long-term regulatory clarity and certainty are essential in light of the long-term timeframe of investment cycles in the climate sector. At the same time, greater attention must be directed towards improving the market mechanisms that have been developed under the Kyoto Protocol. Considerable efforts will be needed to ensure that they function more effectively, especially in light of the role that market instruments play in driving innovation.

"We must look beyond what the parties to the Kyoto Protocol have implemented to date."

4. The specific challenges for COP-11

The decisions to be taken

COP-11/MOP-1 will bring together nations around the world to commence consideration of the longer-term global climate change regime. COP-11/MOP-1 will have to take important decisions in order to operationalise implementation of the Kyoto Protocol. These include ratifying the Marrakech Accords (the detailed international rules that are at the heart of the Protocol) as well as setting up the implementation machinery, such as the Supervisory Board for Joint Implementation.

Challenges for the development of the new global regime

COP-11 will also have to explore options for post-2012 GHG reduction targets, including the second commitment period and beyond to 2050-2080 — in keeping with the objectives aimed at stabilizing concentrations of greenhouse gases in the atmosphere and minimising temperature increases.

Country differences

More than 180 countries are expected to attend COP-11. Each faces its own challenges in reducing GHG emissions and adapting to the changing climate while ensuring economic growth and prosperity and improved quality of life. Finding the way forward will be a complex task. However the shared desire of all countries to directly address climate change will hopefully enable the international community to come together in Montreal and to start productive discussion on real and long-term progress.

The elements of the proposed international framework

As host of COP-11, the Government of Canada has identified the following six key objectives to frame the new international agreement for the post-2012 period.

1. Ensure broader participation with fair goals, including all industrialised and key emerging economies.
2. Generate outcomes that will result in real progress over the longer-term.
3. Provide incentives to invest in developing and sharing transformative environmental technologies to reduce emissions at home and abroad.
4. Maximise the deployment of existing clean climate technologies.
5. Support a streamlined and efficient global carbon market.
6. Address adaptation as well as mitigation.

The market and technology challenges

As regards the two of the six above elements that were addressed by DC4 (namely strengthening market mechanisms and technology innovation), COP-11 will have to address how the new global climate regime could make the most effective use of market forces, including promotion of a more robust and efficient global carbon market. And on the technology innovation challenge, COP-11 will have to consider how the new global climate regime could more strongly promote the development and deployment of climate friendly technologies.

II. Challenges Regarding National Approaches (Thematic Panel One)

The DC4 Programme and Speakers

The objective of Thematic Panel 1 was to share experience regarding the array of climate policy approaches that have been implemented at the national level by Dutch and Canadian government, private sector and NGO actors.

Panel speakers were grouped around the following headings:

- National approaches were presented by **Alex Manson**, Acting Director-General, Domestic Climate Division, Environment Canada and The Netherlands will be represented by **Hans Bolscher**, Director, Climate Change and Industry, Netherlands Ministry of Housing, Spatial Planning and the Environment.
- Private sector approaches were addressed by **Christian van Houtte**, President of the Aluminium Association of Canada and **Karen Lagendijk**, Manager Green Portfolio, Nuon Energy Sourcing (The Netherlands).
- NGO approaches were presented by **Elisabeth May**, Executive-Director, Sierra Club of Canada; **Hans Jager**, Climate Policy Director, Stichting Natuur en Milieu; and **Annie Petsonk**, International Counsel, Environmental Defense Fund (US) presented an American NGO perspective.
- Local approaches were represented by **Jane Middelkoop**, Senior Policy Analyst, Federation of Canadian Municipalities and **Christian van Houtte**, who provided an overview of the approach undertaken by the Government of Quebec.

Once the speakers had made their interventions under each of the headings, collective panel discussion and subsequent audience discussion was organised around the following questions:

1. What are the key lessons learned in climate policy implementation?
2. Which climate policy approaches should be replicated and which new approaches should be developed in the period leading up to and beyond 2012?
3. What are the opportunities for stepping up bilateral cooperation and as well, cooperation with the private sector and other major groups in the period leading up to and beyond 2012?

Key Issues Raised During Presentations and Discussions

1. Shared experiences and lessons learned

Since the Kyoto Protocol has only been in force for under a year, government climate policy relates to the broader array of climate policies that have not only pre-dated Kyoto, but which have been put in place as a response of the Protocol. For example, Canada issued its new climate change plan as recently as April 2005. As a response to the Kyoto Protocol,

the new Plan builds on Action Plan 2000 and Canada's 2002 Climate Change Plan.

In light of the fact that both the Dutch and Canadian Governments were among the first countries to sign the Kyoto Protocol, there is ample experience to be shared in terms of national climate policy implementation. The aim of this session was to assess what specific approaches have worked for example — in terms of emission reduction measures, new domestic market mechanisms, tax measures as well as incentives for the private sector.

In addition to highlighting the national-level successes, the discussion served to spotlight as well, some of the key factors that have impeded national approaches and which could inform and guide the design and development of future approaches leading up to and beyond 2012.

The first mover advantage
Success on climate change actions will depend on the ability of governments and the private sector to mobilise around climate change objectives, to monitor progress, and to quickly apply new knowledge in order to continuously focus on measures that yield best results. The economies and companies that build environmental considerations into their decisions will have a competitive advantage, while those that ignore it will face a bigger, more difficult adjustment in the near future.

The deep reduction challenge
The primary challenge for improving implementation will be to ensure the deep level of reductions that are needed to achieve the ultimate environmental aim of averting the disastrous consequences of climate change, which are now manifesting themselves in the present.

The need to improve market mechanisms
It is important to recognise that we have a set of market mechanisms that are neither sufficiently mature nor fungible. Many of these mechanisms do not function effectively, and if we are to be serious about making them work and driving innovation, then we will have to ensure that they are more robust and user-friendly. A judicious mix of market-based approaches (combined with strengthened regulatory frameworks) will be critical to the challenge. However, their impact lies in large part in the creation of the necessary incentives to ensure their use, and in their continuing improvement to ensure their ultimate effectiveness.

Industry and investment challenges
Industry will only move forward in emissions reduction if there is a stable regulatory framework put in place. Investment cycles are extremely long and must be considered in the development of both climate and fiscal policy. Investors are making decisions now that will extend over a 50-year life span; therefore the investment community needs to know now what the post-2012 framework will actually look like.

The fiscal challenge
Tax reform should be undertaken for small industries, while emissions caps should be made for large emitters. Emission

trade has proven important for setting a clear cap for industry. In addition to this, public private partnerships are a critical step forward to encourage industry to take constructive steps. The mobilisation of the necessary level of financial and fiscal resources should be directed towards steering climate friendly activities in all sectors.

The emissions trading and CDM challenges

Coalition building should be linked to an important opportunity to reduce emissions. More must be done to strengthen and link existing emission trading regimes around the world. Indeed, the global carbon market will stand or fall depending on the success of the Clean Development Mechanism. The current reality is that, problems aside, the CDM has considerable untapped potential, especially in face of the fact that there are over 50 million tonnes of GHG ready to be introduced into the global market.

2. Dutch approach and lessons

Elements of the Dutch approach

The Dutch approach to climate change has three elements. The first part involves the purchase of half the necessary emission reductions from the international market under JI and CDM, estimated at a cost of 600 million euros (6 euros per ton). The second component involves the use of non CO_2 GHC measures, reducing emissions by 30% since the 1990's. This method has proved to be a low cost measure (ie. waste management and agricultural policy cost less than 5 euros per ton). The third component involves domestic CO-2

> "The Netherlands has achieved considerable success in shifting the tax base from labour to energy consumption."

emissions reductions. This has been achieved through energy conservation, mainly achieved by a tax policy at the low cost of 50 euros per ton. Emission trading has also set a cap so that industries will not increase CO_2 output. The use of renewable energy has not been particularly effective in reducing emissions. When considering the cost-benefit analysis this measure has been very costly, estimated at 300 euros per ton.

IEA praise for Dutch energy policy

In the International Environmental Agency (IEA) 2004 review of Dutch energy policy, The Netherlands was praised for its various efforts in pursuing energy policy, including efforts to promote energy security including: new analytical methods for energy security; environmental protection; technology innovation; rationalization of research and development budgets; liberalisation of electricity and gas markets; the launch of its sustainable energy initiative; and its ambitious energy efficiency policy which includes the use of benchmarking covenants and active monitoring and evaluation of policies to reduce policy "free riders".

Ambitious Kyoto approach

The IEA maintains that the Dutch Government's decision

to meet half of the country's greenhouse gas emissions through joint implementation and the Clean Development Mechanism projects is considered to be ambitious, however The Netherlands has shown itself to be a forerunner in the developing and testing of Kyoto methodologies. The IEA has also recognised the Dutch success in the cost-effectiveness of its measures to reduce GHG emissions through its use of both Kyoto mechanisms, as well as through the reduction of non-CO-2 emissions, streamlining subsidies for renewables and combined heat and power co-generation. The IEA also recognised that while the Dutch Government's own analysis shows that the country is on track to meet its Kyoto target, with greenhouse gas emissions having almost stabilized, several challenges remain ahead.

Sectoral approaches

Other elements underpining the Dutch's overall success include the use of a sectoral approach to emission targets where the task of emission reductions is shared by different ministries, and not just the Environment Ministry). Another factor involves the continuous evaluation of impact involving the presence of reserve measures ready to be implemented if existing measures are not working and targets are not being reached. And finally, the large investments in environmental measures and cost-effective policies have contributed towards achievement of Kyoto goals.

Success with green tax reform

The Netherlands has achieved considerable success in shifting the tax base from labour to energy consumption. One of the main factors behind this public policy success story is the approach that was undertaken by the NGO community, which involved public awareness raising in a very step-wise fashion with a particular focus on tax reform implications for the poor and for those who might be particularly vulnerable to green tax reform. Another factor was to highlight the underlying rationale for the tax reform, namely to encourage positive incentives for energy efficiency. The Dutch experience in greening its tax system will be particularly instructive for Canada, which continues to provide positive incentives to the fossil fuel industry, with amounts greater than what the government is actually investing in its Climate Change Plan.

The energy transition phenomenon

One of the interesting reactions to high oil prices in The Netherlands has been the efforts undertaken by companies, local and regional authorities and knowledge institutes to seize the opportunity to bring about energy transitions, with economic and environmental considerations being considered together. Plans are now being devised with knowledge institutes and the authorities to provide companies that have large energy needs with their own more sustainable energy supplies.

Remaining challenges

Notwithstanding all the positive elements of the Dutch approach, there are a number of areas that must be improved. For example, the various policies related to renewable energy are inconsistent and send confusing signals to the market.

The Dutch Government has realised the importance of price certainty and Canada should avoid making the same mistake.

As well, the challenge of transportation has not been adequately dealt with. Curbing the rapid growth of energy demand in the transport sector will require strong new policies and measures especially when considering consumers' demand for bigger and heavier cars. In order to plan for the future, 250 million euros have been released to invest in energy conservation, CO_2 capture and storage, and renewable energy sources.

Another weakness in the Dutch approach is the limited success in combining industrial and environmental policy. For example, The Netherlands had a viable wind industry, but because of sub-optimal approaches, most of the wind industry is now concentrated in Germany and Denmark.

Moreover, The Netherlands had been the leader in carbon capture and storage years ago, however momentum was lost and now many other countries are playing front-running roles in the development of capture and storage technologies and approaches.

3. Canadian approach and lessons

Canada's 2005 Climate Change Plan

Canada was one of the first countries to sign the Kyoto Protocol in1998 and ratified it in 2002. The Canadian Government issued its new climate change plan, "Moving Forward on Climate Change: A Plan for Honouring our Kyoto Commitment" in April 2005 following the entry into force of the Kyoto Protocol. The new Plan builds on Action Plan 2000 and the "2002 Climate Change Plan for Canada".

"Canada was one of the first countries to sign the Kyoto Protocol in 1998 and ratified it in 2002."

Part of Project Green

Canada's new Climate Change Plan is a major element of Project Green – a national project to improve environmental protection, preserve our natural capital while at the same time strengthening the economy through the combined efforts of all levels of government, the scientific community, business, NGOs and the general public. The approaches outlined in the plan, with an associated federal investment in the range of $10 billion through 2012, aim at reducing greenhouse gas emissions by 270 megatonnes per year from 2008 to 2012, the Kyoto commitment period. Canada's Climate Change Plan includes measures to create new market mechanisms, tax measures and incentives for private sector innovation and consumer action.

System for large final emitters

The first measure is aimed at reducing emissions from large industrial sources. The system for Large Final Emitters sets regulated emissions intensity improvement targets for facilities in the oil and gas, thermal power, mining and manufacturing

sectors. In addition, there is an initiative to reduce emissions from vehicles. Through an agreement reached with the Government of Canada, automakers have pledged to reduce greenhouse gas emissions from vehicles in Canada by 5.3 Mt in 2010, through actions such as improving the fuel efficiency of vehicles, making improvements in advanced vehicle emissions and diesel technology, and producing more alternative fuel and hybrid vehicles.

> "Canadian industry is saving $3 billion a year on fuel costs due to advanced energy efficiency management policies."

The Offset System

The third element of the Plan involves tapping the emission reduction potential in all sectors of the Canadian economy. The Offset System will issue credits to large and small industries, technology companies, municipalities, farmers, foresters and individuals who achieve greenhouse gas emission reductions. Canada expects that the system will also create a market enabling these players to sell their credits – which is an efficient way to get the maximum emissions reductions at the lowest cost. Cross-country consultations on this proposed set of rules are taking place this fall.

The Climate Fund

Acting as a form of investment bank, the Climate Fund will purchase reductions in greenhouse gas emissions resulting from innovative energy projects. The Climate Fund will purchase credits as well as invest in internationally recognized emissions reductions where they advance sustainable development in developing countries. It will be fully operational next year.

The Partnership Fund

Through the Partnership Fund, the Federal Government, the provinces and the territories will foster the deployment of strategic new technologies and infrastructure projects and develop key national strategies in areas such as energy conservation. In order to help Canadian businesses and individuals diversify their energy sources and reduce their reliance on fossil fuels where appropriate, the Plan includes expanded incentives to increase production of renewable energy and to position our renewable energy industries in growing international markets.

The One-Tonne Challenge

The Plan is premised on the conviction that increasing the awareness and engagement of Canadians will help to create a generation that understands and embraces sustainability. Programs such as the One-Tonne Challenge and Energuide for Houses Retrofit Incentive will provide citizens with the tools they need to do their part. The Government of Canada itself will strive to lead by example by greening its operations, with the cutting of emissions from its facilities, the construction of buildings with high environmental standards, the use of energy-efficient vehicles, and the purchase of 20% of its electricity from renewable sources by 2010.

Cost savings realised
Canada's investments in climate change have delivered energy-efficiency, energy conservation, and cost saving. It is estimated that the Canadian industry is saving $3 billion a year on fuel costs due to advanced energy efficiency management policies. In total, savings in energy costs have amounted to about $12 billion per year.

GHG emission reductions in the private sector
According to Alcan Ltd. one of the most important lessons has been the importance of reducing GHG emissions while at the ensuring economic competitiveness and growth. Where Alcan was able to reduce GHG emissions by 50%, it managed to improve overall performance, increase productivity and generate increase pride in the workplace. The success was a result of many individuals within the enterprise working together to find the most innovative solutions to reducing GHG emissions.

Reduction of agricultural GHG emissions
Canada has been able to achieve considerable reductions of agricultural GHG emissions through advanced farming practices and the increase in carbon sequestration in soils through no-till and low-till practices. This has helped fight climate change while also providing an important source of supplementary income and niche market opportunities for Canadian farmers.

Reduced electricity consumption
Canada has also been able to advance efforts to improve efficiency by targeting reduction of electricity consumption through innovative methods, especially with the involvement of key sectors such as the aluminium industry.

Voluntary approaches
The use of voluntary approaches has been successful in achieving considerable emission reductions. However, Quebec is the only province to use voluntary agreements to reduce emissions.

The Manitoba experience
The Province of Manitoba has been on the implementation fast-track and has achieved major reduction successes through a combination of efforts including: grounding energy policy in broader social goals of redistribution of wealth within society especially to ensure poverty; enhancing the efficiency of while at the same time taking steps to reduce fossil fuel consumption; efforts towards increasing renewable energy capacity; pioneering efforts regarding waste to energy conversion processes; development of hydrogen refueling infrastructure.

Canada's remaining challenges
Although Canada's energy policy shows much efficiency, having achieved considerable emission reduction at low costs and through innovative methods, there are significant policy aspects that need to be improved in order to heighten the progress towards the Kyoto goals. For example, Kyoto market mechanisms must be considerably improved especially since Canada has in the past relied on offset credits for projects that would have been developed anyway. Canada has much to learn from

The Netherlands success in developing market mechanisms.

Another big challenge for Canada will also involve addressing the necessary tax reforms, and once again, the Dutch experience in greening its own tax system will be instructive for Canada.

As well, it is increasingly felt that the links between the different sectors impacted by climate change are poorly understood and the social implications of climate change have not been sufficiently identified, there having been no incentive to do anything differently in supporting the growing population that is affected by climate change.

As well, according to the Aluminium Association of Canada Energy, the efforts by the aluminium and other sectors between 1990 and 2000 are not formally recognized so there have been no rewards for innovators. Also, because the average reduction is equal among all sectors this creates asymmetries for many sectors. The fossil fuel sector, in particular, has also been unduly insulated from their responsibilities to reduce GHGs. And in this regard, Canada can learn from the Dutch benchmarking approach.

Another concern is the fact that the system has not been sufficiently user friendly and has not been timed to coincide with long-term investment cycles. The Canadian government officials only have a mandate to deal with the first commitment period, but the Canadian political system does not always guarantee that government officials will necessarily be in place outside of a given 4-year period.

Furthermore, there are specific challenges that face the province of Quebec. Although the enormous hydro electrical resources in the Quebec could be equivalent to the huge amount of oil in Alberta, there is a limited electricity-producing capacity of hydraulic energy when faced with the increasing electricity demands. The challenge is to exploit the hydro resource base in an environmentally sound manner. Another challenge comes from the recent increase in GHC emissions in Quebec. Traditionally, Quebec has been the province with the lowest GHC emissions, but with 10 aluminum smelters and large pulp and paper and petrochemical industries, emissions have been rising quickly.

