

**SUSTAINABLE DEVELOPMENT
IN CANADIAN FEDERAL POLICIES:
*Issues, Interests and Mechanism***

Dissertation submitted to the Jawaharlal Nehru University in
partial fulfilment of the requirements for the
award of the degree of

MASTER OF PHILOSOPHY

LIANBOI VAIPHEI



**CANADIAN STUDIES
CENTRE FOR AMERICAN AND WEST EUROPEAN STUDIES
SCHOOL OF INTERNATIONAL STUDIES
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI -110 067
2003**



CENTRE FOR AMERICAN & WEST EUROPEAN STUDIES
SCHOOL OF INTERNATIONAL STUDIES
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI - 110067

CERTIFICATE

Date: 21st of July 2003

This is to certify that the dissertation entitled “**Sustainable Development in Canadian Federal Policies: Issues, Interests and Mechanism**” submitted by **Lianboi Vaiphei** in partial fulfillment of the requirement for the award of the degree of **MASTER OF PHILOSOPHY** of the University, is her own work, and has not been previously submitted for the award of any degree of this or any other University.

We, therefore, recommend that this dissertation may be placed before the examiner for evaluation.

A handwritten signature in black ink, appearing to read 'A. Nafey', written in a cursive style.

PROF. ABDUL NAFEY
(Chairperson)

A handwritten signature in black ink, appearing to read 'Christopher Sam Raj', written in a cursive style.

PROF. CHRISTOPHER SAM RAJ
(Supervisor)

For,

HeNu

&

HePa

Preface

Politics has always been concerned with the quest for good life, be it in maintaining the structure for law and order or the political institutions of the society. To understand life without studying the impact of environment is not possible. The political philosophers from Aristotle to Montesquieu and to Marx made serious attempts to relate environment to political structures in one form or the other. This is because environment facilitates life –Aristotle showed it in his description of ‘polity’ as the best practicable state. Environment makes and unmakes our political systems, so emphasised Montesquieu while Marx demonstrated that our material development and freedom depend on our environment.

The growing awareness that the environment needs to be conserved and protected after the public has been increasingly exposed to a series of environmental disaster around the world - Bhopal gas tragedy in India, Three Mile Islands in the United States, Chernobyl in the Soviet Union, the Exxon Valdez in oil spill in Alaska; as well as the concerns about global change – overpopulation, contaminants, deforestation, desertification, the energy crisis, species loss, global warming, and ozone depletion. Although environmental problems are not new in themselves, industrialization and rapid population growth have greatly increased the scale and intensity of the over-exploitation of natural resources and environmental degradation, generating a wide range of urgent and global problems. The approaches and concepts developed within International Relations can contribute significantly in understanding the cause and impacts of this global environmental change.

What is required is the sustenance, conservation and improvement of the changing and restless and fragile environment. It is now widely regarded that ‘Sustainability’ needs to be incorporated as an essential characteristic of most human activities. The concept is derived from that of Sustainable Development, which has gained wide attention, and was crystallized and popularized in the 1987 report of the UN World Commission on Environment and Development, - “Our Common Future” (The Brundtland Report), which drew long established lines of thought that had developed substantially over the previous 20 years. In fact, the term ‘Sustainable

Development' was invented by Eva Balfour and Wes Jackson and had come into prominence in the *World Conservation Strategy* (WCS) 1980, and had become a catchphrase after the Brundtland Report; becoming buzzwords for everyone concerned with environment and development. Although the concept of Sustainable Development has not been a novel one, but it is only with the Brundtland Report that the term gains some public currency.

The concept of Sustainable Development provides a restriction and a goal. Development has to be sustainable in order to work within the constraints of protecting and preserving the environment, though it has not always been able to observe. It is a goal because it has not attained the objective of ensuring development along with the protection and preservation of the environment. Sustainable Development is development for the present in so far as it satisfies its needs, but it is a development with a future orientation, in Lockean words: 'keeping good and enough for others', (who follow). ✓

The report of the Brundtland Commission on Sustainable Development has emphasized the need to integrate considerations of environmental protection and sustainable resource management into economic planning. This recognizes the linkage of ecology and economy but also the need to redesign public policies in order to create incentives for maintaining sustainable patterns of economic activity. It is here that International environmental issues pose important challenges for International Relations theory.

In Canada, the gain of the increase in the public currency of the term 'Sustainable Development' was due to the initiative, which the Canadian government has taken; as a major supporter of the Brundtland Commission's work which seek to embraced the concept at least notionally, as a goal towards the direction of their public policy. Moreover, Canada cannot be insulated from the global environmental problems and its effects on the global economy, since Canada plays a vital part in an increasingly global marketplace. Canada being a resource-based economy cannot afford to remain isolated in the growing concern for sustaining development.

According to Canada's National Task Force on Environment and Economy, "the goal of sustainable economic development cannot be attained without significant change in the way that the economic initiatives are planned and supervised". Living up to this ambitious prescription poses a challenge for Canada who has sought to take up leadership in Sustainable Development. That is why Canada has sought to take the leadership in the definition and application of sustainable development through the various policies such as the Green Plan - the national plan of action to protect the environment consistent with a national policy of "sustainable development". Canada has succeeded reasonably in establishing a global dialogue on environment and development primarily because of: the experience that Canada possess in developing and managing the world's second largest natural resource base; her determination over issues of regional environmental significance, such as Great Lakes clean up and acid rain negotiations; the support of scientific research into global environmental change and the important role Canada plays in many international research and policy organisations in the field of environment and resource management.