And finally, as Canada prepares to finalise its large emitters programme, it could benefit from the experience of the Dutch Government with its benchmarking efforts that were commenced in 2000. A related challenge to large emitters is to find environmentally sound ways of extracting oil from tar sands, especially in light of the projections that new Canadian tar sands projects will considerably increase Canada's GHG emissions.

"The Dutch experience with benchmarking should be considered for further development in Canada and in other countries."

4. Recommendations for improving national responses

- Governments must develop clear national energy frameworks with energy market reform plans and energy efficiency targets.
- Market-based approaches must be accompanied by capture and storage as well as adaptation strategies, which must be based on an agreed level of "acceptable" global warming (i.e. under 2 degrees Celsius).
- Step up green tax reform efforts.
- Regulatory certainty must be improved to ensure continued and sustained levels of investment in the energy sector.
- Subsidies to the fossil fuel industry must be dismantled with resources redirected towards the support of renewable energy sources.
- Links between climate change and security must be highlighted as a matter of high priority, including the human security dimensions of climate change.
- New implementation approaches must address the transport sector, which has been a "free-rider" in the current Kyoto regime.

5. Opportunities for stepping up bilateral cooperation

Dutch and Canadian bilateral cooperation could serve to deepen the exchange of experience that each has in the implementation of climate policy. The following are the key areas where further joint examination or cooperation could be useful.

- The Dutch experience with benchmarking should be considered for further development in Canada and in other countries, as it embarks on a new plan to bring large emitters on side.
- The Dutch stealth approach to green tax reform
- Shared challenges in regaining a leadership role in capture and storage
- Dutch experience with the development and refinement of market mechanisms
- Dutch lessons in economic approaches to clean incineration efforts
- Shared challenges in combining industrial and environmental policy
- Dutch experience with pricing approaches for renewable energy sources
- Shared challenges in effectively targeting the transport sector
- Dutch success with waste to energy conversion processes
- The shared challenge of raising public interest and engagement in the climate change agenda.
- Shared challenges in the development of smarter options in the heat sector.
- Sectoral agreements should be explored, especially as a vehicle for bringing developing countries on side.

III. Challenges Regarding Market-based Instruments for Climate Policy (Thematic Panel Two)

The DC4 Programme and Speakers

The objective of Thematic Panel 2 was to share experience regarding the array of Kyoto-related market instruments that have been developed and implemented by the Dutch and Canadian governments, the private sector and civil society.

Speakers on Thematic Panel 2 on market mechanisms were grouped around the following headings:

1. Opportunities for strengthening the global carbon market were addressed by **Andrei Marcu**, President of the International Emissions Trading Association (IETA)
2. Expectations and challenges ahead for emissions trading were addressed by:
   Jos Delbeke (via video statement), Director for the Air and Chemicals Directorate, DG Environment, European Commission; **Maurits Blanson Henkelmans**, Head of the Dutch JI and ET Division of the Dutch Ministry of Economic Affairs; **Mike Beale**, Director-General, Large Industrials Emitters Group, Environment Canada; and **Annemarie van der Rest**, Manager, SN-EA Shell Nederland
3. CDM lessons learned and future challenges were addressed by:
   Sushma Gera, President, CDM Executive Board and Director, Climate Change and Energy Division, Foreign Affairs Canada; and **Lex de Jonge**, Head, CDM Division, Ministry of Housing, Spatial Planning and the Environment (The Netherlands)

Key Issues Raised During the Presentations and Discussions

1. Overarching challenges with Kyoto mechanisms

The Kyoto reduction commitments are an important first step in combating climate change, however market based approaches are a critical component to the global framework that is now in place.

One of the most important market-based mechanisms that have been developed under the Kyoto Protocol is emissions trading. These schemes have led to the creation of a global carbon market, whose value is now estimated at close to $10 billion (US) per year. Experience with the EU emissions trading scheme has revealed that emissions trading can serve to catalyse huge capital flows into climate friendly investments—which will be essential for developing carbon-free or low carbon energy systems in the coming years.

One of the central challenges in the further development of emissions trading regimes around the world will be to ensure the long-term durability of the carbon market. This in turn depends in large part on the tightening of mandatory caps on permissible emissions, which would make CO_2 emissions scarcer and more valuable, thereby providing important incen-

tives for all actors to control emissions.

The other market mechanism that was addressed was the Clean Development Mechanism (CDM). The CDM allows countries with emission targets to buy emission credits from projects in developing countries in which developed countries have invested. The CDM has two basic objectives, namely to assist developing countries in achieving sustainable development and secondly, to enable Annex I countries to acquire Certified Emissions Reductions (CERs) from CDM projects in developing countries and to count them towards their Kyoto targets. There are several concerns regarding the CDM's performance (i.e. the processes related to project registration and to the issuance of CERs) that will have to be addressed if it is to fulfill its objectives in the coming years.

"The EU Emissions Trading Scheme and the CDM are important market mechanisms in the process of designing a new post-Kyoto system."

Market mechanisms must be at the core of a successful long-term global carbon regime. A carbon market will not exist unless there is scarcity. The EU Emissions Trading Scheme and the CDM are important market mechanisms in the process of designing a new post-Kyoto system.

2. Emissions trading

Emissions trading is an economic solution to reducing GHGs emissions. Under trading schemes governments set limits or caps on CO_2. Parties that intend to exceed the limits may buy emission credits from entities that are not likely to exceed the limits.

Challenges with emissions trading

It has been proven that emissions trading works with SO_2, but this still needs to be proven with CO_2. Emissions will only be reduced with investment and implementation of new technologies. To reduce their emissions, companies can either invest in new technology and capital stock, or buy allowances in the market. In order to make an efficient decision, companies must compare the market cost of allowances to the marginal costs of abatement over time. Emission reduction projects take a considerable amount of time, in many cases 3-4 years. This lengthy time span is due to capital allocation and approval process, planning approval and stakeholder engagement, construction lead times, and alignment with facility shutdown schedule. In addition to this, the emission trading system requires considerable implementation efforts and high energy and CO_2 prices.

3. EU Lessons with emissions trading

Overview of the EU Emissions Trading Scheme

In January 2005 the European Union Greenhouse Gas Emission Trading Scheme (EU ETS) commenced operation as the largest multi-country, multi-sector greenhouse gas emission trading scheme world-wide. A key aspect of the EU scheme is that it allows companies to use credits from Kyoto's project-based mechanisms, joint implementation (JI) and the clean development mechanism (CDM), to help them comply with their obligations under the scheme. This means the system not only provides a cost-effective means for EU-based industries to cut their emissions but also creates additional incentives for businesses to invest in emission-reduction projects elsewhere, for example in Russia and developing countries. In turn, this spurs the transfer of advanced, environmentally sound technologies to other industrialised countries and developing nations, giving tangible support to their efforts to achieve sustainable development.

The first mover advantage

Focused initially on big industrial emitters, which produce almost half of the EU's CO_2 emissions, the scheme gives European and foreign-owned businesses based in the EU a 'first-mover' advantage through the invaluable early experience they are gaining.

"A whole range of new businesses is emerging in Europe as a result of the EU carbon market."

Due to mandatory monitoring and reporting of emissions, companies are establishing CO_2 budgets and carbon management systems for the first time. Because CO_2 has a price, companies are engaging the ingenuity of their engineers to identify cost-effective ways to reduce their emissions, both through improving current production processes and investing in new technologies. A whole range of new businesses is emerging in Europe as a result of the EU carbon market: carbon traders, carbon finance specialists, carbon management specialists, carbon auditors and verifiers. New financial products such as carbon funds are entering the market.

Potential for linking trading schemes

The ETS is open to linking with compatible greenhouse gas emission trading schemes in other countries that have ratified the Kyoto Protocol. It is foreseen that each side would agree to recognise allowances issued by the other, thereby expanding the market for trading. The EU is discussing Norway's possible participation in the ETS and preliminary discussions on cooperation have taken place with a number of other countries. The EU is also encouraged by moves to create an emissions trading scheme for CO_2 among a significant number of US states.

Factors underlying current success

Three important elements responsible for the success of this new ET scheme. First, national allocation plans have been put

in place and the Commission has allowed 2.2 billion tones of CO_2 allowances, enabling trading to take place. More than half of the allowances are to be allocated in 2005. Secondly, the establishment of electronic registries worldwide have enabled EU member states to be connected. Third, EU companies are now internalizing their carbon costs in decision-making.

Future challenges

There are of course a number of challenges with the EUST that must be addressed. First, Member States are urged to prepare more transparent plans. Second, targets must be updated, as the market will suffer if there is a lack of certainty regarding targets. Third, a review of the EUST is being considered to address possible improvements and to address how the scheme can be adapted to other gases.

4. Dutch experience with emissions trading

Although emission reduction planning is time consuming and the costs of emissions trading are high, positive outcomes with this approach have been shown. The Netherlands implemented the system by setting a binding cap on emissions of 40-50% and by allowing maximum flexibility for companies in the choice of the means to accomplish emission reductions. All this was achieved in a cost effective way.

From the Dutch perspective, the EU Emissions trading scheme provides considerable flexibility and a level playing field for the over 11,000 companies in 25 countries in terms of their interests in either buying, selling, investing etc. Now that CO_2 emissions have been given a concrete price, the private sector and investment community can take more proactive decisions to engage in GHG reduction efforts.

As regards weaknesses within the existing system, the Dutch Government notes that although emission reduction planning is time consuming and the costs of emissions trading are high, the positive outcomes still outweigh the weaknesses of the system. It is felt that emissions trading requires a substantial implementation effort, as well monitoring, verification and the registry process need to be streamlined. The national allocation process has generated political disagreements regarding the division of allowances among EU member states. Moreover, for small installations, the process tends to be too bureaucratic and generates proportionately small environmental benefits relative to the time, money and energy invested.

"Now that CO_2 emissions have been given a concrete price, the private sector and investment community can take more proactive decisions to engage in GHG reduction efforts."

From the Dutch Government's perspective, the main challenge for improving emissions trading in advance of the next allocation plan is to make the system more robust. Specifically,

voluntary harmonization should be explored along with the possibility for benchmarking for certain sectors.

From the Dutch business perspective, emissions trading still has some problems and the industry is still reluctant to invest. However, increasing energy efficiency is certainly perceived as a "no regrets measure". Nevertheless, the market is now flourishing and emissions trading presents considerable business opportunities as well as challenges.

5. Clean Development Mechanism

The Clean Development Mechanism (CDM) is the second mechanism aiming at decreasing global GHGs emissions that emerged from the Kyoto Protocol. Under the CDM, industrialized countries can earn emissions credits by investing in emissions-reducing technology and capital in developing countries. In addition to this, credits from JI and CDM projects have been linked with the emissions trading system, enabling European companies to convert credits from JI and CDM projects to use towards meeting their trading system requirements.

Challenges for the CDM

CDM has shown that there is an enormous sustainability benefit to carbon trade. Carbon trade is an important source of capital and stimulant for technology innovation. There are 50 million tons of greenhouse gases from the industrial sector ready to come into the market. Once they do come into the market we will see the potential for the CDM to achieve real reduction in greenhouse gas emissions. The CDM provides an opportunity for developing countries that did not accept binding emissions reductions at Kyoto to be involved in GHG mitigation. Therefore, if developing countries are to participate, the success of CDM needs to be ensured. The effective function of the CDM is critical to both Canada and The Netherlands in achieving their goals under the Kyoto Protocol. Both countries should be encouraged to increase funding to the CDM to enhance its effectiveness.

Specific problems with the CDM:

- CDM is complex and time consuming.
- The CDM market is not mature yet (there are extreme price expectations and speculation).
- The project-by-project approach of the CDM has not been effective.
- The Executive Board is performing functions that the secretariat should be exercising. Very detailed and rigid requirements contribute to slow progress.
- The CDM has limited human resource capacity, insufficient staff and budget.
- There is not a single credit committee that has taken into account a carbon emissions purchase agreement because credit business remains risky.
- CDM is not adequately supporting the core energy market. For example, coal power represents 20% of global emissions and China itself is stepping up its coal power production. Therefore, CDM must be directed towards addressing this reality and must lead to a package approach that focuses on, among

other things, enhancing the efficiency and environmental sustainability of fossil fuels.

- It is too late to develop a sizeable green fields project under the CDM because ten years are needed to buy emissions reduction agreements in order to have an impact on energy efficiency initiatives.
- The main challenge is that CDM it is dominated by gases that have no impact on the financing of low carbon energy systems.

6. Dutch lessons with CDM

Dutch lessons from the buyer's perspective

The Dutch perspectives on the CDM are categorized according to the three contexts in which interaction with the CDM has been experienced. First, as a buyer, it is felt that the CDM is complex and time consuming mechanism, but nevertheless holds potential. As well, the CDM market is not mature yet (there are extreme price expectations and speculation) and this is problematic in light of the fact that many buyers are planning to purchase beyond 2012. Therefore it is particularly important to have a clear signal of how the CDM will in fact be improved. Another problem from the buyer's perspective is that the huge potential for sequestration is entirely missed within the purview of the CDM.

Dutch lessons from the policymaker's perspective

As a policy maker, The Netherlands perceives that a major hurdle is created by the additionality requirements. Additional tools are needed to strengthen its effective functioning and

> "Under the CDM, industrialized countries can earn emissions credits by investing in emissions-reducing technology and capital in developing countries."

some solutions suggested include moving towards a sectoral CDM.

Dutch lessons from the Executive Board perspective

As an observer of the Executive Board, The Netherlands is concerned about the very slow project-by-project approach undertaken by the CDM. This is further exacerbated by the very detailed and rigid project approval process, not to mention insufficient staff and budgetary resources. While the recent management plan is a step in the right direction, the Executive Board should not be supervising the process as it currently does.

7. Recommendations for strengthening market mechanisms

- Emission trading targets must be updated to ensure that the market does not suffer from lack of certainty.
- The ET scheme needs to be adapted to other gases.
- There is a need to create methods to reduce the cost and allocation/approval time span of ET implementation.

- Governments must be encouraged to prepare to prepare more transparent emission allocation plans. the market will suffer if there is a lack of certainty regarding targets.
- The CDM must be sufficiently strengthened for the 2012 period. If this is not done, future emission credits are at risk and this will certainly impede the development of new energy efficiency projects.
- In national allocation plans for the first year, EU Member States have indicated their intentions to step up activity, therefore the CDM must be improved in order to sustain government engagement
- The resource and human capacity of the CDM must be increased if inefficiencies are to be redressed
- The CDM must be grounded within a less risky and more effective form of capital creation that is climate friendly.
- Incentives are needed to stimulate credit committees to take into account carbon emission purchases.
- A more sectoral approach is needed to counter the project-by-project approach.
- The CDM's Executive Board should not be involved in the day-to-day running of the CDM machinery.

8. Stepping up bilateral cooperation around market mechanisms

The experiences with EU trading schemes are useful and should be shared with partners around the world. The EU is willing to link its emissions trading scheme with other countries that have ratified the Kyoto Protocol. Canada would be a logical partner in this regard.

There is much that both the Dutch and Canadian governments can and must do to strengthen market mechanisms. Specific areas where lessons can be usefully shared pertain to green tax reform. The Dutch approach in achieving green tax reform with a shift in the tax base from labour to energy consumption — is particularly insightful and should be examined closely by Canada.

The objective of Thematic Panel 3 was to share experience regarding the efforts undertaken by the Dutch and Canadian governments to promote the development and transfer of climate-friendly technology innovation and to highlight the private sector experience in strengthening their competitiveness through the implementation of climate-friendly technologies.

IV. Bilateral Cooperation (Thematic Panel Three)

The DC4 Programme and Speakers

Speakers on the Thematic Panel 3 on technology innovation were grouped around the following headings:

- The state of climate-friendly technology and future challenges was addressed by **Richard Bradley**, Division Head of the Energy Efficiency and Environment Division of the OECD's International Energy Agency
- Generating new innovation opportunities was addressed by **Hugo Brouwer**, Director, Project Energy Transition, Ministry of Economic Affairs (The Netherlands); and **Graham Campbell**, Director-General, Office of Energy R&D, Natural Resources Canada.
- Strengthening competitive advantage in a carbon-constrained world was addressed by **Vicky J. Sharpe**, President, Sustainable Development Technology Canada; and **Albert Moens**, Executive Board of the Province of North Holland

Panel discussion and subsequent discussion with the audience was organised around the following questions:

1. What are the key lessons learned in the development and transfer of climate-friendly technologies?"
2. How should existing approaches be strengthened in the period leading up to and beyond 2012 and what are the new measures needed to improve the development and transfer of climate-friendly technologies?
3. What are the opportunities for stepping up bilateral cooperation and as well, cooperation with the private sector and other major groups in the further development and transfer of climate-friendly technology?

Key Issues Raised During Presentations and Discussion

1. Overarching challenges

The technology adaptation challenge

When we consider how we will meet the 60-80% reduction targets by 2050, it is important to acknowledge that many of the necessary technologies needed to achieve that goal do currently exist. The main challenges are to ensure that they are properly adapted, that they are able to penetrate the market effectively and efficiently, and that they are transferred on fair and equitable terms to developing countries, which are positioned to outpace Annex I countries in terms of emission levels.

The transformation challenge

Efficiency improvements are an important part of the climate change response, however they will not be enough. In addition, efforts must be directed towards transforming the current fossil fuels-intensive energy system into one that is based on low-carbon fuels and carbon-free energy sources.

This essential transition will require a massive infusion of technological innovation and ingenuity. Part of the challenge related to technology development is that, on one hand, many climate technologies currently do exist, but their uptake has not yet been economically encouraged. In this light, additional resources are therefore needed to ensure that the technologies that do exist are ready and able to penetrate the actual market. On the other hand, it must be recognised that many important climate-friendly technology solutions, such as clean coal, still require considerable research and development and as such, are nowhere near the point of being ready to be deployed.

The technology transfer challenge

Another challenge related to the technology innovation imperative is the importance of ensuring fair and equitable transfer of climate-friendly technologies to those countries who need them most. This is particularly problematic in light of the fact that the patents for many climate technologies are held by the private sector. It is also problematic in light of the fact that oil continues to be the dominant fuel source in the energy mix of most developing countries. Therefore, governments must implement the necessary incentive measures to stimulate the private sector accordingly.

> "Efforts must be directed towards transforming the current fossil fuels-intensive energy system into one that is based on low-carbon fuels and carbon-free energy sources."

The access challenge

Even with robust economic growth, it is still expected that in 2020, 1.4 billion people will not have access to safe, affordable and clean energy. It is imperative that we assist developing countries to make the necessary changes in the capital structure of their energy sectors, while at the same time ensuring that poverty eradication efforts are focused in large part on improving energy access for the world's energy poor. A main challenge for this is that donor governments are not as well informed as they should be regarding the receptive capacity of developing countries in terms of technology implementation.

The need for faster technological adaptation and innovation

Staying within the 2-degree Celsius "target" will necessitate a level of technological innovation that will have to match the ingenuity that originally catalysed the industrial revolution. Thus, innovation at all stages of technology development must carry on at a faster pace, compressing the overall timeframe in which the technology development chain unfolds needs to be compressed. In this light it is all the more important to reverse the decline in government spending on research and development. In addition, it is important to note that the historical way in which technology has been developed and diffused over time must change significantly, especially in

> “The use of fossil fuels will remain an inevitable reality, as they will continue to be the dominant source of energy in the next 25 years.”

face of China and of the world’s growing energy demand. The use of fossil fuels will remain an inevitable reality, as they will continue to be the dominant source of energy in the next 25 years. Thus, we need a radical transformation of fossil fuel use instead of simply focusing on the transition to low carbon use. Improving carbon capture and sequestration technology will be key in this regard. The clean coal challenge remains daunting in light of the state of development of relevant clean coal technologies.

The investment challenge

The technology innovation breakthrough will not happen without a massive infusion of investment. This is why we need a long-term plan to inform the investment community and to ensure that the necessary investment climate is sufficiently conducive to meeting the technology challenge. In order to reach the target of net zero emissions by the end of the century we must create a capital system in the energy sector that generates opportunities for zero emissions and addresses the rapid growth in demand for energy. Whatever approach is chosen, the involvement and financial commitment of the market and of businesses needs to be secured. Governments must take measures to mitigate risks for business in investing in climate change. Getting the pricing right is also a critical part in supporting technology innovation. When the price of oil reaches $75 per barrel, renewable energy sources will become profitable. Dismantling perverse subsidies in the fossil fuel sector must be accompanied by positive incentives to expedite the development of alternative fuel sources.

2. Dutch approaches and lessons

The transition approach

The Dutch government has developed a “transitional” approach to stimulating technology innovation, which focuses on social and institutional factors, and involves: stakeholder collaboration through all phases of technological development; the consideration of changes in the wider system, as the available technology is part of a general eco-social system; fostering learning and accepting variation, in lieu of a single blueprint approach. The transitional approach has stimulated Dutch industry. The energy R&D budget has been relatively stable over the last ten years with annual spending on research and development amounting to an average of 100 million euros per year.

Success with the Dutch R&D framework

Overall, the Dutch R&D framework has produced a coherent long-term strategy addressing energy policy goals, with a clear regard for cost-effective policy and evaluation procedures. However, efforts could be directed toward ensuring a greater degree of multi-sectoral communication regarding

R&D programmes and priorities across key ministries. As well, government departments considering creating new international research networks, or using those of the International Energy Agency (IEA) should bring in international partners from both public and private sectors to support work on new R&D priorities.

The EU's new push for technology innovation

As a short footnote on EU approaches, it is important to note that on 24 October, the European Commission launched the second European Climate Change Programme (ECCP II) at a stakeholder conference in Brussels. ECCP II follows on from the first European Climate Change Programme of March 2000, which won both plaudits and criticism with the EU trading scheme for CO_2 emissions by big industrial plants. The new programme will define future EU policies to mitigate climate change as well as to adapt to its consequences since at least part of it is considered to be unavoidable. Encouraging innovation and investment in clean technologies will form the major part of ECCP II. The Commission has designed the new programme to provide "a strong push for innovation" in climate-friendly technologies and for "the inclusion of all emitting sectors, such as aviation, shipping and road transport" in mitigation efforts.

3. Canadian approaches and lessons

The Office of Energy Research and Development

Natural Resources Canada is the federal government department that leads Canada's efforts energy technology. Approximately 100 million Euros are spent per year through several challenges: the department's energy S&T programmes that links 12 federal departments and agencies; the department's 3 energy S&T research centres across the country; and a host of networks, partnerships and contractual engagements with the provinces, industries and universities.

"Encouraging innovation and investment in clean technologies will form the major part of ECCP II."

Integrated approaches

The approach to managing energy S&T within the Office of Energy Research and Development (OERD), Natural Resources Canada involves an integrated combination of policies, programme and energy S&T. OERD take the policy drivers from the "top-down" priorities, make use of programs to put the policy into widespread practical application, and invest in energy science and technology to support and inform the policy and program thrusts.

The importance of international collaboration

OERD draws heavily on international collaboration, since Canada's investments make up only a few percent of the world's energy R&D. Therefore, Canada works through the International Energy Agency (IEA) Implementing Agreements, through a bilateral MoU with the US Department of Energy

and through a limited number other bilateral arrangements. While Canada shares the "collaboration overload" phenomena with The Netherlands, in many cases the benefits have proven to be well worth the effort.

The four technology innovation themes

In addition to this, four technology innovation initiatives reflect Canada's commitment to stimulating innovation in climate-friendly technology. These include: getting the strategy right by selecting the right niche opportunities; working in partnership with industry and the provinces; turning up the delivery machinery on climate S&T investments; more proactive commercialization of climate technologies.

Advancing transformative technologies

Two other recent initiatives include the allocation of $280 million CAD towards the development of "transformative technologies" in the last four years, and the use of new innovation-focused foundations, like the Sustainable Technology Development Canada (STDC), which operate at an arms' length outside of government.

The STD's mandate is to bring technologies forward through the innovation spectrum. Its funding system is like that of an early stage private-venture company: they receive two-thirds of their funding from the private sector. Then, instead of funding individual companies, the STDC funds consortia, thus connecting key players, including the potential consumers of the technology. By ensuring that private financial institutions are not disconnected, the likelihood of the market being adopted is enhanced. Despite the emphasis on practical application of new technologies, in the innovation chain, most of the emphasis is on research, and technologies often do not make it to the market because of deficient development strategies and policies.

4. Recommendations for improving technology innovation

- Technology innovation must be a critical part of the overall strategy for meeting Kyoto targets.
- Innovation at all stages of technology development must carry on at a faster pace.
- Governments must increase funding for research and development, making spending in these areas a priority.
- Positive incentives for expediting the development of alternative fuel sources must be implemented at national and international levels.
- More focus needs to be directed towards the transformation of existing technologies, especially of fossil fuels, to ways that are cleaner and more energy-efficient.
- Governments need to lay out detailed national strategies to ensure not only the development of new forms of environmentally safe technology, but also their implementation in the industrial and energy sectors.

- Governments must take measures to mitigate risks for business in order to provide an incentive for investment in climate change and in environmentally safe technologies.
- Perverse subsidies in the fossil fuel sector must be dismantled.
- Governments should create the necessary incentives to encourage better transfer of climate technologies to developing countries.
- Assisting developing countries in changing their energy sector needs to be coupled with overall improvement of energy access for the world's poor as part of a wider effort towards poverty eradication.

5. Strengthening bilateral cooperation in support of technology innovation

- Bilateral cooperation between the Dutch and Canadian governments along with the private sector will be key in the development and diffusion of energy efficient technologies that will play a major part in achieving the Kyoto goals.
- Both the Dutch and Canadian approaches reflect positive experience in the involvement of a wide range of stakeholders in the development of technology innovation. Canada's OERD serves as a model for bilateral cooperation, combining strengths by relying on international collaboration. Perhaps collaboration with the Dutch Government could be further explored with the OERD.
- Also, initiatives such as the STDC seem to be an effective way of ensuring partnerships with private financial institutions. This could be an interesting model for the Dutch to explore further in its efforts linking technology innovation to the wider social system.
- By the linkage of government initiatives with private sector investments and the creation of joint research initiatives among countries, efforts towards bilateral cooperation can not only help decrease some of the necessary costs necessary for technological investments, but they are also important in encouraging the sharing of experiences and the building of a common knowledge system that will fasten the development and implementation of environmentally friendly technologies and of more efficient forms of energy production. Bilateral cooperation will be especially necessary in pursuing the goal of technology innovation in developing countries. Efforts such as this conference are a starting point that should be systematically pursued by all players in the development of more efficient and environmentally sound technologies.

V. Bilateral Cooperation

The Importance of Bilateral Cooperation

The DC4 Conference has been an important expression of the proactive spirit of cooperation between The Netherlands and Canada. Important lessons were exchanged in terms of the similarities and differences of climate policy approaches, in terms of what climate policy approaches have worked, which have not, how both countries cope with new and emerging climate-related problems and how each has implemented and will set about strengthening the Kyoto mechanisms.

There is clearly a need for Canada and The Netherlands to continue to cooperate closely on matters pertaining to climate change. Both countries face many similar challenges and each has a multiplicity of innovative policies from which the other can learn. A stronger partnership between Canada and The Netherlands in meeting the climate challenge will mean more effective implementation in both countries. It will also ensure that both governments uphold their responsibilities under the Kyoto Protocol.

Understanding the factors that have constrained implementation could serve to inform the development of the new international climate framework up to and beyond 2012. At the same time, the conference has served to create opportunities for forging new forms of coalitions, which can help to mobilise political will to take positive action as opposed to the inertia that often characterizes international processes in which the most powerful interests dominate.

Potential Areas for Future Cooperation

The specific issues of common interest and concern that were raised throughout the discussions include:

- Challenges and importance of linking emission trading schemes
- Experience with fixed versus variable emission caps
- Importance of addressing the transport sector more effectively
- The aviation industry imperative
- The need to improve capture and storage approaches
- Challenges and experiences with green tax reform
- Use of energy efficiency agreements with industry
- Development of sector-based agreements for GHG reductions
- Development of progressive standards for building, plants and consumer products
- The need for further integration of industrial and environmental policy
- Strategies for enhancing the use of renewable energy sources;
- Challenges for public awareness raising around the climate challenge.

5. Conference Report

COP-11 presents an historic opportunity for developing countries to leapfrog into the low-carbon future. Canada and The Netherlands should seize this opportunity and ground future bilateral cooperation in the common cause of exercising its common but differentiated responsibilities and in particular, in supporting developing countries in responding to their climate policy challenges.

For example, since both Canada and The Netherlands have prioritized environmental sustainability in their respective development cooperation policies, there is considerable potential for future collaboration in assisting developing countries to create, maintain and enhance environmental sustainability goals, especially in relation to climate change.

Given China and India's intention to continue to use coal as the dominant fuel in their energy mix, Canada and The Netherlands might explore collaborative efforts to invest in clean coal technologies and infrastructure development in these two developing countries.

Another approach for stepping up bilateral cooperation could be to explore the development of MoUs to focus on how joint efforts could achieve both Canada and The Netherlands' climate change goals in the short and long term, as well as bringing about the tranformative changes needed for ensuring competitiveness of both economies in the 21st century. MoUs could identify goals and strategies for key sectors, such as the transport or aviation sector, which both countries have acknowledged as weak links in their current approaches.

As well, given The Netherlands' experience in the EU Emissions Trading Scheme and the recent participation of Canada's Climate Fund in the international carbon market, joint efforts could explore how best to link emissions trading schemes at global, national and regional levels and to examine how best to ensure the sound and sustainable evolution of the global carbon market.

At the end of the day, if we go anywhere in the post-2012 period, we must literally "get our act together". We need to achieve a greater degree of regulatory consistency, we need market mechanisms that send the right price signals and we need a more robust global framework that not only sets out more ambitious reduction targets, but as well, which strengthens existing implementation mechanisms such as emissions trading, joint implementation and the Clean Development Mechanism. This is an immense challenge, however bilateral cooperation between the two governments will serve as an important impetus for COP-11.

"Canada and The Netherlands should seize this opportunity and ground future bilateral cooperation in the common cause of exercising its common but differentiated responsibilities."

6. Speaker Biographies

6. Speaker Biographies

Hans Alders

Queen's Commissioner and former Minister of Housing, Spatial Planning and the Environment, The Netherlands

J.G.M. Alders has been the Queen's Commissioner in the province of Groningen since 1996. His main ancillary positions include: Chairmanship of the Supervisory Board of Gasunie Trade & Supply BV, Chairmanship of the Landelijk Beraad Crisisbeheersing (National Crisis Management Consultative Body) in The Hague, Chairmanship of the Supervisory Board of the Stichting Nationale Sporttotalisator (National Sports Totalisator) in The Hague, Chairmanship of the board of the Pension Fund for the Employees in Health, Welfare and Social Institutions (PGGM) in Zeist, Chairmanship of the Legal Aid Board in Leeuwarden, Chairmanship of the Supervisory Board of Aedes, federation of social housing institutions in The Netherlands in Hilversum, Process Directorship for the implementation of the Crop Protection Covenant in The Hague, membership of the Nieuwe Hanze Interregio, membership of the Samenwerkingsverband Noord-Nederland (SNN) (Northern Netherlands Alliance). Prior to 1996, Mr. Alders served as Director and Representative for Europe and Executive Coordinator Globalisation (economics, trade and international law) of United Nations Environment Programme (UNEP) from 1994, from 1989 to 1994 he was Minister of Housing, Spatial Planning and the Environment of The Netherlands. From 1989 to 1989 he was Member of the House of Representatives of the States General, where his portfolios included Civil Service Affairs and Interior Affairs. From 1978 to 1982 he was a Member of the Provincial Council of Gelderland.

The Honourable David Anderson, P.C. MP

Member of Parliament and former Environment Minister of Canada

Having been re-elected as Member of Parliament for Victoria for four consecutive terms, Mr. Anderson served as Minister of the Environment in the cabinets of Prime Minister Jean Chrétien from 1999 and of Prime Minister Paul Martin from 2003. Anderson's priorities as Minister have been improving air and water quality, protecting biodiversity (including endangered species) and negotiating, securing and implementing Canadian ratification of the Kyoto Protocol on climate change. Prior to this, Mr. Anderson was Minister of Fisheries and Oceans from 1997, where his efforts in the field of conservation earned him international recognition. In 1996, he was appointed Minister of Transport. In 1993 he was appointed Minister of National Revenue and political Minister for British Columbia. In 1979 Mr. Anderson worked as an environmental consultant and adjunct professor at the University of Victoria's School of Public Administration, served on several government commissions and boards, including as a member of the Immigration Appeal Board, as the sole commissioner of the Commission of Inquiry into Fraser Valley Petroleum Exploration, and as an advisor to the Premier of British Columbia on tanker traffic and oil spills. From 1972 to 1975 he sat in the Legislative Assembly for Victoria as the leader of the Liberal Party of British Columbia. Prior to this, as Member of Parliament (MP) for Esquimalt-Saanich, Mr. Anderson founded and chaired the Special Committee on Environmental Pollution. Before entering political life in 1968, he served in Indochina, Hong Kong, and Ottawa with the Department of External Affairs. In 2001 Mr. Anderson was elected President of the Governing Council of the United Nations Environment Programme (UNEP). In 2004 he was honored with the Dr. Andrew Thompson Award

for his lifelong contribution to environmental and sustainability in British Columbia, as well as with the prestigious John Fraser Award for Environmental Achievement. Mr. Anderson received his law degree from the University of British Columbia (UBC) and did two years of postgraduate studies at the Institute for Oriental Studies at the University of Hong Kong.

Michael Beale

Director-General, Large Industrials Emitters Group, Environment Canada

Mr. Beale is Acting Director General of the new Greenhouse Gas Reductions Directorate at Environment Canada. As such he is responsible for developing the regulations for the Large Final Emitters system, recommending the rules that should govern the offsets system, and advising on the policy mandate of the new Climate Fund Agency. Before taking on these responsibilities in May, Mr. Beale was closely involved in the development of Canada's Climate Change Plan. Michael Beale's previous responsibilities at Environment Canada have included policy development in the area of trade and environment, energy and environment linkages, and the use of economic instruments in environment policy. Prior to joining Environment Canada in 1989, Mr. Beale spent 8 years working in energy policy at what was then Energy, Mines and Resources Canada.

Mike Beale, Acting Director General, Greenhouse Gas Reductions Directorate, Ministry of Environment, Canada

Jacques Bilodeau

Ambassador for Climate Change of Canada

Ambassador Bilodeau joined the Department of External Affairs in 1967, and served abroad in Havana, Cuba; Accra, Ghana; Athens, Greece; Paris, France; and Rome, Italy. He served as Ambassador to Senegal from 1990 to 1994, with accreditation to The Gambia, Mauritania, Guinea, Guinea-Bissau and Cape Verde. He served as Deputy High Commissioner to the United Kingdom from 1996 to 2000, and Ambassador to Belgium and Luxembourg from 2000 to 2004. Mr. Bilodeau returned to Ottawa in August 2004. He continues to serve as the Prime Minister's personal representative for La Francophonie, a position he has held since 2000 as well as Canada's Ambassador for Climate Change.