The journey towards Sustainable Development can be traced back to 1885, when the country's first national park was established. Canada has also played a host to a number of major environmental meetings at the global level such as: the United Nations Conference on Human Settlement in Vancouver, 1976; the meeting that resulted in the Montreal Protocol on substances that Deplete the Ozone Layer, 1987; the Conference on the Changing Atmosphere, Toronto, 1988; and Globe'90 and '92, both of which combined a scientific conference and an international trade fair promoting practical solutions for sustainable development.

Over the past two decades, Canada has attempted to provide a strong leadership in international environmental policy; playing a prominent role in co-operative responses to environmental problem. Moreover, Canadian individuals have played a major role at the international level. Maurice Strong was the dynamic Secretary General of both the 1972 Stockholm meeting and the Earth Summit, and the first Executive Director of United Nation Environment Program; Jim Mac Neil was Secretary General of the World Commission on Environment and Development; David Munro, a former Director General of IUCN, the International Union for the Conservation. The eloquent messages delivered by Canadian writers and broadcasters,

such as David Suzuki and Farley Mowat, have a powerful influence on people far beyond the Canadian shores.

Canada has also assumed an active and progressive stance in the Earth Summit process. The government has set up a very high-level committee, bringing together the efforts of over 20 government departments and agencies. Many Canadian proposals received serious consideration at the negotiation table. In Canada, thousands of NGOs held meetings, wrote reports, and liaised with officials. At the World Summit for Sustainable Development in Johannesburg, (2002) youth, women, native peoples; organisations representing environment, development, peace, and business interests; these and many others took part. Canada has ratified the Kyoto Protocol right after the Summit.

For Canadians, the Summits are an educational experience, and an understanding of the linkages between what developments meant to both the environment and economy. It is with this understanding that the Canadian environmental policy is based on the premise that domestic and international efforts must complement each other such as the Green Plan which seeks to fill the knowledge gaps on global warming and control of toxic chemicals. In short, Canada has become strongly identified with the efforts to put Sustainable Development on the international agenda.

The subject matter of this dissertation being related to Canada has a shortage of published sources available in New Delhi. Therefore, sources available in Internet Website pertaining to Canadian Government and NGO publications have been consulted and incorporated. With this hiccup the study of the dissertation have been divided into the following chapters.

The scheme of the chapterisation in the study of dissertation would be in the following manner:

Chapter I discuss about the background of how the theme of Sustainable Development has emerged in the issue of the international politics and constructing

the meaning of the term and the constraints one finds with regard to the applicability of the term to the political domain of Canada.

Chapter II describes the various environmental issues as a consequent of the environmental degradation that has occurred and affected the different province and region of Canada. This has lead to be the major concern of these issues in the governmental policies of Canada.

Chapter III talks about the kind of interest that the environmental issues of sustainable development has led to the divergent of approach and stand taken by the various interest groups and the political dynamics generated as a consequent of the interest groups.

Chapter IV analyses the policy process of the theme that Sustainable Development has generated and the mechanism with which it has sought to implement the commitments made in abroad in the domestic constituents.

In the conclusion a summary of main observation of the theme is given and an attempt has been made to answer the formulated research questions, of the study.

Acknowledgements

First of all, I would like to acknowledge my Heavenly Father for granting me with good health to carry out this research and blessing all my sweat, labour and tears into this dissertation. It is only because of God's Grace that I have been given this opportunity in my life, which I will always count as one of my blessings and cherish it all my life. I would like to express my gratitude to all those people who has help me in my tenure of study in J.N.U as well as those people with whose help my dissertation have been possible.

I would like to thank the Professors who have been responsible in introducing me to Canadian Studies and has nurtured my interest in it. My Supervisor Prof. Christopher Raj with whose help my dissertation has seen the day. I would also like to thank Prof. Abdul Nafey for his kind suggestions and advice, in my dissertation. My heartfelt gratitude to Prof Sudha Raghavan who has given me the liberty to read her books for my references. I would like to take this opportunity to thank Prof James Walker, Andrew Cooper, Deborah Addis, Ryan Touhey, Prof J.L.Ferreira Archana Ojha and Joy.

I would like to thank Madhusri Das for helping me to consult the library in the Canadian High Commission. I also express my gratitude to those Librarian who has allowed me to use their library facilities for my consultation and references; Poonam the Librarian of Shastri Indo Canadian Institute (SICI), Baldev Chand, the Library Assistant of Tata Energy Research Institute (TERI), Development Alternatives, Chandrani Raj, Librarian of International

Labour Organisation (ILO) and Rajpal Singh, Sub Officer of World Wildlife Fund (WWF).

I am indebted to Jawaharlal Nehru University Christian Fellowship (JNUCF) for their prayers and support. I would also like to thank my friends who has always remembered me in their prayers; Khatoli Khala Chisi, Ianty Shannon Myllemngap and Benita Behera and; also those friends of mine whose continued support and motivation has helped me throughout my studies; Jaysree, Valentina, Tashi, Rebika, K.N. Asha and my old friend Nirupama Mukhia who had helped me a lot in my salad days, when I was a fresher in J.N.U.

I would like to thank my family members; my brother Lalal and Lunpi, sister Sinu and Pupui and my nephew Sawsawn and Zawzawl; and a special mention to Papau for providing me with the necessary zest to continue with my work. And above, I acknowledge the encouragement and support of my parents with deep reverence for the entire tenure of my study, and therefore; convey my heartfelt gratitude to both my mom and dad who has always been my pillar of strength!

Last but not least, I take responsibility for al the error and mistake that might have been committed.

Date: 21st of July 2003

Place: New Delhi


Miss Lianboi Vaiphei

List of Environmental Issues and Concerns in Canada

	Page No
1.Greenhouse gas Emission Indicators (1980-2000)	35
2. Climate Change: Indicating Canadian and global Temperature Variations	37-38
3.Environmental Pollution on the Atlantic Coast	42
4.Environmental Pollution on the Pacific Coast	43
5.Environmental Pollution on the Arctic Ocean	44
6. The Physical Characteristics of Great Lakes	46
7.The Origin of the Air Pollutants	52
8.Major contributors to Global Warming	54

CONTENTS

Page

Preface	i-v
Acknowledgement	vi-vii
List of Environmental Issues and Concerns in Canada	viii
Chapter 1: SUSTAINABLE DEVELOPMENT: MEANINGS and CONSTRAINTS	09-19
• Perspectives on Sustainability	05
• Principles of Sustainable Development	13
• Canada and Sustainable Development	15
Chapter 2: ENVIRONMENTAL ISSUES in the GOVERNMENTAL POLICIES of CANADA	20-73a
• Environment and Ecology in Canada	21
• Environmental Issue in Canada	27
• Causes of the Environmental Hazards	50
• The Ecological Effects of the Environmental Issues	62
Chapter 3: THE ENVIRONMENTAL INTEREST in SUSTAINABLE DEVELOPMENT	73b-108a
• The Political Nature of Environmental Interest Groups as a catalyst of Political Change	73
• The Classification of the Interest Groups in Politics	75
• The Associational Interest Groups of protecting Environment through Sustainable Development	76
• The Institutional Interest Groups of protecting Environment through Sustainable Development	84
• The Communal Interest Groups of protecting Environment through Sustainable Development	98
Chapter IV: THE MECHANISM in the SUSTAINABLE DEVELOPMENT POLICIES	108b-149
• Canada's stand in the International Forum	108
• Canada's Environmental Policy	122
• Canada's Environmental Institution	128
• Canada's Environmental Instrument	134
• The Stakeholders in the Green Lobby	143
Summary and Conclusion	150
Selected Bibliography	158

Chapter 1

SUSTAINABLE DEVELOPMENT: MEANINGS AND CONSTRAINTS

1. Introduction:

The concept of Sustainable Development has gained considerable public attention, since the release of the 1987 report of the World Commission on Environment and Development, - "Our Common Future" as titled by Brundtland Report. The public interest in the concept was undoubtedly encouraged by a series of environmental disasters around the world in recent years- Bhopal gas tragedy in India, Three Mile Islands in the US, Chernobyl in the Soviet Union, the Exxon Valdez oil spill in Alaska- are only a few examples. The growing public awareness of the effects of our industrial activities and the serious threat to the ozone layer, and the dangers posed by the "greenhouse effect", soil and water contamination, deforestation, and waste disposal, have served to dramatically increase the public currency of the concept of Sustainable Development.¹

Although, the concept of sustainable development has been used by environmental policy analysts for many years, be it in one form or the other, but it was only the release of the 1987 Report of the World Commission on Environment and Development titled as " Our Common Future" prepared by the Brundtland Commission, did the term not only gain public currency but was popularize globally. In Canada, the increase of the public currency was partly due to the initiative of the Canadian government, which had been a major supporter of the Commission's work, and had embraced the concept at least notionally, as a goal towards which public policy should be directed. However, public interest in the concept was also due to the concomitant emergence of certain global environmental problems such as the announcement of the serious threat to the ozone layer, which received particular attention in Canada because of the Montreal Protocol, and the growing awareness of the dangers posed by the "green house effect", which achieved prominence as a public

¹ Lynne B's; "Sustainable Development and the role of law" in *The report of the Canadian Bar Association Committee on Sustainable Development in Canada: Options for Law reform*; The Canadian Bar Association; (Ottawa, Ontario; September, 1990); p 1

concern largely due to the widespread and serious drought in North America in the summer of 1998.²

Sustainable Development is one of the concepts, which has been the subject of numerous conferences and seminars organized during the last twenty years. The study of the historical journey taken by Canada towards sustainable development implies the need to trace the chronology, more specifically the landmarks events of how the concept of environmental conservation led to the protection of the new global environment.

The first landmark development of adapting the environmental conservation by the Canadian federal government could be traced back to 1885 when the first Canadian National Park System was established in the 26 sq. km around the hot mineral springs near Banff station in Alberta were set aside for public use. In fact, Canada has the first the national park service, which is the oldest in the world. This concept has been brought into legislation in 1911 and was institutionalized through the National Park Act in 1930 - setting aside federal lands for historical purposes.

The establishment of the first historic site was Fort Anne in Annapolis Royal, Nova Scotia in 1917. In fact, the Historic Sites and Monuments Act of 1953 has provided statutory authority for the designation of Natural Historic Sites; regardless of ownership as well as a legislative basis for acquiring and for contributing directly for the care and preservation of these sites.

It should be noted that the legislation for the conservation was 'established in 1909 by the Canadian Crown on conservation as an advisory body with a mandate to collect and disseminate information on any matter regarding conservation of National Resources Act that was later on banished in 1921'.³

However, the beginning of the landmark events in protecting the global environment began in the year 1948 when the International Union for the Protection

²J.Owen Saunders's "The Path to Sustainable development: A Role for Law" in J.Owen Saunders (ed) *The Legal Challenge of Sustainable Development*; Canadian Institute of Resources Law;(Calgary, 1990) p 1

of Nature was founded at Fountainebleau near Paris in France .It was later renamed as the International Union for Conservation of Nature and Natural Resources (IUCN) or in short the World Conservation Union. It fosters a unique partnership of governments and NGO, which serves as a keystone of global environmental community for the protection global environment. Also, it was the first time that the relevance for supporting development and human needs had been demonstrated. Although under the umbrella/ aegis of UN; the first awareness and steps taken in this regard was in 1949, when the first major UN meetings on natural resource and its problems was discussed. In the UN Scientific Conference on the 'Conservation and Utilization of Resources' in Lake Success, New York.