6. Speaker Biographies

Maurits Blanson Henkemans

Manager, Dutch ET and JI Program, Ministry of Economic Affairs, The Netherlands

Mr. Blanson Henkemans has served in the Ministry of Economic Affairs as Project Manager of Risk mitigation, implementing the EU emission trading scheme, as member of the implementation team for the Linking Directive, participant of various working groups on Post Kyoto Policies, Chairman of the CO_2 expert group, where representatives of different companies active on the CO_2 market inform each other about obstacles and barriers for trade. Previously, from 2003 to 2004, Mr. Blanson Henkemans was responsible for the negotiations of the Linking Directive on EU Emissions Trading. From 2001 to 2003, he was the Dutch Government's co-ordinator for the negotiations on the EU Directive for Emissions Trading. In 2002, he was responsible for implementing a pilot allocation plan for The Netherlands as part of the implementation of the EU emissions trading program. From 1999 to 2002 he chaired the Participant Committee of the Prototype Carbon Fund (PCF). From 1998 to 2001 he managed the Dutch Joint Implementation Program (ERUPT), and served as member of the Dutch Delegation to the International Climate negotiations (CoP 5,CoP 6 CoP6 bis till CoP10)

Hans Bolscher

Director, Climate Change and Industry, Ministry of Housing, Spatial Planning and the Environment, The Netherlands

Mr. Bolscher started his career working in Africa in emergency relief operations. Later he studied business and development economy and became active in the field of "fair trade" - The trade approach to development goals. He worked both in the field of business and NGO's and was internationally involved in many sustainability fora.

After ten years as director of Max Havelaar he switched to the public sector as deputy director and later as director for the Dutch Immigration Service. Since 1st of September 2005 he is director for Climate Change and Industry at the Ministry of Housing, Spatial Planning and the Environment.

Hans Bolscher, Ministry of Housing, Spatial Planning and the Environment, The Netherlands

Hugo E. Brouwer

Director, Project Energy Transition, Ministry of Economic Affairs, The Netherlands

Mr. Brouwer is Director for Energy Transition at the Directorate General for Energy, Ministry of Economic Affairs of The Netherlands. He has extensive experience spanning more than 15 years in a variety of energy policy-related issues. For four years now he has been responsible for acquisition of foreign companies in The Netherlands. Among his current responsibilities in the field of energy are, notably, forecasting and model-

ling energy demand, development and application of energy research programs, negotiation of long term agreements with industry on energy-efficiency, introduction of cogeneration in households and industry, policy making regarding liberalisation of the electricity and gas sectors, and development of climate change policy. He is also working on a program of transition towards a sustainable energy system. Mr. Brouwer is Vice Chairman Standing Group on Long Term Issues at the International Energy Agency in Paris. He acquired his degree in economics at the Free University of Amsterdam.

Richard Bradley

Division Head, Energy Efficiency and Environment, International Energy Agency, OECD

Dr. Bradley has been the Head of the Energy Efficiency and Environment Division at the International Energy Agency in Paris since January 2004. The EED provides analytical support to the IEA Standing Group on Long Term Co-Operation and to the Annex I Experts Group on a range of issues climate change policy issues. For many years, he represented the US as senior negotiator on multilateral energy and environment agreements. He is also a former Chair of the OECD/IEA Annex I Group of Experts. He has written a number of articles on issues such as climate change and greenhouse gas emissions.

Graham Campbell

Director General, Office of Energy Research and Development, Natural Resources Canada

In his present position as Director General, Office of Energy Research and Development, Mr. Campbell is responsible for Natural Resources Canada's Office of Energy R&D which provides annual funding for interdepartmental research and development in technologies related to energy sources, energy end-use and related environmental issues. He has contributed to the National Climate Change Process as co-Chair of the Technology Issues Table made up of representatives from the federal and provincial governments, energy suppliers, industry, academia and ENGOs from across Canada. The Technology Table developed options to accelerate the development, demonstration and commercialization of technologies to reduce GHG emissions, and recommended means to enhance Canadian capabilities and opportunities in supplying technologies in domestic and international markets.

Graham leads two climate change technology development initiatives, under Action Plan 2000 and the Technology and Innovation program, and is the co-chair of the federal-provincial-territorial Energy Technology Working Group convened under the auspices of the Council of Energy Ministers. Mr. Campbell is the Chair of the International Energy Agency's Committee on Energy Research and Technology (CERT), which plans and coordinates the IEA's program of collaborative R&D in a wide range of energy technologies, and participates in several R&D advisory boards.

Mr. Campbell is a graduate of the University of Waterloo (Physics) and the University of British Columbia (Metal Physics) and is a member of the Association of Petroleum Engineers, Geologists and Geophysicists of Alberta (APEGGA).

The Honourable David Walter Chomiak

Minister of Energy, Science and Technology of Manitoba, Canada

Minister David Chomiak was born in Winnipeg's North End and resides in the West Kildonan area. Prior to Minister Chomiak successful election in September 1990 as the MLA for Kildonan, he was a lawyer in private practice. He was

re-elected in the 1995 general election. Minister Chomiak has been a member of the board of the Hoosli Ukrainian Male Choir, the Board of Directors of Ed Schreyer's Canadian Shield Foundation and was an active Big Brother with the Big Brother's Association of Manitoba. Minister Chomiak was Executive Assistant to Ed Schreyer as Premier of Manitoba and Special Assistant to Ed Schreyer as Leader of the Opposition. He is a former board member of Ukrainian Cultural and Educational Centre and a former member of Rusalka Dance Ensemble. He was the New Democratic Party Critic for Health and has also served as the Critic for Education and Justice.

Hugo Brouwer, Director, Project Energy Transition, Ministry of Economic Affairs, The Netherlands

Lex de Jonge

Head, CDM Division, Ministry of Housing, Spatial Planning and the Environment, The Netherlands

Since April 2001, Mr. de Jonge has been the head of the CDM Division, part of the Directorate for International Environmental Affairs of the Dutch Ministry of Housing, Spatial Planning and the Environment (VROM). His main responsibility is to implement the CDM and thus purchase CERs on behalf of the Dutch government. Another important part of his duties is contributing to the development of CDM policy in the international arena. Before April 2001 he was head of the Industry Division of the Directorate of Climate Change and Industry of the Ministry of VROM. Mr. de Jonge's education as a chemical engineer and assignments within industry, later on at local authorities and for the last 10 years at the Ministry of VROM, have all contributed to his broad experience on technology, environmental protection and (international) policy making.

Jos Delbeke

Director, Air and Chemicals Directorate, DG Environment, European Commission

As of February 2003 Dr. Delbeke is Director for the Air and Chemicals Directorate of the European Commission's Directorate General for Environment. In this capacity he oversees the Clean Air for Europe programme (CAFÉ), the implementation of the European Emission Trading Scheme (EU-ETS), and the negotiations on the new chemicals proposal REACH. As of the fall of 2004 he is also establishing a new unit on industrial emissions that incorporates several Directives such as on Integrated Pollution and Prevention Control (IPPC) and on the Emission Pollutions Register (EPER).

Dr. Delbeke has been teaching at University of Louvain and at VLEKHO Business School in Brussels. In 1985, he was a temporary staff member at the International Monetary Fund (IMF), Washington DC, and joined the European Commission in 1986. In the DG for Environment, he has been Head of Unit, responsible for economic and fiscal instruments and benefit-cost analysis in the field of the environment. Since 1999 he is heading the Climate Change Unit and he has been the chief negotiator for the European Commission at the UNFCCC Conference of the Parties. He has been actively promoting the

use of the Kyoto mechanisms at EU level. In 2002, he was the Head of the Task Force on the World Summit on Sustainable Development in Johannesburg. Dr. Delbeke holds a PhD is in economics.

The Honourable Stéphane Dion, P.C., M.P.

Minister of the Environment of Canada

Minister Dion obtained his bachelor's and master's degrees in political science from Laval University in 1977 and 1979, respectively. Stéphane Dion received his doctorate in sociology from the Institut d'études politiques in Paris. He taught at the University of Moncton in 1984, and from 1984 to January 1996 he was a professor of political science at the Université de Montréal. On Jan. 25, 1996, Mr. Dion was sworn in as President of the Queen's Privy Council for Canada and Minister of Intergovernmental Affairs, a position he held until Dec. 12, 2003. He was named Minister of the Environment on July 20, 2004.

Jim Fulton, Executive Director, David Suzuki Foundation, Canada

Jim Fulton

Executive-Director, David Suzuki Foundation, Canada

Mr. Fulton is Executive Director of the David Suzuki Foundation, a charitable organization working to achieve sustainability within a generation for Canada. Prior to joining the Foundation in 1993, Mr. Fulton represented the federal riding of Skeena (in northwestern British Columbia) in Canada's House of Commons. For 14 years he was Opposition spokesman in Parliament on environmental issues. Mr. Fulton also held Parliamentary positions on constitutional matters, Aboriginal and Northern affairs, energy, forestry, mining and small business, and held the position of vice-chair for the Canada/United States Interparliamentary Association from 1980 until 1993. Mr. Fulton graduated from Simon Fraser University in 1974 and from 1975 until his election was employed in the Ministry of Attorney General for British Columbia. In 1988 he was given the Outstanding Graduate Award from Simon Fraser University.

Daniel Gagnier

Senior Vice President, Corporate & External Affairs, Alcan Inc., Canada

Mr. Gagnier is the Senior Vice President, Corporate & External Affairs for Alcan Aluminium Limited of Canada. In this position, his responsibilities include corporate communications, government relations and environment health and safety. Prior to joining Alcan in 1994 as Vice President, Corporate Affairs, Mr. Gagnier held a number of positions with the governments of Canada, Ontario and Saskatchewan. From 1972 to 1982, the Department of External Affairs posted him overseas to diplomatic assignments in countries including Mexico, Yugoslavia and the United Kingdom. In 1985, Mr. Gagnier joined

the Saskatchewan government as Deputy Minister, Economic Development and Trade, a position he held until 1987. Mr. Gagnier returned to Ottawa in 1987 to become Assistant Secretary to the Cabinet, Economic Policy and Programs, at the Federal-Provincial Relations Office. From 1988 to 1990, he worked for Ontario Intergovernmental Affairs, Special Adviser to the Cabinet and Chief of Staff of the Premier's Office. Following this period at Queen's Park, Mr. Gagnier returned once again to Ottawa, where he served as Deputy Secretary to the Cabinet (communications) and Adviser at the Privy Council Office until 1992. From 1992 to 1994, he was the President of the Brewers Association of Canada.

The Honourable Stéphane Dion, Minister of the Environment, M.P., Canada

Como van Hellenberg Hubar

Ambassador of The Netherlands to Canada, Co-Chair of the DC4 Steering Committee and Co-Chair of the DC4 Conference, The Netherlands

Ambassador of the Kingdom of The Netherlands to Canada J.G.S.T.M. van Hellenberg Hubar joined The Netherlands Diplomatic Service in 1972, he served in Rabat, Montevideo, Kuwait, Algiers and at the Permanent Representation of The Netherlands to the United Nations in New York, as well as at the Ministry of Foreign Affairs in The Hague as head of the Armaments Production and Civil Defence Unit.

After these postings, Ambassador van Hellenberg Hubar served as Permanent Representative to the West-European Union seat in Brussels and Ambassador to the Political and Security Committee of the EU (2000 to 2001), Ambassador in Tel Aviv (1997-2000). During The Netherlands Presidency of the EU in 1997 Ambassador van Hellenberg Hubar was a leading official in The Netherlands Delegation to the fifth Session of the Commission on Sustainable Development and the 19th Special Session of the UN General Assembly. From 1994 to 1997 he served as Deputy Secretary-General at the Ministry of Foreign Affairs in The Hague, prior to this he occupied the position of Director of the General Affairs Department at the MFA. From 1990 to 1993 he was DCM in Tel Aviv, and point of contact with the local Palestinian leadership. From 1989 to 1990 as Counsellor and Deputy Head of The Netherlands Delegation he partook in the negotiations on Confidence- and Security Building Measures (CSBM) in Vienna; and from 1987 to 1989 he was Counsellor in The Netherlands Delegation to the Third CSCE Follow-up Conference in Vienna.

Ambassador van Hellenberg Hubar attained his law degree from the University of Leiden in The Netherlands.

Hans Jager, Stichting Natuur en Milieu, The Netherlands

Hans Jager

Climate Policy Director, Stichting Natuur en Milieu, The Netherlands

Drs. Jager studied polymer chemistry at the University of Groningen. After his study he worked for Philips Electronics as a chemist. Six years later he left and started as manager of the coating department for Fuji Photo Film. He returned to Philips Electronics first as a chemist and later on he served as policy officer at the Corporate Environmental & Energy Office. He then served as a consultant with Arcadis. Since 2002 he has been working for the Society for Nature and Environment (NGO) in the Climate Department.

Sushma Gera

President, DCM Executive Board and Director, Climate Change and Energy Division, Foreign Affairs, Canada

Dr. Gera has been a negotiator on climate change issues since COP1 in Berlin. She closely followed IPCC and OECD climate change deliberations. She also negotiated Kyoto Mechanisms rules. Dr. Gera holds a Ph.D. in economics.

Andrei Marcu

President and CEO, International Emissions Trading Association (Canada)

In his capacity as the President and CEO of IETA, Mr. Marcu has been deeply involved in COP process and the national and international effort to make the provisions of the Kyoto Protocol operational and create its governance regime. His activities have included work with the European Commission, the UNFCCC, Canadian government as well as other regulators. Mr. Marcu has spent most of his career in the electric power industry with Ontario Hydro in Toronto, Canada where he has worked in many areas of the corporation in a senior capacity including contracts, energy efficiency, regulatory affairs, and international operations. As Deputy Managing Director of the E7 and Chair of the Climate Change Subcommittee he has had the opportunity to work on issues related to sustainable energy development in a sector critical to development and in implementation of Agenda 21. He has also worked in the field of development as Manager of Private Sector Cooperation in the United Nations Development Programme, where he has pioneered cooperation between the UN system and multinational corporations. Mr. Marcu holds a degree in electrical engineering from McGill University in

6. Speaker Biographies

Montreal and an MBA form the University of Toronto. He is a member of the Advisory Boards of the World Bank Community Development Carbon Fund and the Oregon Carbon Trust.

Andrei Marcu, President, International Emissions Trading Association, Canada

Clive Mather
President and CEO, Shell Canada

Mr. Mather is President & CEO of Shell Canada Limited since August 2004. Shell Canada Limited is one of the largest integrated petroleum companies in Canada, with three major businesses: Exploration & Production (of natural gas, natural gas liquids and bitumen); Oil Products (manufacture, distribution and marketing of refined petroleum products across Canada); and Oil Sands (integrated mining and upgrading).

Mr. Mather writes and speaks on business, leadership and corporate social responsibility (CSR) internationally. He is a Director of Placer Dome Inc. and on the Board of Directors of the C.D.Howe Institute. He is Chairman of the CSR Academy in the U.K. and Chairman of the IMD Business Advisory Council in Switzerland. His career of 35 years with Shell has spanned all its major businesses, including assignments in Brunei, Gabon, South Africa, The Netherlands and the U.K. His last position was CEO of Shell U.K. Limited and Head of Global Learning in Shell International based in London, England.

Elisabeth May
Executive Director, Sierra Club of Canada, Officer to the Order of Canada

Ms. May is an environmentalist, writer, activist, and lawyer. She has been Executive Director of the Sierra Club of Canada since 1989. She is a member of the Board of the International Institute of Sustainable Development and is former vice-chair of the National Round Table on the Environment and the Economy. In 1999, Dalhousie University created a permanent chair in her honour, the Elisabeth May Chair in Women's Health & the Environment. She has received numerous rewards, including the United Nations Global 500 award and 2 honourary doctorates. She is the author of four books. In 2005 Elisabeth May was honoured to be appointed as an Officer to the Order of Canada.

Mary Jane Middelkoop
Senior Policy Analyst, Environment and Sustainable Development, Federation of Canadian Municipalities, Canada

Ms. Middelkoop is a Senior Policy Analyst for environment and sustainable development with the Federation of Canadian Municipalities (FCM). Ms. Middelkoop's role within the FCM is to identify and address emergent and ongoing environmental and sustainability policy issues that affect the quality of life within Canada's cities and communities. She provides FCM's National Board of Directors and membership at large with an

analysis of key policy issues, and serves as the organization's strategic voice during key environment and sustainable development consultative processes. Ms Middelkoop has extensive experience providing expert policy and management advice to individual corporations, industry associations, and governments in the areas of environment, community development, and social policy. She has provided the Government of Canada with advice on the design of economic instruments and voluntary programs for environmental policy, and has broad experience in the design and implementation of multi-stakeholder engagement and community outreach processes. Prior to FCM, Ms Middelkoop held positions with Stratos Inc. (an Ottawa-based environmental policy consulting firm), and the Ontario Ministry of Natural Resources, Delaware Water Resources agency, National Aeronautics and Space Administration (NASA), and NOAA (National Oceanic and Atmospheric Administration).

Mary Jane Middelkoop, Senior Policy Analyst, Federation of Canadian Municipalities

Albert Moens

Member, Executive Board of the Province of Noord-Holland, The Netherlands

Albert Moens has a particular interest in the development of future techniques for large scale off and near shore wind farming. Albert Moens is the architect and stimulator of strategic alliances, that are being formed between the renowned energy research centre ECN, power supplier NUON, Shell, construction giant Ballast Nedam, and many more companies involved in research, development, construction and maintenance of wind farms. Harakosan Europe Ltd. plays a pivotal role in this: due to Albert Moens' intervention, this Japanese construction firm settled in Den Helder. The Den Helder Harakosan plant produces so called direct drive wind turbines, based on the Dutch Zephyros-Lagerweij concept.

Albert Moens also chairs the Renewable Energy Subgroup of the European Union North Sea Commission. Albert Moens has been a member of the Provincial Executive since May 2003. Before then, he was the Mayor of (small town) Oostzaan for five years, worked in several municipalities, as a consultant on municipal collaboration and served as an elected member in Municipal Councils.

6. Speaker Biographies

Ken Newcombe

Director, Prototype Carbon Fund, World Bank, Australia

Dr. Newcombe is Senior Manager and Senior Advisor for Sustainable Development in the Vice-Presidency for Environmentally and Socially Sustainable Development.

From 2000 to April 2005, as Senior Manager and Funds Manager for the Carbon Finance Business, Dr. Newcombe developed and oversaw the design and launch of 8 carbon leading to funds under management of $1 billion, as a multi-million dollar program for capacity building for developing countries and the private sector.

Dr. Newcombe began his career as a research scientist in energy and natural resource management at the Australian National University, and as Director of the Papua New Guinea Human Ecology Program. He was General Manager of the Papua New Guinea electric power utility, and Head of the Energy Planning Administration in Papua New Guinea that he helped establish in the period 1978-82. He joined the World Bank in December 1982 as an energy specialist in the Energy Department and transferred to East Africa Projects Department in 1983. He became Head of the Energy Unit, Technical Department for Africa in 1989, Chief, Global Environment Division in 1991, and Senior Advisor, Environment Department in 1997.Dr. Newcombe has a PhD in Energy and Natural Resource Systems Management from the Australian National University and a BSc Hons in natural sciences from the University of Tasmania.

Ken Newcombe, Director, Prototype Carbon Fund, Worldbank

Annie Petsonk

International Counsel, Environmental Defense Fund, United States

Ms. Petsonk is International Counsel for Environmental Defense, a 400,000-member advocacy organization specializing in the development of innovative, economically sensible solutions to environmental problems. Ms. Petsonk was closely involved in the design of the 1997 Kyoto Protocol on Climate Change and in the analytical work that preceded Russian President Vladimir Putin's decision to ratify the treaty. Her current priorities include helping the more than 140 countries that have joined Kyoto participate in its global emissions trading market, which opened its doors for business on February 16, 2005. Prior to coming to Environmental Defense, Ms. Petsonk served in the administration of President George H.W. Bush, as Director of Trade and Environment Affairs at the Office of the U.S. Trade Representative, in the Executive Office of the President. Ms. Petsonk has published many articles on climate change, appeared on numerous television and radio shows and speaks on climate change and economic growth around

the country, including Stanford's Graduate School of Business and Harvard Business School. Ms. Petsonk is a graduate of The Colorado College and Harvard Law School. She also teaches at George Washington University Law School.

The Honourable Pierre Stewart Pettigrew, P.C., M.P.

Minister of Foreign Affairs of Canada

Mr. Pettigrew was elected to the House of Commons in a March 1996 by-election and first joined the Cabinet in January 1996 as Minister for International Co-operation and Minister responsible for La Francophonie. In 2003, he was named Minister of Health, Minister of Intergovernmental Affairs and Minister responsible for Official Languages. From 1996 to 1999, he served as Minister of Human Resources Development. Appointed Minister for International Trade in 1999, he has since chaired the Ministerial Meeting of the Free Trade Area of the Americas in Toronto in November 1999, chaired the Working Group on Implementation at the World Trade Organization (WTO) Ministerial Conference in Seattle in December 1999, and chaired the Working Group on Singapore Issues at the WTO Ministerial Conference in Doha, Qatar in November 2001. A former business consultant, Mr. Pettigrew was vice-president of Samson Bélair Deloitte & Touche International (Montreal) from 1985 to 1995 where he acted as a business consultant to companies with dealings in international markets.He served as Foreign Policy Advisor to the Prime Minister of Canada from 1981 to 1984, as executive assistant to the Leader of the Quebec Liberal Party from 1978 to 1981, and as director of the Political Committee, NATO Assembly, in Brussels, from 1976 to 1978. Mr. Pettigrew holds a bachelor of arts in philosophy from the Université du Québec à Trois-Rivières and a masters of philosophy in International Relations from Balliol College, Oxford University, England.

Sible Schöne, Climate Director, WWF, The Netherlands

Sible Schöne

Climate Director, WWF-Nederlands, The Netherlands

Mr. Schöne has been WWF's Programme Director for Climate since 2005. Previously, as Head of the Climate Programme of the World Wide Fund for Nature, he contributed to the development of the WWF international climate team. Mr. Schöne is furthermore involved in both national and international policy work and in the development of innovative projects with businesses related to green electricity and energy efficient houses. From 1985 to 1992 Mr. Schöne was head of the Energy Unit with Friends of the Earth Netherlands. During this period he worked on nuclear energy issues and national and local energy policies, and climate change issues. Since the mid seventies he has been working and volunteering for such organizations as Energiewinkel Nijmegen, Stroomgroep Stop Kernenergie Nijmegen. Mr. Schöne holds a degree in mathematics from the University of Nijmegen.

6. Speaker Biographies

Vicky Sharpe, President, Sustainable Development Technology Canada (SDTC)

Vicky J. Sharpe
President & CEO of Sustainable Development Technology Canada, Canada

Dr. Sharpe is President and CEO of Sustainable Development Technology Canada. Previously, she was President of GRI Canada and Astral Group. Dr. Sharpe has more than 15 years' experience in the energy industry and over the course of her multifaceted career she has successfully integrated sustainable development into business practices. She built an international business in the areas of energy efficiency and the environment while serving as Vice President of Ontario Hydro International.

A recipient of the inaugural National Energy Conservation Association's Energy Efficiency Award for outstanding contributions to the energy industry, Dr. Sharpe has served as an international advisor on sustainability issues and represented the Canadian energy sector at the Asia-Pacific Economic Cooperation (APEC) Business Forum. Dr. Sharpe has chaired several boards including the National Advisory Board on Energy, Science and Technology, and the Board of Directors of Clean Air Canada Inc. She co-chaired the City of Toronto's Sustainability Roundtable.

Dr. Sharpe holds a B.Sc. Honours in Applied Biology (Co-op Program) from Bath University, U.K. She earned her Ph.D. in Microbiology and Chemistry from Trent University, U.K. where she spent five years as a doctoral researcher and lecturer.

H.E. Philip Patric Smith, High Commissioner for the Commonwealth of the Bahamas to Canada

H.E. Philip C.P. Smith
High Commissioner for the Commonwealth of the Bahamas to Canada

Previously to his post as High Commissioner for the Commonwealth of the Bahamas to Canada, Ambassador Smith was employed with the Sunshine Holdings Group in Nassau as Marketing Manager for two subsidiary companies. Before this, he served as Parliamentary Secretary in the Foreign Ministry.

Ambassador Smith was a Member of Parliament from 1977 to 1992.

During his public life Ambassador Smith served, at various times, as: Chairman, Bahamas Quincentennial Commission; Chairman, Broadcasting Corporation of The Bahamas; Chairman, People's Penny Savings Bank; Vice-Chairman, BahamasAir Holdings Ltd.; Vice-Chairman, Water and Sewerage Corporation; and, Delegation Leader to the 1981 Commonwealth Parliamentary Conference in Fiji. He was an active member of the Committee on Southern Africa, and of an observer group for the historic 1994 National elections in South Africa. Ambassador Smith attended St. Augustine's College in Nassau and the University of the West Indies' Trade Union Education Institute in Jamaica.

Annemarie van der Rest

Manager, Environmental Affairs, Shell-Nederlands, The Netherlands

Ms. van der Rest is Manager of Health, Safety and Environmental Affairs for Shell in The Netherlands since April 2003. She advises the Shell Nederland board of Management on HSE policy matters, HSE performance and national developments on HSE issues. Ms. van der Rest joined the Shell team in 1978 at the Technology Department for Refining. After several functions in waste water treatment and gasoline production, both at Shell's Central offices in The Hague, and at Shell's Pernis Refinery, she joined the Public Affairs department of Shell Nederland in Rotterdam as Head of the Educational Liaisons' Department. In 1991 she became Corporate Environmental Adviser for Chemicals and Refining, working at the Development Centre for Corporate Environmental Issues. From 1994 to 2000 she was Manager of Environmental Affairs at Pernis, Shell's Refining and Chemicals complex near Rotterdam. She was a member of several national and international environmental committees both for the Oil and Chemicals industry, covering subjects like: governments relations, ISO 14001 certification, IPPC BAT document for Refining, NOx abatement and the Post Seveso-II directive. In July 2000 Ms. van der Rest joined the corporate centre in The Hague, dealing with subjects such as HSE reporting and external verification. Ms. van der Rest graduated from Twente Technical University in Chemical Engineering.

Annemarie van der Rest, Manager Health, Safety and Environmental Affairs SN-EA Shell Nederland, The Netherlands

P.L.B.A van Geel

State Secretary for Housing, Spatial Planning and the Environment, The Netherlands

After completing his secondary education, State Secretary van Geel studied town and country planning at the University of Nijmegen (graduating in 1974). He went on to work for the Municipality of Helmond, first as a planner but from 1980 as head of the Research, Statistics and Policy Development Department and from 1988 as town clerk. From 1987 to 2002

6. Speaker Biographies

State Secretary van Geel was a member of the Provincial Council of North Brabant for the Christian Democratic Alliance (CDA) and from 1995 a member of the provincial executive. He became vice-chairman of the Association of Provincial Authorities (IPO) and in 2002 a member of the House of Representatives of the States General. State Secretary van Geel has also been chairman of the Dutch Organisation for Civic Education, a board member of the Forum for Urban Regeneration (FSV) and Senior Vice President of the International Network for Urban Development (INTA). On 22 July 2002 State Secretary van Geel was appointed State Secretary for Housing, Spatial Planning and the Environment in the Balkenende government on the nomination of the CDA. He was once again appointed State Secretary for Housing, Spatial Planning and the Environment in in the second Balkenende government on 27 May 2003.

Richard Bradley, Division Head, Energy Efficiency and Environment
International Energy Agency, France

Sheila Watt-Cloutier
Chair, Inuit Circumpolar Conference, Canada

Ms. Watt-Cloutier is originally from Kuujjuaq, Nunavik, Northern Quebec. Before being elected as Chair of the Inuit Circumpolar Conference in 2002, she headed the Canadian Branch of the organization. Ms. Watt-Cloutier is recognised for her efforts on behalf of Arctic indigenous peoples and, in particular, the Inuit of the North. She champions many critical contemporary issues including Persistent Organic Pollutants, sustainable development, traditional ecological knowledge, northern education and the impact of climate change on northern regions among others. Ms. Watt-Cloutier oversaw the administration of the Inuit land-claims body established under the James Bay and Northern Quebec Agreement as Corporate Secretary of Makivik from 1995 to 1998. In 2005, the United Nations Environment Programme (UNEP) named Ms. Watt-Cloutier, along with six other environmental leaders as a “Champion of the Earth 2005”.

7. Selected Keynote Speeches

7. Selected Keynote Speeches

Address by the Honourable Pierre Pettigrew, Minister of Foreign Affairs, at the Dutch-Canadian Conference on Climate Change

It is with great pleasure that I address you today. Canada and The Netherlands have a close and storied history, and we have faced many challenges together. Now our two countries, and the world at large, must do whatever is necessary to address the challenge of global climate change-to ensure that our natural environment and our prosperity are sustained.

Of course, all international action begins at home. No country can help the state of the global commons if it is not willing to act domestically. Both Canada and The Netherlands have taken significant national action to reduce greenhouse gas emissions.

As you know, Canada is working hard to find effective ways to address climate change. Over the course of these two days, representatives of both Canada and The Netherlands have been able to share best practices, innovative policies, success stories and, yes, challenges. This exchange will serve to help our two countries work more closely together in finding solutions to this global problem.

Canada is fully committed to meeting the challenge that climate change presents. Although the journey from the crafting of the Kyoto Protocol in 1997 to Canada's ultimate ratification in December 2002 was often difficult, Canada's commitment to meeting its obligations never wavered.

This commitment was clearly highlighted by Prime Minister Paul Martin in his recent address to the United Nations General Assembly, when he stated, "climate change is real, and the world must recognise it; human activity is a defining cause, and the world must act on it."

And Canada is acting.

We have released a comprehensive national plan to address our Kyoto commitments. In addition, Canada will be hosting the first United Nations Conference on Climate Change to be held after the Kyoto Protocol's entry into force. This meeting will serve to finalize the unfinished business surrounding initial implementation of the Protocol, and it will lay the foundations for an effective and equitable way forward, beyond Kyoto.

We have our work cut out for us, but we will rise to the challenge.

The effectiveness of our efforts to reduce emissions will depend very much on the effectiveness of the international regime. This is precisely why Canada has offered to host the United Nations Conference on Climate Change in Montreal this November.

Over the past year, Prime Minister Martin has given unprecedented momentum to Canada's environmental policy. His agenda, laid out in the Speech from the Throne, included 13 commitments on clean air and water, energy, climate change

and the preservation of our natural capital.

In April, the Government of Canada released a comprehensive plan for honouring our Kyoto commitments-a plan, I should add, that has been widely lauded by many nations across Europe.

Let me be more specific. Over the course of the summer, normally a quiet time for governments, draft regulations dealing with Canada's largest emitters of greenhouse gases were outlined. They should be finalized before the end of this year.

In August, we released a proposed set of rules for an offset credit system. This system will award credits to large and small industries, technology companies, municipalities, farmers, foresters and individual Canadians who achieve greenhouse gas emissions reductions. The system will also create a market enabling these players to sell their credits-which is an efficient way to get the maximum emissions reductions at the lowest cost. Cross-country consultations on this proposed set of rules are taking place this fall.

We are working hard to ensure that the Climate Fund, a key component of Canada's climate change plan, will be fully operational by next year. Acting as a form of investment bank, this fund will purchase reductions in greenhouse gas emissions resulting from innovative projects.

On September 3, 2005, the government proposed the addition of the six greenhouse gases to Schedule 1 of the Canadian Environmental Protection Act, which will effectively allow Canada to regulate these gases as controlled substances. This is an important and necessary step in the development of regulations that will cover the largest point sources of emissions.

> "Climate change is not simply an issue of resource protection. Climate change has deep roots in global economic and political activity."

Canada's climate change plan is designed to spur innovation and technological advancement. This is essential for the long-term transformation that is required to maintain a sustainable and competitive economy in the 21st century.

The plan also seeks to help the private sector maintain its economic strength while being part of the solution to the challenge of climate change-financially healthy companies are vital not just in effectively addressing climate change but in maintaining Canada's global competitiveness.

Of course, another key element of our climate change plan is to engage Canadian civil society. For example, the government recognizes the value of working with industry and NGOs [non-governmental organizations] at home and internationally. We may not agree on everything, and on some things we may disagree strongly, but we will have to find common ground if we are to make progress. That's not a call to abandon principles, but rather to assess the needs of other groups and see where we can work together.

I am convinced that the market-based yet socially responsible approach laid out in Canada's climate change plan will be effective. Over the coming months and years, Canada will continue to work diligently on its national program of action, and will ensure that its Kyoto commitments are fully met.

Internationally, the world has seen a remarkable focus on climate change in the past year. The G8 summit at Gleneagles saw the leaders of the most robust economies on earth recognize that climate change is a reality and that it must be dealt with. Recently, in Greenland and here in Ottawa, ministers have met to discuss the options for a way forward both in Montreal and beyond.

These and other efforts by the international community reflect an increased sense of urgency regarding action on climate change, but many challenges remain.

Canada recently released its International Policy Statement, which highlights the importance of promoting sustainable global development. The statement clearly outlines the critical importance of effectively addressing climate change, and Canada's desire to play a leadership role in this area on the world stage.

One must remember that climate change is not simply an issue of resource protection. Climate change has deep roots in global economic and political activity. To be clear, addressing climate change also means addressing issues of development, health, demographic change and, of course, energy security.

All countries are recognizing the need to make their economies more sustainable and secure by adopting efficient, less polluting technologies and energy sources. This is becoming a priority as the global demand for energy grows exponentially, while we all face rising energy costs and, at some point this century, the peaking of global oil production.

That is why I believe it is important for Canada's foreign policy to promote a new multilateralism, one based on numerous responsibilities, including the collective responsibility to ensure the well-being of future generations. It is no longer acceptable to beggar the future of humanity for the spoils of the present.

Finding a way forward will not be a simple task. Each country has its own demands, its own unique circumstances and its own preferred method for dealing with the issue. However, the shared desire of all countries to directly address climate change will enable the world community to come together in Montreal and to initiate productive discussions on real, long-term progress.

We have done some amazing things here in Canada. But we know that just because we are hosting the world in Montreal does not mean we can "magically" create progress on our own. We know that in order to achieve success, the views of all parties and stakeholders must be heard. Only then can real and lasting progress be made.

> "Our countries face many similar challenges, and each has a multiplicity of innovative policies from which the other can learn."

Knowing this, Canada has, over the past seven months, engaged the world community in over 140 bilateral meetings, discussing options for effective long-term action on climate change. These meetings have provided invaluable information on what countries are expecting and, more importantly, what they will accept.

With the insights we have gleaned from engaging the world, I believe that Canada can develop a forward-looking declaration in Montreal that will focus on six key elements:

- ensuring environmental effectiveness;
- broadening participation;
- advancing development goals;
- strengthening market mechanisms;
- realizing the potential of advanced technologies;
- dealing with adaptation.

As we rapidly approach the Climate Change Conference in Montreal, Canada will continue to work diligently in its role as host, and president, to develop consensus on a way forward.

This [Dutch-Canadian] meeting has made us witness to a proactive spirit of cooperation between our two countries.

Canada has seen similar cooperative efforts at the G8, in Greenland, last month here in Ottawa, and in many other international venues over the past seven months. I sincerely hope that parties to the Kyoto Protocol such as The Netherlands, will help Canada achieve success in Montreal, and help us put the world on the right track as we move into a new era of international climate change governance.

To conclude, there is clearly a need for Canada and The Netherlands to continue to cooperate closely on matters pertaining to climate change. Our countries face many similar challenges, and each has a multiplicity of innovative policies from which the other can learn.

A stronger partnership between Canada and The Netherlands in meeting the challenge of climate change will mean more effective action in both our countries. This will ensure that we uphold our responsibilities as privileged members of the world community, and that we push ahead toward a truly sustainable global economy.

In a wider context, it is clear that much progress has been made since Rio and since Kyoto. However, we understand that, as we prepare to finalize the last elements of the Kyoto Protocol in Montreal, the world community is beginning a journey into a vast, uncharted territory. We all recognize the benefits and shortcomings of the Kyoto Protocol. But, as we all know, it is only a first step. What lies beyond Kyoto remains a challenge of environmental governance not seen before by the community of nations.