The seeds of the theme of Sustainable Development was sown around twenty five years when Harrison Brown had published a prophetic book titled as "The Challenge of Man's Future" in 1963 which has delved into the problems that the world would find themselves in It was followed by a book written by Rachel Carson called as "Silent Springs" in which warning of worldwide pollution from DDT and other chemicals began to receives wide attention in 1962.

UN responded to the global environmental problem by initiating draft conventions on environmental protection and the first UN Conference on the Law of the Sea was held in Geneva and since then it continued as a continuous process. ?

The Canadian government has taken initiative within the federal structure of the government to respond to the problem and not without making changes .It has established a separate Ministry called as Environment Canada on June 11,1971 by bringing together the Department of Fisheries as well as Forestry and some elements of other department including Air Pollution Control Division from Health and Welfare, Weather Science from Transport, Water Section from Engineering, Mines and Resource and the Canadian Wildlife Service from India and Northern Affairs.

The Canadian initiative and the UN endeavor met when the UN Conference on the Human Environment was held in Stockholm, Sweden in 1972.It was a significant

³ *Historical Path* in www.sdinfo.gc.ca

landmark towards protection of global environment in more ways than one as it led to the establishment of environmental movement; both in the economic as well as the social context and led to the development of UN Environmental Program (UNEP).

The Conference was significant for Canada as Maurice Strong chaired the seminar in the conference. Also as a Canadian his success due to his global networking skill got him to be appointed as UNEP's first Executive Director which has helped a lot in promoting the voice of Canada in the international forums. The establishment of UNEP in 1973 has led to the coordination of UN global environmental initiative and has also acted as a simultaneous Environment Forum in recognizing the key role of NGO's Human Settlement and has set a precedent for future international meetings.⁴

Several concrete results were produced in the conference such as the 26 principles outlined in the Declaration of the UN Conference on Human Environment as well as Action Plan for the Environment and Environment Fund. Besides, it also revealed a rift between developing and developed countries over the exploitation of natural resources in ways that both damaged the environmental and perpetuated the unequal distribution of wealth.

Moreover, the UNCHE (United Nations Conference on Human Environment) has diversified into Human Settlement for which the United Conference on Human Settlement (HABITAT 1) as held in Vancouver, Canada in 1976. This world conference drew attention on the plight of the cities and has resulted in establishment of a new Habitat Center in the UN System. The development traced, is on how the global consciousness has occurred with regard to environment especially with regard to Canada. However, the term "*SUSTAINABLE DEVELOPMENT*" was first used by the International Union for the Conservation of Nature and Natural Resources published 'The World Conservation Strategy' in 1980 bringing into light how conservation support development.

This has led to UN General Assembly to create the UN World Commission on Environment and Development for which Dr Gro Harlem Brundtland, the first Prime

⁴ *Rio +10* in www.socialfunds.com

Minister of Norway was appointed as the Chairperson. The Brundtland Commission published the seminal report, "Our Common Future" four years later in 1987 and defined the term, "Sustainable Development".

As a direct response the Canadian government published 'the Report of the National Task Force on Environment and Economy' – as an independent agency mandated by the Parliament to give inputs that will act as a catalyst to identify, explain and promote the principles and practices of Sustainable Development in all sectors of the Canadian Society. The members include peoples from all walks of lifelike government officials, business, science, environmental groups, indigenous people, labour, academia who review the works and initiate programs for a better understanding of sustainable development through a common consensus.. There are also local and provincial round tables of this nature in Canada.

2.PERSPECTIVES ON SUSTAINABILITY

In developing the theme of 'Sustainable Development' The World Commission on Environment and Development, (Brundtland Commission) 1987 defined sustainable development simply as –

*Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*⁵ In more detail, the commission said, *sustainable development is a process of change in which exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations.*

There are a wide variety of ideas about what sustainable development specifically means and probably has as many definitions. While the actual wording of the various definitions may vary, the basic themes are constant in all these definitions. They all concern themselves with an effective integration of the social, economic and environmental factors in decision-making.

⁵ World Commission on Environment and Development, *Our Common Future* (New York: Oxford University Press, 1987) p 43

DEFINITIONS

In Canada, the definition of Sustainable Development as provided by the World Commission on Environment and Development (Brundtland Commission) in 1987 has been adopted through the Auditor General Act of 1995.⁶

Through the interdepartmental Deputy Minister's Sustainable Development Co-ordinating Committee, the federal government has further endorsed the approach advocated by the World Commission. The Committee formally recognizes that sustainable development is based on integrated decision making, and encompasses the following three elements:

1. A long-term focus seeking to preserve and enhance economic, social and natural capital in order to improve the quality of people's lives and ensure a continuing legacy for the future;
2. A horizontal perspective that fully incorporates social, economic and environmental factors; and
3. Recognition of the interdependence between domestic and global activities.

The definitions as given by the Brundtland Commission by the different federal department and agencies with their endorsement in Canada such as:

The definition of Sustainable Development given by Gitxsan Wet'suwet'en of the Canadian Government defines it as:

The integration of environmental and economic considerations, along with the consideration of equity, is a fundamental underpinning of the concept of sustainable development.

While the House of Commons Standing Committee on Environment and Sustainable Development has this to say:

⁶ Sustainable Development/ SD Concept in www.ainc-inac.gc.ca

Sustainable development requires that society as a whole consider collectively the implications of its actions for society, the economy and the biophysical environment (i.e. fauna, flora, the air water and soil) and that this consideration extend decades into the future.