We know that difficulties lie ahead, and we are all far too aware of the perils of failure. As complex as the difficulties were in crafting the Kyoto Protocol, I predict that they will seem insignificant compared with the challenge that lies ahead of us in crafting a truly global, inclusive, equitable and effective post-2012 climate change regime. That challenge begins this November in Montreal.

I for one believe that we are up to that challenge: The Netherlands, Canada and the world.

I will close by letting you all know that Canada will need strong and reliable international partners on the road ahead, and we look forward to seeing you again in November. Welcome to Montreal. Welcome to a new beginning.

Thank you.

7. Selected Keynote Speeches

Speech by Pieter van Geel, the State Secretary for the Environment & Sustainability at the Dutch-Canadian Conference on Climate Change

Excellencies, chairmen, ladies and gentlemen,

I am delighted to be one of the keynote speakers today at the Dutch-Canadian Conference in Ottawa. Canada is practically my home base this fall. I was recently here at the invitation of Minister Stéphane Dion to attend an informal ministerial meeting in preparation for the United Nations Climate Change Conference in Montreal. That conference will be a historical gathering. It is the first meeting of the Parties to the Kyoto Protocol. Now that we have celebrated the entry into force of the Kyoto Protocol, Montreal is another important step towards the future of international climate policy.

Outline of the speech

The title of this conference is “Innovation in Combating Climate Change”. Today and tomorrow public authorities, businesses and NGOs from The Netherlands and Canada will discuss policy instruments and technological innovation. My speech will address the broader context of this conference, the developments in the way we think about international climate policy after 2012. First, I will touch on the impact of climate change in Europe and the UN’s political response to it. Next, I will briefly sketch the European perspective on the climate change challenge and the different perspectives on technology development. I will finish by giving you my own perspective on the key elements that should define future climate policy.

Where do we stand now? The impact of climate change and UN climate policy

Sheila Watt-Cloutier, the Chair of the Inuit Circumpolar Conference, painted a clear picture of the impact climate change will have on Canada. European studies also show that the current effects of climate change are greater than anticipated. Europe is warming up more quickly on the whole than the rest of the world. Glaciers across Southern and Central Europe are shrinking and extreme weather is becoming more common throughout the continent. This became painfully clear this summer when forest fires, caused by drought, raged through Portugal and severe flooding hit Romania and Switzerland. We cannot with any certainty attribute these phenomena solely to climate change, but they fit in with the expected trend.

Climate change will hit developing countries the hardest. They lack the money and expertise to defend themselves adequately against the negative effects. Every report published by the IPCC, the international panel that reviews scientific literature on climate change, adds to our certainty that it will have a serious impact. Recent research shows that temperatures are rising faster than expected and the effects of that rise will be greater.

Climate change is a global problem that we must solve. That is why the UN Framework Convention on Climate Change was

drafted in 1992. The main objective of the climate convention is to prevent dangerous human interference with the climate system. The Kyoto Protocol contains targets for industrial nations and sets out rules for monitoring compliance and imposing sanctions.

The EU perspective on the climate challenge

The Kyoto Protocol has been in effect since the start of this year and the agreements on targets apply until 2012, but everyone realises that it is only a first step. Far-reaching policy is needed to prevent dangerous climate change. The European Union took a very strong position in March, when they stated that the average global temperature should not be allowed to rise more than two degrees Celsius above the pre-industrial level. This is an overall long-term objective that should guide global limitation and reduction efforts. In accordance with the precautionary approach, the EU aims to limit the risk that climate change will have severe or irreversible effects. Even global warming of two degrees Celsius would have a significant impact on ecosystems and water resources. I believe that this objective is a very important anchor for the future.

> "Deeper reductions will be affordable in the coming decades if a large coalition of countries participates."

The EU wants to talk to other developed countries about achieving reductions, relative to 1990, of fifteen to thirty percent, by 2020 and sixty to eighty percent by 2050. And as for developing countries, rapidly growing economies cannot allow their emissions to grow unchecked until 2050. These are ambitious objectives. But the technology needed to achieve them is available today. Of course, the cost of these measures can be slashed through technological development. And the technologies need to be adapted for specific purposes. But it is a myth that we have to invest everything in developing technological breakthroughs. The best strategy is to combine concrete objectives with technology. That is why we need a long-term plan for the business community, to inform investment and drive technology development and diffusion.

Our studies on the costs and benefits of climate policies show that much deeper reductions will be affordable in the coming decades if a large coalition of countries participates. The larger the coalition, the lower the costs. Emissions trading and other flexible instruments can also bring down costs significantly. These are key instruments in a global framework beyond 2012 that will enable cost-effective emission reductions and support sustainable development in developing countries. The costs of climate policy are offset by a major benefit: fewer dangerous effects of climate change. But this benefit is undervalued in traditional economic calculations, because it lies far in the future. The costs of climate policy are not prohibitive; in fact they are small in comparison to other costs to society. Consider today's high oil prices. Environmental spending can even benefit the economy. Just think of smog reduction in large cities.

Different perspectives on technological development

Europe is open to other countries' perspectives on how to solve the climate problem. That is why we need closer diplomatic consultation about future international climate policy. The goal is to form a broad climate coalition that includes the US and developing countries, in order to tackle the problem effectively. Free riders make solutions more expensive for the countries that pay for them.

I applaud additional efforts, such as those of the G8. The G8 summit at Gleneagles in July explicitly acknowledged the climate issue and the need to deal with it now. This is a big step forward. The G8 has drafted a plan of action and will continue the dialogue on energy and climate change with other major

energy consumers in November. The G8 also acknowledged that the UN climate convention is the appropriate framework for negotiations on future action. In late July, China, India, Japan and the US announced a partnership for clean development and climate change, focusing on innovation. This is a good initiative, but it lacks concrete details. The EU also works with countries like India and China on innovation. In fact, it made new commitments with these two countries in September. I believe it is vital to use the United Nations to bring all the bilateral and multilateral initiatives together.

Practical experience with technology policy shows that promoting research is not enough. Technology that cuts greenhouse gas emissions is used only when there is a demand for it.

In short, to drive technological innovation we must employ an optimal mix of "push" and "pull" policies. One option is to cooperate in global agreements on technological innovation and develop the global carbon market together.

Three-tier strategy for a global solution for climate change

To take the climate change agenda forward, we need to broaden the dialogue to include other subjects, such as development, energy security and air quality. This will help get the US and developing countries more involved. We must enter into a structured, integrated energy dialogue with international financial institutions, states and the business community. In my view, our climate change strategy beyond 2012 should consist of three elements.

> "It is vital to use the United Nations to bring all the bilateral and multilateral initiatives together."

First, we need to create a clear international framework, under the UN Framework Convention on Climate Change, that has the following features:

- To begin with, we need deeper reductions and targets to achieve the ultimate objective. We need to include all major greenhouse gases, sectors and mitigation options. We must take a global approach to create a post-2012 framework that is environmentally effective and economically efficient. It is essential for as many countries as possible to participate. We can minimise costs by using a market-based approach with flexible instruments. And we must find ways to make reductions economically attractive to developing countries.
- In addition, the regime must be socially equitable. It should take into account common but differentiated responsibilities, and respective capabilities. Developed countries should continue to take the lead in cutting greenhouse gas emissions, but the EU and other developed countries cannot meet the challenge alone. We would like to explore new ways to differentiate between parties in a fair and flexible framework. For example, we could distinguish different stages in the framework and offer incentives to graduate from one stage to another. This multi-tiered approach would offer opportunities for broadening and deepening the parties' contributions to mitigating climate change.
- We recognise that developing countries are already taking action to cut greenhouse gas emissions. But every country needs to take measures that are conducive to sustainable economic and social development and poverty eradication. Since climate change is already happening, adaptation to climate change is a necessary complement to mitigation policies. But how can we design our adaptation

strategies, if we haven't decided what level of global warming we are willing to accept? This is why the EU has set the target of two degrees Celsius.

And that brings me to the second element of the global climate strategy for the period after 2012. Every country should have a national framework for integrating energy, development and climate change in their national energy plans.

- These plans should include energy market reforms; environmental and health issues; energy efficiency; and energy requirements for reaching the Millennium Development Goal of increasing access to energy for the poor.
- As the G8 leaders said in July: "We face a moment of opportunity. Over the next 25 years, an estimated $16 trillion will need to be invested in the world's energy systems. Clear national energy frameworks can help to invest this capital cost effectively in cleaner energy technologies and energy efficiency." So, we will need to invest wisely in the coming decades.

> "The world now has an opportunity to confirm its commitment to fighting climate change."

And now the third element. Financial, fiscal and administrative resources must be focused on steering future investment towards climate-friendly activities. For example, public funding by development banks can be used to leverage private sector funding for climate-friendly investments. In addition, international institutions can provide technical assistance and help with capacity building. And developing countries can take advantage of carbon finance. The G8 sees major opportunities here. And the World Bank has a leadership role in creating a new framework for clean energy and development, including investment and financing.

Connection between this conference and the future process

Ladies and gentlemen, the battle against climate change has just begun. Under Canada's capable leadership, COP11 and COP-MOP1 in Montreal in December will kick off the global debate on future climate change policies. The world now has an opportunity to confirm its commitment to fighting climate change, to agree on appropriate responses and to initiate a process that will lead to an international regime beyond 2012. I hope we will make the most of that opportunity. Minister Dion can be assured of my full support for the work under the UNFCCC later this year in Montreal.

And now back to our conference. I have emphasised the importance of technological innovation and the use of flexible instruments such as emissions trading and the CDM. This conference provides an opportunity for our countries to share their experiences with the implementation of climate policy and the lessons they have learned. Our economies and societies are, of course, very different. For example, Canada has a population density of 2.7 people per square kilometre, compared to 440 in The Netherlands. Still, there's a lot we can learn from each other. Which policies work? What are problems? How do we cope with them? What are our experiences in developing the market mechanisms under the Kyoto Protocol? What role will these mechanisms play in the future? How can we drive climate-friendly technological innovation? Answering these questions will enable us to assess possible strategies for the period up to and beyond 2012. The talks today and tomorrow between public authorities, businesses and NGOs will help us develop an international climate change framework beyond 2012.

Thank you for your attention.

7. Selected Keynote Speeches

Climate Change: Global Challenge, Business Opportunity by Clive Mather, President and Chief Executive Officer, Shell Canada Limited

I can't think of a more important and relevant topic for business discussion than climate change. Hardly a day passes without some new evidence that mankind's footprint on the earth is creating lasting damage to our environment, our communities and economics. We are on notice that, to quote author and naturalist Robert M. Pyle: "Nature bats last."

A recent report by the International Climate Change Taskforce notes the impact of rising global temperatures. If they continue on their current trajectory, the risks to human societies and ecosystems are very disturbing – agricultural losses, widespread disease and, paradoxically, both flooding and water shortages. Take note, all ten of the warmest years in the past 140 have occurred since 1990.

Biologists say the global environment is changing so fast that the slow evolutionary processes of species adaptation cannot keep up. In fact, last year the World Conservation Union (IUCN) reported more than 15,000 threatened species, a 26 per cent increase over just one year. The loss of habitat and diversity threatens many communities, not least here in Canada, where part of our national identity is defined by landscape and weather.

I accept that the science of climate change is not proven and others, including some in my own industry, continue to push back on the evidence. However, I contend that the precautionary principle demands our attention and action. Although we may not fully understand the causes and effects, it is hard to refute the challenge of climate change or its global impact. The ocean currents, jet streams and river systems of mother earth connect everyone in one complex, but integrated system. Air emissions and water effluents know no national borders.

But if a global challenge, why not a business challenge or business threat? Certainly the responsibility to respond rests squarely on us all. We are in this together, whether business people or activists, legislators, educators or individual consumers. But there is one big difference. Business exists to turn challenge into opportunity, driven by the forces of competition and innovation. Unless we can harness these, the outlook is gloomy. But the good news is that we can and it is already happening.

"Technical innovation will be key to maintaining the energy supply needed for continued economic growth, while meeting the challenge of climate change."

less, Shell's commitment is real and right here in Ottawa Royal Dutch Shell is investing in Iogen, a company that has developed enzymes to convert waste straw into ethanol. This 'cellulosic' ethanol process creates a net zero GHG profile and is at the leading edge of this technology worldwide.

Another new business opportunity is carbon trading which is fast developing in the post-Kyoto world. "The carbon market is an opportunity not only to generate global efficiency gains, but also to contribute to sustainable development by bringing new public and private investment in clean technologies to economies in transition and to developing countries". Such trading releases the commercial motive to harness technology. Building on Shell's experience in Europe and the USA, Shell Canada is an active member of the International Emissions Trading Association and intends to take advantage of emerging carbon trading markets both to reduce emissions and develop business opportunities.

"I cannot stress enough the importance of setting a sound policy framework that encourages sustainable solutions."

Our interests and investments go beyond our own research laboratories. We partner with leading universities and technical schools right across Canada. This broadens our research impact and engages a wider community in finding sustainable solutions. Here is a small example but an important one. Through the Yves Landry Foundation, we sponsor the Progress Toward Sustainable Development Academic Award. This year's winner is the University of Waterloo Alternative Fuels Team, a student organization that researches, designs and implements vehicle modifications for use with alternative fuels, such as ethanol, propane and hydrogen. Team members, from a variety of academic backgrounds, represent Canada at various alternative fuel competitions around the world.

Secondly, there is the opportunity to improve our existing businesses and reduce costs. Ironically the very changes we implement to meet the larger environmental agenda, like reduced sulphur in gasoline and diesel fuel, require a more energy intensive process, and produce more greenhouse gases. But here is where innovation and technology come into their own. At our Sarnia refinery, for example, our engineers didn't just design a new hydrotreater. They looked for ways to reduce energy use and GHG emissions and built an ingenious system of new heat exchangers to recover heat from existing refinery sources. Called the warm water loop, the system recovers enough energy to lower projected greenhouse gas emissions by 10,000 tonnes per year. That is a great achievement – but even better it yields a net energy saving worth $1.5 million per year. And so it must. Meeting the challenge of climate change requires an economic stimulus to ensure adequate investment in technologies that offer significant environmental benefit. Carbon sequestration, more efficient oil sands extraction, ever-higher energy efficiency, gasification and recycling must yield both economic as well as environmental rewards if they are to become mainstream quickly. Altruism is excellent but not enough.

And the third opportunity is enhanced reputation. Pioneering research for new technologies and new fuels helps develop new businesses and improve existing ones, but it also sustains our reputation. That is why we focus our corporate advertising on sustainable development. It honours our corporate commitment and it helps us engage key stakeholders in society – like the regulators who adjudicate our exploration drilling proposals; customers who buy our products and students who provide the future talent stream for our company. Reputation is indeed a key corporate asset, vital for our survival, and sustainable development is increasingly at its core.

7. Selected Keynote Speeches

Shell Canada recognized the need for action more than 15 years ago when we embraced a commitment to sustainable development in every aspect of our operations. That commitment motivates people to think afresh about the way they do their work. It fosters a culture that promotes ingenuity and technological improvement. We first set voluntary greenhouse gas (GHG) emissions reduction targets a decade ago - to stabilize GHG emissions at our 1990 level in our base businesses. By the end of 2000, we had met this and are now on track to meet a further emissions reduction target of six percent below the 1990 baseline by 2008.

Technical innovation will be key to maintaining the energy supply needed for continued economic growth, while meeting the challenge of climate change. The world's dependence on fossil fuels is not going to diminish any time soon. The upheaval resulting from the interruption to supply caused by the hurricanes in the Gulf is evidence of our continued reliance on oil and gas. Experts predict that energy demand will double or even triple by 2050, mainly from exploding demand in the developing world. The fact is, no other energy resource is as affordable, convenient and available.

So here is the first opportunity for business – to develop new fuels and new markets. Around the world, Shell is working hard on this, with massive investment in liquid natural gas, in gas-to-liquids, in oil sands, oil shale and renewable energy sources like wind, biomass and hydrogen. It takes courage, because the dollars are big and the prospects uncertain. Fossil fuels will have a dominant role until well into the middle of this century and it will need tax incentives and policy directives to give renewable energy sources like wind and biomass, even a fighting chance. I would like to stand here and say in a few years we will all be heating our homes and driving our cars with green fuels, but simple economics says the transition will happen only very slowly - at best they will supply no more than ten per cent of the global demand by 2025. Nevertheless, there is the opportunity to participate in the wider policy debate. I cannot stress enough the importance of setting a sound policy framework that encourages sustainable solutions – at the local, provincial, federal and yes, international level too. Misguided incentives or misplaced constraints damage Canada's competitiveness as a nation and divert precious resources to the wrong ends. That is why Shell Canada seeks to be an active leader in industry associations, policy initiatives and public education. It is vital that we lay the foundation for reducing GHG emissions in an equitable and economically responsible way. Kyoto is a good example and we support the government's commitment to intensity-based targets for large emitters, limiting industry's exposure to price risk through the $15/tonne price assurance mechanism and creation of a domestic offset system that will create domestic carbon credits.

The key to any lasting progress must lie in partnerships – between business people, academics, environmentalists, all levels of government, suppliers and customers. As Churchill said: "If we are together nothing is impossible. If we are divided all will fail." If ever there was a time for all of us to focus on the problem, the priorities and the potential solutions, it is now. In Shell I believe we have the people, the ideas, the capital, the technology, the experience and the will to take a leadership role – that's why I am here today. The challenges for business may be great, but so are the opportunities. With clear vision, stable market-based policies and strong partnerships, we can make a big impact.

Keynote Speech by Hans Alders on Climate Change, 7 October 2005, Ottawa, Canada

Ladies and gentlemen,

How are we going to tell the polar bears? You will undoubtedly have read last week that the North Pole ice cap has never been so small in recent years as it is now.

According to research by the United States space organization NASA and the American National Snow and Ice Data Centre (Nsidc), the amount of ice in September was 5.31 million square kilometers.

Satellite pictures show that between 1978 and 2000 the average area was still seven million square kilometres. The disappearance of the ice has been particularly great in the last four years. If the ice continues to melt at the present rate, the Arctic Ocean will be ice-free in summer from 2060 onwards, meaning that the bears' hunting territory will have disappeared.

This report illustrates once again that the consequences of climate change are become increasingly clear. In that regard the Brundtland Report of 1987, which formed the overture to the United Nations conference in Rio de Janeiro in 1992 and the Climate Treaty, has unfortunately only gained in topicality in the past few years.

For years now we have wondered whether we can anticipate catastrophes like this. Not everyone is equally confident that we can. I myself am an optimist.

But I do think that we need to realize that classical environmental policy is finished. Setting and enforcing environmental standards will in itself no longer avail. Only an unorthodox approach can take us further. In my opinion we need to anchor environmental policy firmly in durable social development if we are to be able to bring about a transition.

Government alone cannot do this. Only by working together with market players, knowledge institutes and social organizations will we be able to tackle the causes (mitigation) and consequences (adaptation) of climate problems. I should like to tell you something about our approach in the Northern Netherlands.

To do that we must go back to the year two thousand and one, to the central government's fourth National Environmental Plan (NMP4). That plan elaborates the principles of the Club of Rome, the Brundtland report and the conclusions of various long-term surveys.

NMP4 points out that a great deal has been achieved in The Netherlands over the last thirty years by means of the environmental policy that has been pursued. Local pollution has been tackled effectively, by means of both remediation and tackling the problems at source. Water and air have become cleaner and nuisance from smells and noise significantly reduced.

But we have started to bump up against the limits of this policy. To give a simple example: for individual companies with licensing and enforcement the last five per cent of the target cannot be achieved, or can only be achieved at great expense.

> "We need to anchor environmental policy firmly in durable social development if we are to be able to bring about a transition."

So what do you as a government need to do? Continue enforcement, resulting in companies going bankrupt or having to shut down, with all that consequences that would have for jobs?

No, the new approach must ultimately result in a fundamentally different structure for providing energy, food and mobility.

In my view humankind has a decisive role to play in this. As the author of technological breakthroughs and the innovator of products and processes he must make the difference. Think, for example, of the clever logistics systems that people have developed in companies. These systems kill two birds with one stone: transport costs fall, thus improving the company's competitive position, and the reduction in transport movements reduces the environmental impact.

Think too of how companies are dealing with high oil prices. One of the reactions that we are seeing in The Netherlands, and in the province of Groningen too, is that companies, local and regional authorities and knowledge institutes are seizing on this to effect energy transitions, with economics and the environment going hand-in-hand. Plans are being devised with knowledge institutes and the authorities to provide companies that have large energy needs with their own more sustainable energy supplies.

I am not much taken by the 'doomsday scenario' that sets out to convince people of the need to cope with the consequences of climate change and solve its causes. That kind of scenario offers no prospects at all. If things are going wrong anyway and such a scenario is inescapable, what's the point of making a fuss?

Only if we dare face the fact that urgency brings out the best in us will we tap the creativity that's needed. The challenge is for us to see that urgency in good time so that we don't let time slip by unnecessarily.

In The Netherlands we are aware that we will not find an answer overnight to how to put those transitions in place. And of course we will also come up against resistance and vested interests. But though we may slip and stumble, the quest to make the human difference has begun!

> "The aim is to create new products, technologies, services and initiatives which will bring about a transition in the area of energy."

In 2002 an ad-hoc environmental committee of the 12 Netherlands provinces made recommendations about the role of the regional authorities in the transition policy. Consultation between government and business is an important part of Dutch environmental policy, and by no means everything is laid down in environmental standards. Policy is based partly on imposing long-term targets, giving companies and industries time and options so that they themselves can say how they think they can achieve the targets.

The committee's conclusion is that the present tools – permits and consultation – are becoming blunt. The committee is calling for a policy in which the options and opportunities are

central: in short, use urgency to think in terms of environmental returns!

Another important conclusion was that it was precisely on a regional scale that action is needed. Local and regional players know each other well, lines of communication are short and practical projects can be developed in a tailor-made way. Participants can create synergy in a short space of time.

I imagine you would like to know what all this means in concrete terms and how a modest contribution is being made in the Northern Netherlands to saving (part of) the polar bear's hunting territory.

I should like to single out three examples, though it's highly tempting to mention others too.

As a number of you perhaps know, the province of Groningen has the largest natural gas fields in Western Europe. So you will not be surprised to learn that there is a great deal of know-how regarding energy and power generation. The energy sector in the Northern Netherlands employs nearly 20,000 people. In the years to come the importance of gas, as a transition fuel, can only increase as we move towards a sustainable European energy supply.

Because of the changes that have inevitably taken place in the Dutch and European energy market during the last few years, the important players in that market see new opportunities.

By combining existing knowledge and activities in the region, they are trying to create a climate for innovation and creativity. The aim is to create new products, technologies, services and initiatives which will bring about a transition in the area of energy.

To achieve this, the public and private players in the region have set up Energy Valley, the North Netherlands equivalent of Silicon Valley. In Energy Valley knowledge is pooled and experiences shared. The field of play is wide: not just the northern authorities (municipalities and province) but also the EU, the University of Groningen, the Nederlandse Aardoliemaatschappij [The Netherlands Oil Company], the Gasunie (a partnership between the Dutch State, Shell and Esso), the Northern Netherlands Assembly and the Investment and Development Company for the Northern Netherlands. The cornerstones of Energy Valley are: developing sustainable energy, expanding the knowledge infrastructure and encouraging energy-related business activities. In a short space of time this has resulted in a multiplicity of projects oriented towards, for example, biomass, underground CO_2 storage, green gases and micro combined heat and power plants. What does this kind of thing mean in practice?

> "In our own modest way we have started to make a difference. We are still searching, but we have found the constructive urgency that taps our creativity."

Take the Costa Due project, which aims to strengthen sustainably the economic structure of a traditionally weak region, Eemsmond in the North of The Netherlands. A criterion is that stimulating the economy should not be at the expense of the environment. The project's aims include developing a green energy port in the Eemsmond region and providing the 'energy-guzzling' chemical and metal works in the region with sustainable energy, as The Netherlands' second largest port, Eemsmondhaven, is located in the area. There are, of course, good reasons for this choice, and I would mention these:

- Costa Due as a long-term project ties in seamlessly with the aims of Energy Valley: both aim to maintain and strengthen Groningen's strong position in energy.

- The docks of the Eems Delta are ideal for bringing in and processing biomass. And of course our own agricultural industry is also a potentially significant supplier of raw materials for green energy.
- The Dutch side of the Eems Delta is responsible for nearly 15% of the chemicals in The Netherlands with a number of heavy energy users such as Aldel and AKZO.
- Groningen Seaports, Eemshaven's port authority, is stimulating these developments by constructing the Eemshaven EnergyPark.

As we are only at the start of the project, I cannot predict what the outcome will be. Our intention, however, is to strengthen the economic structure of this region in a sustainable way that is not at the expense of the environment. I have great confidence in the creativity of the participating organizations, which number over sixty.

My last example is the Groningen Energy Covenant, also part of Energy Valley. The province and municipality of Groningen, Gasunie, the power company Nuon and Shell Solar are working together within this covenant, and around a quarter of a million euros is being invested in some 20 projects. These range from public transport using natural gas to saving energy in homeowners' existing buildings.

My last example is about water. The effect on the sea level as a result of the melting of the polar ice caps is even greater in our region because of soil subsidence as a result of gas extraction. Just as with the polar bears at the North Pole, this was borne in on us with a vengeance in 1998: a long period of rain brought major flooding, with the threat that the famous Groningen Museum would be under water. With our neighbouring province of Drenthe and a substantial number of other participants we developed a Water Action Plan, and last month we and other bodies signed a management accord for it. The plan sets out the actions and measures we will take to cope with the consequences of climate change, and implementation has already begun.

Now you may be thinking: what can little Northern Netherlands really add to solving the world's climate problems? Will the polar bears notice anything as a result of what's happening in Groningen?

Although I cannot predict how large the effect will be, I am optimistic about what we can achieve. In our own modest way we have started to make a difference. We are still searching, but we have found the constructive urgency that taps our creativity.

May I conclude with an image? The image of a frog that fell into a bucket of cream one dark night? Any other frog would have assessed his position as hopeless. But this frog kept on kicking and thrashing in the cream. By dawn the cream had turned to butter and the frog was able to climb out of the bucket.

Doomsday scenarios are irrelevant. It's people, not a frog, that make the difference. With the thinking power of science, business and politics we can do it. If you join in, however big or small your influence is, we'll one day be able to climb out of the bucket together.

8. List of Participants

8. List of Participants

Abbass, Amr	Deputy Chief of Mission	Embassy of Egypt, Ottawa	Egypt
Alders, Hans	Queen's Commissioner and former Dutch Environment Minister	Province of Groningen	Netherlands
Allard, Jean-Luc	Vice President	SNC Lavalin Inc. and Placer Dome Inc.	Canada
Anderson, Anderson	DC4 Panel Moderator	Member of Parliament	Canada
Balint, Thomas	Senior Policy Advisor to the Ambassador for the Environment	Ministry of Foreign Affairs	Canada
Ballhorn, Richard	Senior Departmental Advisor Climate Change	Federal Government	Canada
Banavent, Ana	Trade Analyst	Economic & Commercial Office, Embassy of Spain, Ottawa	Spain
Basahi, Ilham	Environmentalist	Embassy of Yemen, Ottawa	Yemen
Beale, Mike	Acting Director General, Greenhouse Gas Reductions Directorate	Ministry of Environment	Canada
Bekhof, Roel	Senior Policy Advisor	Ministry of Economic Affairs	Netherlands
Belokolos, Oleh	Counsellor	Embassy of Ukraine, Ottawa	Ukraine
Bennett, John	Executive Director	Canadian Climate Action Network	Canada
Bernstein, Johannah	Conference Staff		Canada
Bilodeau, Jacques	Ambassador for Climate Change and DC4 Co-Chair	Ministry of Foreign Affairs	Canada
Blanson Henkemans, Maurits	Senior Policy Officer	Ministry of Economic Affairs	Netherlands
Bonin, Patrick	Spokesman	Coalition Quebec Vert Kyoto	Canada
Bolscher, Hans	Director, Climate Change and Industry	Ministry of Housing, Spatial Planning and Environment	Netherlands
Bowen, Dave	Team Leader, Environmental Sciences	Natural Science and Engineering Research Council of Canada (NSERC)	Canada
Brackett, David	Special Advisor, Global Climate Change Affairs	Environment Canada	Canada

Bradley, Richard	Division Head, Energy Efficiency and Environment	International Energy Agency	France
Brak, Arjan	Political Assistant to the State Secretary	Ministry of Housing, Spatial Planning and Environment	Netherlands
Bramley, Matthew	Director, Climate Change	Pembina Institute	Canada
Brock, David	PhD candidate	University of Western Ontario	Canada
Brouwer, Hugo	Director	Project Energy Transition, Ministry of Economic Affairs	Netherlands
Brown , James	Corporate Climate Change Advisor	Shell Canada, Inc.	Canada
Bruneau, Angus	Chairman	Fortis Inc., Honorary Consul of the Kingdom of The Netherlands in Newfoundland	Netherlands
Burn, Chris	Professor of Geography and NSERC Senior Northern Research Chair	Carleton University, Ottawa	Canada
Campbell, Bruce	Principal Consultant	Campbell and Associates	Canada
Campbell, Graham	Director General, Office of Energy R&D,	Natural Resources Canada	Canada
Castillo, Martha Patricia		Ministerio del Medio Ambiente	Colombia
Chrimes, Neil	Economic Counsellor	British High Commission	United Kingdom
Chomiak, David	Minister, Energy, Science and Technology	Government of Manitoba	Canada
Conway, Dawn	Executive Director	Canadian Foundation for Climate and Atmospheric Sciences	Canada
Cormier, Al	President and CEO	The Centre for Sustainable Transportation	Canada
Cox, Natalie	First Secretary	High Commission for Barbados	Barbados
Crump, John	Polar Issues Co-Ordinator	UNEP GRID-Arendal	Canada
Daechsel, Werner		Environmental Awareness Group, First Unitarian Congregation of Ottawa	Canada
David, William	Senior Researcher	Inuit Tapiriit Kanatami	Canada

8. List of Participants

Deeg, Frank J.	Partner	International Commerce Associates	Canada
Delbeke, Jos	DG Environment	European Commission	EC
Devahastin, Snanchart	Ambassador	Royal Thai Embassy	Thailand
Dickinson, Jerome	Intern, Medial Relations Department	Embassy of France, Ottawa	France
Dion, Stéphane	Minister of Environment	Ministry of Environment	Canada
Duncker, Annemarie		Embassy of Chile, Ottawa	Chile
Edache, Adah Geoffrey	Minister	Nigerian High Commission	Nigeria
Eggertson, Bill	Executive Director	Canadian Association for Renewable Energies	Canada
Epiphanie, Kabushemeye-Ntamwana	Ambassador	Embassy of Burundi, Ottawa	Burundi
van Erp, Patrick	Adm. Assistant to Mr. Moens	Province of North Holland	Netherlands
Fisher, Claire	Policy Advisor	National Round Table on the Environment and Economy	Canada
Forrest, Michelle	Director	Boreal Forest Network	Canada
Forsythe, Douglas	Deputy Director, Climate Change & Non-Nuclear Energy Policy Section	Ministry of Foreign Affairs	Canada
Fulton, Jim	Executive Director	David Suzuki Foundation	Canada
Gagnier, Daniel	Senior Vice-President and CEO	Alcan Inc.	Canada
Geel, Pieter van	State Secretary	Ministry of Housing, Spatial Planning and Environment	Netherlands
George, Olufemi	High Commissioner	Nigerian High Commission	Nigeria
Gera, Sushma	President	CDM Executive Board & Director Climate Change & Energy Division, FAC	Canada
Gonçalves, Fernando	Atache for Social Affairs	Embassy of Portugal, Ottawa	Portugal
Gray, Herb	Chairman	International Joint Commission, Canadian Section	Canada
Gurbanov, Fakhraddin	Ambassador	Embassy of Azerbaijan, Ottawa	Azerbeijan
Habibi, Sediqullah	Second Secretary	Embassy of Afghanistan, Ottawa	Afghanistan

Hosier, Richard	Teamleader Climate Change & Chemicals	Worldbank, Global Environment Facility	USA
Houtte, Christian van	CEO	Aluminium Association	Canada
Hellenberg Hubar, Como van	Ambassador & DC4 Co-Chair	Royal Netherlands Embassy, Ottawa	Netherlands
Hurley, Daniel		Environment Canada	Canada
Ignatius, Dennis	High Commisioner for Malaysia	High Commission of Malaysia, Ottawa	Malaysia
Jager, Hans	Expert, Climate & Energy	Nature & Environment Foundation / Stichting Natuur & Milieu	Netherlands
Jeffrey, Anja		Embassy of Denmark, Ottawa	Denmark
Jonge, Lex de	Head, CDM Division	Ministry of Housing, Spatial Planning and Environment	Netherlands
Kal, Hanneke	Conference Staff	Royal Netherlands Embassy, Ottawa	Netherlands
Karman, Deniz	Professor of Environmental Engineering	Carleton University, Ottawa	Canada
Kennedy, Joy	Ecological Justice Coordinator, Canadian Ecumenical Justice Initiatives	KAIROS	Canada
Khachab, Oussama	First Secretary	Embassy of Lebanon, Ottawa	Lebanon
Khasawneh, Mohammed	Political Officer	Embassy of Jordan, Ottawa	Jordan
Kinsman, Philip	Director General, Communications	Environment Canada	Canada
Kittiwangchai, Montri	Minister-Counsellor	Royal Thai Embassy, Ottawa	Thailand
Kleinenberg, Roger	Attache for Science & Technology	Royal Netherlands Embassy, Washington	Netherlands
Knook, Dirk	Counsellor	Royal Netherlands Embassy, Ottawa	Netherlands
Korthals Altes, Anne	Project Man. Green Portfolio	NV. Nuon Energy Sourcing	Netherlands
Kuijper, Tineke	Chief Intergovernmental Relations	Department of Justice	Canada
Kwaasteniet, Marjanne de	Head of Economic & Environmental Affairs Department	Ministry of Foreign Affairs	Netherlands

8. List of Participants

Lagendijk, Karen	Manager Green Portfolio	Nuon	Netherlands
Lang, Saskia de	Deputy Head of Mission	Royal Netherlands Embassy, Ottawa	Netherlands
Leeuwen, Anne van	Cultural Attache	Royal Netherlands Embassy, Ottawa	Netherlands
Les Magdolen, Agnes	Special Assistant to the Minister	Environment Canada	Canada
Lint, Willem de	President, Honorary Consul for the Kingdom of The Netherlands	De Lint & Edwards Architects	Netherlands
Long, Alex	Policy Advisor	National Round Table on the Environment and the Economy	Canada
Lortie, Pierre-Philippe	Senior Policy Advisor	Environment Canada	Canada
Maillet, Mariette	Senior Policy Advisor	CIDA	Canada
Maimeskul, Mykola	Ambassador	Embassy of Ukraine, Ottawa	Ukraine
Malcom, David	Executive Director	Artic Energy Alliance	Canada
Manson, Alex	Acting Director General, Climate Change Bureau	Environment Canada	Canada
Marcu, Andrei	President	International Trading Association	Canada
Marton, Sandor	Counsellor	Hungarian Embassy, Ottawa	Hungary
Mather, Clive	President & CEO	Shell Canada Inc.	Canada
Matravers, Robyn	Deputy Director	UNEP RONA	USA
May, Elisabeth	Executive Director	Sierra Club	Canada
McGregor, Tanya	Policy Analyst	CIDA	Canada
Mehdi, Bano	Coordinator	Brace Research Institute	Canada
Mejia-Castillo, Guillermo	Charge d'Affaires A.I.	Embassy of Colombia, Ottawa	Colombia
Melsom, Kristin	First Secretary	Royal Norwegian Embassy, Ottawa	Norway
Mercille, Charles	Intern, Western Europe Division	Foreign Affairs Canada	Canada
Mesman, Claire	Trainee	Royal Netherlands Embassy, Ottawa	Netherlands
Middelkoop, Mary-Jane	Senior Policy Analyst	Federation of Canadian Municipalities	Canada
Miranda, Carlos	Ambassador	Embassy of Costa Rica, Ottawa	Costa Rica