The Environment Canada defines their International Sustainable Development Strategy as:

"The primary objective of the Sustainable Development is to reduce the absolute poverty of the world's poor through providing lasting and secure livelihoods that minimize resource depletion, environmental degradation, cultural disruption and social instability".

The First Nations sees Sustainable Development; as defined by the Council of Yukon First nations:

"Beneficial socio-economic change that does not undermine the ecological and social systems upon which communities and societies are dependent."

While the Council of First Nations believes that the *"Sustainable Development recognizes that development is essential to satisfy human needs and improve the quality of human life. It is based on the efficient and environmentally responsible use of all society's scarce resources - our natural, human and economic resources. Activities must be considered in light of their impacts on the "seven generations" to come."*

According to the Heritage Canada in defining the Sustainable Development Strategy says that *"Sustainable, Development is: a long-term focus that seeks to preserve and enhance economic, social and natural (resources) capital to improve the quality of people's lives and ensure a continuing legacy for the future; a coordinated and integrated approach to decision-making, and horizontal issues in the federal government, incorporating social, economic and environmental considerations; and recognition of the interdependence of domestic and global activities."*

The Sustainable Development Strategy of HRDC has articulated what Sustainable Development meant as seeking *"to recognize the complex inter- relationships*

within and between aspects traditionally characterized as the environmental, the economic and the social to cultural.”

The Sustainable Development Strategy of the Department of Fisheries and Oceans says that:

“Sustainable Development is about how we meet the need of people today, without compromising the ability of future generations to meet their needs. It is not an end point but rather an approach to decision making. It recognizes that social, economic and environmental issues are interconnected, and that decisions must incorporate each of these aspects if they are to be good in the long term. It is an approach that will help us to achieve a healthy environment, a prosperous economy, and a vibrant and just society for current and future generations.”

While the other countries has also sought to define and explain the stand taken in this regard such as:

According to Environmental Conservation “The Concept of Sustainable Economic Development” as quoted by E.Barbier,(1987), says:

“Ecologically sustainable Development is development that aims to meet the needs of Australians today, while conserving our ecosystems for the benefit of future generations. Finding better ways to integrate environment, economic and social concerns in decision-making are a key theme of Australian policy.”

For, Environment Australia it means; *“Ensuring a better quality of life for everyone, now and for future generations”*

The Department for Environment in the Food and Rural Affairs of Australia has a very simplistic assumption of Sustainable Development. It meant *“To feed, house, nurture, educate and employ this growing, but slowing population while using and protecting the planet’s life support systems”*.

According to the US Chair of the Arctic Council, Robert Corell in the Arctic Climate Impact Assessment says “Sustainable Mobility is the ability to meet the needs of society to move freely, gain access, communicate, trade, and establish relationships without sacrificing other essential human or ecological values today or in the future.

Semantically, Sustainable Development has fused two words derived from verbs with contradictory connotations. The word "sustain" connotes perpetuation and balance, while "develop" is a dynamic word that connotes expansion and transformation. If the two words cannot accommodate their paradoxical meaning than the relevance of the term is subverted Development is inextricably linked with environment for the simple reason that environment provides the base of life and development is the means of improving our lives. Therefore, Sustainable Development seek to provide the means by which environment cannot only be protected, but also provide the base for the economy to grow and thereby enhance the society; all this at the same time.

However, how the quest for the path of Sustainable Development can be adjusted to the capacity of the environment and be directly responsive to human needs and requires an approach to Development which is implicit rather than explicit

Sustainable Development is a value laden and elastic concept; it's meaning is capable of wide latitude of interpretation by environmental and economic constituencies. There is no commonly accepted definition or agreements on the ways and means for societies or industries to meet the test of sustainability

A different perspective of Sustainable Development has been given in the following formulation by O.P.Dwivedi, "*Sustainable Development obligates humanity to use, develop, manage, and care for the environment and planetary resources in such a manner that supports the stewardship of creation (including all natural resources, biodiversity and the welfare of all living beings) and the continuity of cultural and spiritual heritage of each community, as well as maintenance of harmony between people and nature for present and future generations*".⁷

⁷ O.P. Diwedi's in 'Introduction to Sustainable Development' in O.P Diwedii's Tremblay, Chowdhari Rita; Dwivedi O.P., Parber Carole, Inglis Stephen, Tele Tagent,

In essence, this definition suggest sustainable development as a general principle, ought to ensure that it is the recognized duty of all people and their government's to protect, conserve, preserve and finally pass on to the nature's heritage for the future generation, while at the same time preventing all deliberate measures acts (of individual and states) which harm or threatens our nature's heritage.

According to the Commission on Environment Law of International Union for the conservation of Nature and Natural Resources, the concept of sustainable Development denotes a balance where 'sustainable' brings environmental concepts into the development process, while 'equitable' inserts developmental matters into international environmental protection efforts⁸

Traditionally, the term 'sustainability' has referred simply to a harvesting regime that could be maintained overtime. The meaning has been considerably broadened by ecologists to express concern about preserving the status and function of entire ecological systems. Moreover, the English word "development" is seen as a grammatically ambiguous term, because it stands for a process of developing or state of development, which results from such a process. The common usage seems to favour a "process of developing" but has a different implication to different vocation and professionals.