Mirbach, Alfred von	CEO	EcoPerth	Canada
Moens, Albert	Gedeputeerde	Province of North Holland	Netherlands
Moerzinger, Alvaro	Ambassador	Embassy of Uruguay in Canada	Uruguay
Mohd. Sidek, Suzilah	Second Secretary	High Commission of Malaysia, Ottawa	Malaysia
Moor, Hans	Conference Staff	Royal Netherlands Embassy, Ottawa	Netherlands
Morris, Dale	Head of Economic Section	Royal Netherlands Embassy, Washington DC	Netherlands
Moses, Albert	Consul General	General Consulate of The Netherlands, Montreal	Netherlands
Mourits, Frank	Senior Advisor, Climate Change Technologies	NRCan, Office of Energy R&D	Canada
Nasher, Dr. Abdulla	Ambassador	Embassy of Yemen, Ottawa	Yemen
Ng, Clement	Policy Analyst	Canadian Electricity Association	Canada
Newcombe, Ken	Director, Prototype Carbon Fund	World Bank	USA
Oloo, Michael	First Secretary	Kenian High Commission	Kenya
Oudolf, Sacha		Ministry of Foreign Affairs	Netherlands
Pacher, Sigurd	Minister -Counsellor & Dep. Head of Mission	Embassy of Austria, Ottawa	Austria
Parsons, Graham	President	Organisation for Western Economic cooperation (OWEC)	Canada
Perera, Channa	Policy Advisor	Canadian Electricity Association	Canada
Perez, Jesus Arnaldo	Ambassador	Embassy of the Bolivarian Republic of Venezuela, Ottawa	Venezuela
Peters, Rogers	Senior Technical & Policy Advisor	The Pembina Institute	Canada
Petersen, Stine Pagh	Assistant, Political Affairs	Royal Danish Embassy, Ottawa	Denmark
Petsonk, Annie	International Counsel	Environmental Defense Fund	USA
Pettigrew, Pierre	Minister of Foreign Affairs	Ministry of Foreign Affairs	Canada
Pickering, Mary	Associate Director	Toronto Atmospheric Fund (TAF)	Canada
Portenier, Francine	Senior Consultant	CGI	Canada

8. List of Participants

Prevost, Jean	Senior Executive Investment Services Division	Dept. of International Trade, Ministry of Foreign Affairs	Canada
Reddaway, David	High Commissioner	British High Commission, Ottawa	United Kingdom
Rest, Annemarie van der	Manager Health, Safety and Environmental Affairs	SN-EA Shell Nederland	Netherlands
Richardson, Wayne	Director, Team Operations Office, Climate Change Technology, Early Action Measures	National Research Council	Canada
Rivera, Anna Matilde	Political Counsellor	Embassy of Costa Rica, Ottawa	Costa Rica
Robillard, Nicole	Policy Advisor, Environment	Canadian International Development Agency	Canada
Rolle, Arthur	Chairman	National Climate Change Committee	Bahamas
Romaguer, Boris	Policy Analyst, Climate Change Unit	Environment Division/Policy Branch, CIDA	Canada
Rutherford, Sally	Executive Director	Bio Products Canada Inc.	Canada
Samad, Omar	Ambassador	Embassy of Afghanistan, Ottawa	Afghanistan
Samson, Roger	Executive Director	Resource Efficient Agricultural Production (REAP)	Canada
Scarpa de Masellis, Luigi	Economic Officer	European Commission	Canada
Schöne, Sible	Head of Programme	Klimaatbureau	Netherlands
Seabrooke, Amy	Manager Stewardship Projects	Wildlife Habitat	Canada
Sewell, Wendy	Conference Staff	Royal Netherlands Embassy, Ottawa	Netherlands
Shariff, Nashina		WWF Canada	Canada
Sharpe, Vicky	President	Sustainable Development Technology Canada (SDTC)	Canada
Shafiyev, Farid	Counselor	Embassy of Azerbaijan, Ottawa	Azerbeijan
Silveira Carvalho, João Pedro	Ambassador	Embassy of Portugal, Ottawa	Portugal
Smith, Philip	High Commissioner	The High Commission for the Bahamas, Ottawa	Bahamas
Spitzer, Daniel	Senior Instrumentation Engineer	Tradewind Scientific Ltd.	Canada

Stewart, John	Economist	US Department of State	USA
Stinson, Sara		Canadian Embassy, The Hague,	Canada
Storm, Gertjan	Ambassador	Royal Netherlands Embassy, Luxembourg	Netherlands
Strömberg, David	Intern	Swedish Embassy, Ottawa	Sweden
Tejani, Karim	Sector Manager	Consulate General of The Netherlands, Toronto	Netherlands
Turcotte, Yvon	Conseiller Benelux	Ministry of Foreign Affairs	Canada
Turk, Eli	Vice President	Canadian Electricity Association	Canada
van Houtte, Christian	CEO	Alumnium Association	Canada
Veekman, Joyce	Press Officer	Ministry of Housing, Spatial Planning and Environment	Netherlands
Verones, Christina	Stagiaire	Embassy of Switzerland, Ottawa	Switzerland
Voucheva, Lubka	Economic Counsellor	Embassy of Bulgaria	Bulgaria
Vries, Astrid	Consul for Trade & Cultural Affairs	Consulate General of The Netherlands, Toronto	Netherlands
Watt-Cloutier, Sheila	Chair	Inuit Circumpolar Conference	Canada
Weiner, Joel	Senior Advisor	International Joint Commission	Canada
Westenberg, Hans	Honorary Consul for The Netherlands	Consulate of The Netherlands, Kingston	Netherlands
Wild, Claude	Ministre	Ambassade de Suisse, Ottawa	Switzerland
Whitmore, Johanne	Climate Change Policy Analyst	Pembina Institute	Canada

Appendix A References for Discussion Paper

Ashton, John, and Tom Burke. "Climate change and global society." Open Democracy: May 17, 2005. *http://www.opendemocracy.net/debates/article-6-129-2509.jsp*, DOA: 08/08/2005.

Barlow, Dan, Hulme, Mike, Liverman, Diana, Newcombe, Ken, Rydall, Derrick, Singer, Red, Lord May of Oxford, and Lord Oxburgh. "Ripe for Change." The Gurardian: June 30, 2005. *http://www.guardian.co.uk/climatechange/story/0,12374,1517943,00.html*, DOA: 08/21/2005.

Bilodeau, Jacuqes. Notes for an address by Ambassador Jacuqes Bilodeau on behalf of the Honourable Stephane Dion, Minister of the environment of Canada at Carbon Expo, Cologne. May 13, 2005. *http://www.ec.gc.ca/minister/speeches/2005/050513_s_e.htm*, DOA: 08/21/2005.

Brown, Paul, and Jamie Wilson. "US in plan to bypass Kyoto protocol." The Guardian: July 28, 2005. *http://www.guardian.co.uk/climatechage/story/0,12374,1537629,00.html*, DOA: 08/21/2005.

Cook, Robin. "Only collective action can overcome the climate crisis." The Guardian: December 10, 2004. *http://www.guardian.co.uk/climatechage/story/0,12374,1370836,00.html*, DOA: 08/21/2005.

Commission of the European Communities. Winning the Battle Against Global Climate Change. Communication from the Commission to the Council, European Parliament, the European Economic and Social Committee and the Committee of the Regions, Brussels: February 2, 2005. *http://64.233.183.104/search?q=cache:crDpXngSfK8J:europa.eu.int/comm/environment…*, DOA: 08/08/2005.

Confederation of Netherlands Industry and Employers. Emissions Trading for Business and Industry: Comments VNO-NCW on the Draft Emissions Trading Proposal.

Daniel, Caroline, and Fiona Harvey. "G8 talks resume on trade and debt relief." Financial Times: July 7, 2005. *http://news.ft.com/cms/s/55d5c00c-ef1f-11d9-8b10-00000e2511c8.html*, DOA: 08/08/2005.

Day, Catherine. Possible Elements of the EU's Post-2012 Climate Policy. European Commission: DG Environment Directorate, Stakeholder Meeting: November 24, 2004.

De Boer, Yvo. Policy Intergration Challenge. Presentation at the Seminar of Governmental Experts, Bonn, 16-17 May, 2005. Netherlands Ministry of Housing, Spatial Planning and the Environment, VROM International: 08/20/2005.

Department for Environment, Food, and Rural Affairs. "The Greenland dialogue: minister attends key talks on climate change and visits the Greenland ice-cap." DEFRA news release: 19 August, 2005. *http://www.defra.gov.uk/news/2005/050819a.html*, DOA: 08/21/2005.

Elkington, John and Geoff Lye. "Kyoto: a change of climate." SustainAbility Think Tank. *http://www.sustainability.com/insight/article.asp?id=217*, DOA: 08/08/2005.

Environment Daily. "Ministers talk tough on climate challenge." Environment Daily 1794: December 21, 2004. *http://wwwlclimnet.org/news/december2004.html*, DOA: 08/20/2005.

EurActiv.com. "Financial sector warns of cost of climate change." EurActiv.com: June 30, 2005. *http://www.euractiv.com/Article?tcmuri=tcmuri=tcm:29-141719-16&type=News*, DOA: 08/08/2005.

EurActiv.com. "Surprise US-China climate pact meets with scepticism." EurActiv.com: July 28, 2005. *http://www.euractiv.com/Article?tcmuri=tcm:29-143030-16&type=News&textlg=EN*, DOA: 08/08/2005.

European Commission. The EU's Challenge until 2012: European Climate Change Program (ECCP), The EU's Emissions Trading Scheme. The European Commission: DG Environment: 20/08/2005.

European Commission. Post-2012 climate policy for the EU. Stakeholder Conference: 22 November, 2004. *http://europa.eu.int/comm/environment/climat/stakeholder_conf.htm*, DOA: 08/08/2005.

Government of Canada. National Implementation Strategy on Climate Change. National Climate Change Process: October 2000.

Government of Canada. Minister Dion's Statement for the Japanese Webcast on the Entry into Force of the Kyoto Protocol. *http://www.climatechange.gc.ca/english.newsroom/2005/kyoto_feb16statement.asp*, DOA: 08/21/2005.

Government of Canada and Government of The Netherlands. Joint Declaration on the Strengthening of the Bilateral Relations between the Government of Canada and the Government of The Netherlands. September 23, 2003.

Gow, David. "Health v. industry: EC finally forces through emission cuts." The Guardian: July 21, 2005. *http://www.guardian.co.uk/climatechange/story/0,12374,1532954,00.html*, DOA: 08/21/2005.

Graab, Alison. "Greenhouse gas market to slow global warming." CNN: April 8, 2005. *http://edition.cnn.com/2005/TECH/science/04/08/earth.trading.carbon*, DOA: 08/19/2005.

Greenpeace Canada. "Greenpeace challenges Martin government on Kyoto… Take the 240 million tonne challenge." Greenpeace.ca: 16 February, 2005. *http://action.web.ca/home/gpc/alerts.shtml?x=72280&AA_EX_Session=67d10e19a7d8…* DOA: 08/21/2005.

Hillman, Mayer. "Living beyond the planet's limits." OpenDemocracy: April 28, 2005. *http://www.opendemocracy.net/debates/article-6-129-2460.jsp*, DOA: 08/08/2005.

International Centre for Trade and Sustainable Development. Climate Change Negotiators Begin Talks on Post-Kyoto Period. ICTSD: May 27, 2005. *http://www.ictsd.org/biores/05-05-27/story2.htm*, DOA:08/21/2005.

International Finance Corporation. IFC Signs Carbon Emission Purchase Agreements in Brazil and India. IFC press release: July 26, 2005. *http://www.harolddoan.com/modules.php?name=News&file=article&sid=4729*, DOA: 08/21/2005.

Juniper, Tony. "A crucial first step." The Guardian: February 16, 2005. *http://www.guardian.co.uk/climatechange/story/0,12374,1415943,00.html*, DOA: 08/21/2005.

Leader. "A new environment." The Guardian: July 29, 2005. *http://www.guardian.co.uk/climetechange/story/0,12374,1538651,00.html*, DOA: 08/21/2005.

Leader. "Thinking beyond Kyoto." The Guardian: February 17, 2005. *http://www.guardian.co.uk/climatechange/story/0,1274,1416135,00.html*, DOA: 08/21/2005.

Meyer, Alden. "The United States and Global Warming: Two Countries." OpenDemocracy: April 29, 2005. *http://www.opendemocracy.net/debates/article-6-129-2469.jsp*, DOA: 08/08/2005.

Michaelowa, Axel. "Climate Policy Challenges After the Kyoto Protocol Enters into Force." Intereconomics: November/December 2004.

Morgan, Jennifer. Position Paper for the Tenth Conference of the Parties to the Climate Change Convention. World Wildlife Federation: December 2004. *http://www.forumfor.no/?id=578*, DOA: 08/08/2005.

Muller, Benito. "The G8, the Kyoto Protocol." OpenDemocracy: June 08, 2005. *http://www.opendemocracy.net/globalization-climate_change_debate/2586.jsp*, DOA: 08/08/2005.

Netherlands Ministry of Housing, Spatial Planning and Environment. The Progress of The Netherlands Climate Change Policy: An Assessment at the 2002 Evaluation Moment. VROM International: February 2002.

Netherlands Ministry of Housing, Spatial Planning, and the Environment. The Opening of the Series of Debates on the Future Environment Agenda. VROM International. VROM International. *http://international.vrom.nl/pagina.html?id=9516*, 08/19/2005.

Netherlands Ministry of Housing, Spatial Planning and Environment. Speech by Minister Pronk at the Conference 'Innovative Policy Solutions to Global Climate Change'. VROM International. *http://international.vrom.nl/pagina.html?id=8529*.

Netherlands Ministry of Housing, Spatial Planning and Environment. "The Opening of the Series of Debates on the Future Environment Agenda." VROM International. *http://international.vrom.nl/pagina/html?id=9516*.

Netherlands Ministry of Housing, Spatial Planning and Environment. "Climate policy." VROM International: November 16, 2004. *http://www.netherlands-embassy.org/article.asp?articleref=AR00000288EN*.

Opening of the Series of Debates on the Future Environment Agenda. *http://international.vrom.nl/pagina.html*.

Pearce, Fred. “Memo to the G8.” OpenDemocracy: June 1, 2005. *http://www.opendemocracy.net/globalization-climate_change_debate/2561.jsp*, DOA: 08/08/2005.

Pearson, Ben, and Yin Shao Loong. The CDM: Reducing Greenhouse Gas Emissions or Relabelling Business as Usual? Third World Network, CDM Watch, *http://www.cdmwatch.org*, March 2003.

Purdy, Alison. “The Kyoto Protocol.” The Guardian: February 16, 2005. *http://www.guardian.co.uk/climatechage/story/0,12374,1415660,00.html*, DOA: 08/21/2005.

Radford, Tim. “Global warming rate discovered.” The Guardian: April 29, 2005. *http://www.guardian.co.uk/climatechange/story/0,12374,1472989,00.html*, DOA: 08/21/2005.

Ravilious, Kate. “Don’t take no for an answer.” The Guardian: June 30, 2005. *http://www.guardian.co.uk/climatechange/story/0,12374,1517947,00.html*, DOA: 08/21/2005.

Reuters. “Reaction to Six-Nation Climate Pact.” Climate Ark – Climate Change Portal: July 29, 2005. *http://www.climateark.org/articles/reader.asp?linkid=44672*, DOA: 08/08/2005.

Robins, Nick. “The $20,000,000,000,000 question.” OpenDemocracy: June 03, 2005. *http://www.opendemocracy.net/globalization-climate_change_debate/2570*, DOA: 08/08/2005.

Sample, Ian. “Warming hits ‘tipping point’.” The Guardian: August 11, 2005. *http://www.guardian.co.uk/climatechange/story/0,12374,1546824,00.html*, DOA: 08/21/2005.

Simms, Andrew. “Ecological debt and climate change.” Open Democracy: May 13, 2005. *http://www.opendemocracy.net/debates/articles-6-129-2503.jsp*, DOA: 08/08/2005.

Smith, Norine. Canada’s Commitment to Address Climate Change. 16 May, 2005. *http://64.233.183.104/search?q=cache:tVFQgSFKSlYJ:unfcc.int/files/meetings/semin…*, DOA: 08/21/2005.

Sustainablebusiness.com. “Ignoring Climate Change Poses Big Financial Risk.” Carbon Disclosure Project press release: 02/17. *http://www.csrwire.com/sb/article.cgi/1585.html*, DOA: 08/11/2005.

Watson, Ian. “What they said about the new climate change pact.” The Guardian: July 30, 2005. *http://www.guardian.co.uk/climatechange/story/0,12374,1539265,00.html*, DOA: 08/21/2005.

Watt-Cloutier, Sheila. “Our land is changing – soon yours will too.” The Guardian: January 15, 2005. *http://www.guardian.co.uk/climatechange/story/0,12374,1391045,00.html*, DOA: 08/21/2005.

Watt-Cloutier, Sheila. “Arctic Connections: Local/Global Linkages for Sustainable Development.” Russian Chairmanship of the Arctic Council: February 6, 2002. *http://www.arctic-council.org/en/main/infopage/181/*, DOA: 08/19/2005.

Wirth, Timothy E. “Climate and Energy: United States.” Open Democracy: May 26, 2005. *http://www.opendemocracy.net/globalization-climate_change_debate/USclimate_2547.jsp*, DOA: 08/08/2005.

World Business Council for Sustainable Development. G8 Gleneagles 2005: Climate Change, Clean Energy and Sustainable Development Agreement. *http://www.wbcsd.org/prlugins/DocSearch/details.asp?type=DocDet&ObjectID=MTU…*, DOA: 08/08/2005.

Webb, Tobias. “When it comes to the carbon crunch.” The Guardian: July 28, 2005. *http://www.guardian.co.uk/climatechange/story/0,12374,1537858,00.html*, DOA: 08/21/2005.

Notes