For an economist, development may mean any activities designed to increase production of goods and services in certain sectors of production; while to a poor farmer, the implication of development may imply a chance of help from the threat of giving up his home which may be caused either by a flood due to a creation of hydroelectric facility or a means of increasing his agricultural products. On the other hand development as perceived by a politician of a developing country may see it as a help from foreign investment or agencies in raising the standard of living of the people, so that he would pursue avenues for bringing development into his country. It may also give him an opportunity to line his pocket; so that he would make careful

'Interfacing Nations: Indo/Pakistani/Canadian Reflections' B.R. Publications, New Delhi 1998.p 6

plans to realize as large a windfall as possible. As such development has been perceived in either cautious optimism, or fear to anger by the farmer.

In actual practice the label of "development" encompass many activities that consists of moderate to large scale interventions in the economies of some country or region. Typical, of large scale interventions, a lot of havoc and negative side effects were produced The Brundtland Report acknowledge the aspects of development as it pointed out that "many present developments trends leave increasing numbers of people poor and vulnerable, while at the same time degrading the environment ".Due to such insights , the commission came to see that a new development path was required , one that sustains human progress not just in a few places for a few years , but for the entire planet into the distant future, which it termed as "sustainable development". Putting aside , the ambiguity in the grammatical use of the word "development"; the development path urged by the commission is meant to lead to the most important long range goal – a human existence that is sustainable and at the same time supportive of each human being. Beyond the ambiguity of meaning there is also a disagreement about the prospects for achieving sustainability.As some scholars has essentially questioned whether sustainability is a significant issue, pointing out that humankind consistently has managed in the past to avoid the specter of Malthusian security through resource substitution and technical ingenuity⁹.

While others believe that the scale of human pressure on natural systems already is well past a sustainable level. They have pointed that the world's human population has probably double before stabilizing, and that to achieve any semblance of a decent living standard for the majority of people, the current level of world economic activity must grow, perhaps fivefold to tenfold, They cannot conceive of already stressed ecological systems tolerating the intense flows of materials use and water discharge that presumably would be required to accomplish this growth. Ascertaining more clearly where the facts lie in this debate and determining appropriate response and strategies are difficult problems- perhaps among the most difficult faced by all who are concerned with human advance and sound natural

⁸ *International Covenant on Environment and Development*; IUCN; (Switzerland, March 1995)

⁹ Simon J., *The Ultimate Resource*; Princeton University Press (1981) p 7

resource management. In order to clarify the ambiguity in the concept and identifying the salient elements in the concept of sustainability, there are contrasts in view between economists on the one hand, and ecologists as well as environmental ethicists on the other¹⁰.

Two elements stand out to be essential in understanding sustainability. The first is intergenerational equity and the responsibility of the current generations to their descendants. The second is the degree of substitutability between natural resources, including environment, and other forms of social concept.

In order to clarify the ambiguity in the concept, it is important to trace the relevant fund of information which will give the perspective and principles of Sustainable Development into a preliminary framework for analysis as,

- (i) The intellectual as well as chronological development began when "**The World Conservation Strategy**" was created by the International Union for the Conservation of Nature and Natural Resources (1980) and their supplementary updates.

The World Conservation Strategy is an important milestone in the history of environmental movement; being the first time that the relevance of conservation for supporting development and meeting human needs was convincingly demonstrated.

The Strategy has subtitled it as "Living Resources for Sustainable Development" has placed the perspective in context rather than replacing the traditional conservation ideas and approaches, such as design with nature and the designation of protected areas. It has given substance in three areas: the sustainable use of natural resources; the preservation of genetic diversity and the maintenance of essential ecological processes. Thereby, bringing both environmental protection and economic development into the fold of total development.

- (ii) It was followed by "**Our Common Future**"; the path breaking report of the **UN World Commission on Environment and Development (1987)**,

¹⁰ Daly and S.Cobb; *For the common good*; Beacon Press (Boston, 1989) and; A.H Ehrlich & P.R Ehrlich *The Population Explosion*; Simon and Schuster (N.York, 1990)

which was headed by Gro Harlem Brundtland, the then Prime Minister of Norway. The Brundtland Commission has re-examined Sustainable Development from an economic perspective drawing on the mainstream of development thinking. The strategy is to be founded on more effective forms of international cooperation and on policy and institutional reforms that encourage direct responsibility by development agencies for the environmental consequences of their decisions and actions. It promoted a new era of economic growth to sustain and expand the resource base but whether this can be achieved is questionable since the main focus is to alleviate world poverty and reduce the inequalities between industrial and developing countries.

- (iii) The "**Report of the National Task Force on Environment and Economy**"(1987); which is a direct Canadian response to the development as mentioned earlier but more specifically to the work of the Brundtland Commission.

The report is based on the line of how to adopt Sustainable Development as given by Brundtland Commission and emphasize is given on "Sustainable Economic Development". Several policy and institutional initiatives were proposed as to adopt the concept of Canadian political culture. It recommends the creation of national and provincial/territorial round tables made up of senior decision makers, offering a new approach to integrate environment and economy. The approach of the policy has shifted from "react and cure" to an "anticipate and prevent" mode of environment and development decision making, incorporating larger time frame for planning. The difficulties of relating the global concept were also realized.

3.PRINCIPLES OF SUSTAINABLE DEVELOPMENT

The framework of analysis that gives the perspective of Sustainable Development has led to the formulation of the different principles in Sustainable Development. The main principle of Sustainable Development basically correspond to the need of having economic development without continuing to deplete and destroy

the natural resources upon which all lives depend. The principle of Sustainable Development can be divided into two sub principles¹¹:

- A. The principle of *Integration, Stewardship, Shared Responsibility, Prevention and Conservation*
- B. The principle of *Recycling, Enhancement, Rehabilitation and Reclamation, Scientific and Technological Innovation and Global Responsibility*

A. The first principle has the following implications-

- (i) The economic decision should reflect the environmental impacts so that environmental initiative takes into account economic consequences. In short, "the decision of today has an impact for our tomorrows"
- (ii) Adverse environmental and economic policies and decisions can be prevented if not mitigated when the decisions and actions are adopted in a spirit of partnership, open cooperation with accountability.
- (iv) Biological Diversity, Ecological Process, Life Support Systems of our environment need to be maintained through the principle of Conservation such as Harvesting renewable resources on a sustainable yield basis to make wise and sufficient use of our renewable and non renewable resources.

C. The second principle on the other hand implies that-promoting recycling through the reuse of Material reduce not only the problems of solid waste disposal but also save raw materials.

Therefore, the principle of Sustainable Development is to ensure economic development through –

- (a) The protection of the environment ✓
- (b) Paying for the environmental initiatives ✓
- (c) Meeting the needs of the present without sacrificing the ability of the future generations to meet their own needs
- (d) Taking into consideration the long term effects on environment by the economic decision makers.

¹¹ David Simon's in '*Principles of Sustainable Development*'; Simon's "*Sustainable Development: Theoretical Construct or Attainable Goals*"(1989) p 5

4. CANADA AND SUSTAINABLE DEVELOPMENT

Canada believes that Sustainable Development means ensuring that environmental, bring about economic and social activities and policies are mutually enforcing. With this approach it aims to bring about a higher quality of life and provide better access to the necessities of life for present and future generations. The quality of life for Canadians depends in large part on clean air, clean water, and protection from the effects of severe weather and natural disasters. At the same time, the economy depends on natural resources such as forestry, agriculture, mining, energy and fisheries. In fact, how economy and quality of life is inextricably linked with the environment has been best exemplified in the case of Canada. Therefore, the natural resource has to be used in ways that do not affect the quality of life or health either today or in the future. This is the core of what Sustainable Development means – balancing economic, environmental, social, cultural, health and political needs.

Canada's approach in building sustainability requires an integrated action in the three general areas known as the Economic, Environmental and Social pillars of Sustainable Development¹².

- (a) *Economic Development*: since today's global economic system is interlinked it requires an integrated approach that fosters responsible long term development that ensures no nation or community is left behind. It also provides the necessary wealth to invest in protecting the environment, education, science and technology and in maintaining health and well being.
- (b) *Social Development*: must be undertaken in a manner that empowers all members of society to play a role in determining their own future. It must also address and respect cultural and social diversity along with the rights of workers while fulfilling the basic needs of the world's people- jobs, food, education, energy, health care, water and sanitation.
- (c) *Conserving Natural Resources and Environment*: A healthy and abundant environment is important for the well being, prosperity and human security. Sustainable Development of Natural Resources, prevention of pollution and

¹² Canada's stand for sustainable development in www.wssd-smdd.gc.ca

conservation of Natural Habitats are central to advancing poverty alleviation and improved quality of life.

However, the litmus test of Sustainable Development lies in the triangular association of the commonwealth values of environment, economic, and social values. In translating this idea into practical terms of analysis and decision making lies a number of practical difficulties are witnessed. But the key point is the relationship among these constituents is in the context of sustainability for creating a sustainable society.

The sustainable society is one where wider question of social needs and welfare and economic opportunity are integrally connected to environmental concerns. Sustainability implies a more careful use of scarce resources, in all probability; a change to the high consumption lifestyle experienced by the affluent and aspired to, by the others¹³

Canada has taken initiative in responding to the landmark events in protecting the global environment especially to "The World Conservation Strategy" as created by IUCN and the Brundtland Report through public hearings on these reports and the "National Round Table on the Environment and Economy" which was held in 1988; taking into account the interdependence on environment and economy in Canada. Later on , it legislated an environmental bill known as "Canada's Green Plan"; which is also known as the first environmental bill of rights in Canada.

This explains, Canada's participation in the developments of a large number of multilateral agreements in the international community as well as among different countries in the world addressing primary issues concerning environment and sustainable development. That is why; Canada is promoting a focus on practical action to build the capacity on implementing existing commitments, rather than launching negotiations on new agreements. Canada believes that with this practical action can be achieved through cooperation at many levels that is quite exemplary.

At the UN Conference on Environment and Development, also called as the Earth Summit in Rio de Janeiro in June 1992, two international convention agreements was reached –

¹³ Julius Lgyne (ed); *Just Sustainable Developments in an Unequal World*; Earthscan Publications; (London , 2003) p 26.

- Agenda 21- a blueprint for action in support of sustainable development for the 21st century in which Canada has signed; Environment and Development, and
- The Forest Principles.

This other two agreement include the two sets of principles i.e., on the Rio Declaration.

- Convention on Biological Diversity ✓
- United Nations Framework on Climate Change

In parallel to the summit, Canada signed the Convention on Biological Diversity and ratified it in December 1992 and was also part of the agreement on the UN Framework Convention on Climate Change which was formulated into a protocol known as the Kyoto Protocol as it was concluded in Kyoto, Japan in December 1997. Canada has not only signed but ratified the Kyoto Protocol after World Summit on Sustainable Development (WSSD) 2002 of Johannesburg.

Canada needs to back up her rhetoric of commitments and resolutions in the international forums with solid policies by the federal government. It is here that Canada faces the challenge of adapting not only the global concept of "Sustainable Development" into the local Canadian environment but also to keep the commitments and resolutions of the government by adopting the policies and institutional initiatives to their political ethos and culture besides the geopolitical realities in Canada.

The federal government of Canada has sought to meet her commitments and resolutions through various mechanism such as the protocol which established as law, legislate bills on sustainable development through federal Sustainable Development Strategies and execute them through the Executive Commission of the Environment and Sustainable Development. It also conducts research through the research institute such as International Development Research Center and International Institute of Sustainable Development; which has been established in 1970 and 1990 respectively. Besides there are several NGO'S such as Greenpeace, Sierra Club, Arctic Council which champion the cause of the environmental issues as the raison d'être for their existence.

The environmental concerns and issues are crucial for determining the quality of life for the Canadians. There is a threat to the Canadian biodiversity due to the

pollution both in Air and Water, which has increased global warming as a consequence of the climate change. The loss of biodiversity has become a concern since it endangers the life of many species by affecting the reproductive ability of organisms and lead to their extinction; thereby threatening the fragile fabric of the ecosystem.

This has been caused due to the decline in the quality of air, water and the environment as a whole. The technological advances and industrial development has led to the excessive emission of contaminants, which deplete the ozone layer and contribute to Acid Rain. The excessive use of chemicals such as PCBs (polychlorinated biphenyls) and pesticides such as DDT and long range transport of heavy metals and persistent organic pollutants have led to transboundary pollution; which contribute to the factor of extinction of the wildlife species. Moreover, the effects of pollution from cities, industries and agriculture has led to the pollutants entering freshwater and waste water which not only stress the aquatic ecosystems and contaminate the surface water as well as ground water. This is one of the major challenges, which Canada faces in preserving their fresh water resources.

Human activities are having a discernable influence on the global climate that has led to greater temperature changes in Canada than anywhere else in the world. The consequences for Canada due to a potential increase in the climate varies from Heat waves, floods, droughts, storms as well as major shifts in the resource base for forestry, agriculture, fisheries etc including the damage to the northern ecosystems.

The environmental issues advocated by the different environmental groups as a consequence of the threat for the basic survival has led to define the existence of their interest in the issues among the environmental groups such as NGO's, Advisory body of the Federal Government or the Standing Committee. Some of the group show their solidarity to the victim due to the environmental threat and thereby addressed the issues selectively while others show their concern as a result of the political goals of meeting their commitments in the multilateral agreements among the countries of the world

Nevertheless, they have expanded the number of policy making communities by putting a host of new issues on the agenda, altering the make up of existing communities by demanding their voice to be heard among the government officials involved in the process by pressing for the establishment of new environmental departments and regulatory authorities. Thus a beginning was made in Canada to

operationalise the Sustainable Development objectives; has been launched with the background of the environmental degradation caused which is discussed in detail in the next chapter.

Chapter 2

ENVIRONMENTAL ISSUES IN THE GOVERNMENTAL POLICIES OF CANADA

INTRODUCTION:

According to 'The New Penguin English Dictionary, 2000 the word "issue" signifies a matter that is in dispute between two or more parties or a controversial topic. So, an Environmental issue depicts the problem faced by the people as a consequence of their action towards the environment, which accumulates into a serious problem that pose a threat to all the living organism in the world. To create a sustainable society, it is very important not only to connect and integrate both the welfare and social needs of the society with the economic opportunity but also relate it to the environmental concerns.

The main goal towards Sustainable Development is to - ensure a balance in the economic, environmental, social, cultural, health and political needs in Canada. For this will ensure the quality of life, which the Canadians desires; as a core idea in sustainability which largely depends on clean air, clean water, and protection from the effects of severe weather and natural disasters. The environment plays a very important role in the economy of Canada, as it is dependent on the natural resources such as forestry, agriculture, mining, energy and fisheries.¹ Thereby, it is important that natural resources be used in ways that do not affect the quality of life or health either today, or in the future.

Therefore, in order to make development "sustainable", environmental, social and economic planning cannot proceed independently of each other because Sustainable

Development seeks to ensure "development in which the utilization of resources and the environment does not damage prospects for their use by the future generations"; according to the definition of the Canadian Council of Ministers of the Environment².

¹Sustainable Development in www.environmentandresources.ca

²www.ccme.gc.ca

For the resources must be developed in harmony with the natural ecosystem i.e. the biological community of interacting organisms and its environment functions as a reasonably self-sustaining ecological unit in nature; such as the water resources needs to be preserved and cannot be destroyed or depleted at any cost in order to sustain life on earth of both the plant as well as animals. That is why; a long-term economic growth is very much dependent on a healthy environment.

1.ENVIRONMENT AND ECOLOGY IN CANADA:

The word “environment” is derived from the French word which is a verb “environner” which means to surround i.e., our environment is literally no more and no less than our surroundings; while the word “ecology” according to the Greek roots meaning ‘house study’. The German writer Haeckel has defined Ecology as ‘the science of relations between organisms and their environment’; a general definition which has been accepted. ³

TH-10930

Canada is a vast country, the largest country in the Western Hemisphere and the second largest country in the world; with a total area of 9,096,507km sq. Its 9.98 million km² extend over more than 41 degrees of latitude and 88⁰ of longitude, and its coastline is a remarkable 243 789 km, three quarters of which encompass islands. The geological base is diverse and anchored on the massive Canadian Shield of the mineral rich Precambrian rocks. Sedimentary rocks underlie vast areas of rolling western plains, and rise abruptly, to peak at 5955m above sea level in a series of north-south mountain ridges that cradle some of the world’s most spectacular scenery.

To the east, sedimentary and older rocks have been sculptured by the elements to form the Appalachians, the St.Lawrence lowlands, and the varied landscapes of the four Atlantic Provinces. A continental and northern setting has exposed the land repeatedly to the rigours of glaciation⁴.

³ Ian Mc Lean’s, *Concise Dictionary of Politics*; Oxford University Press;(Oxford, 1996) p.149, 160

⁴ D.F.W pollard and M.R. Mc Kahnies “The Dimensions of Canada” in *Canada: A Report on Achievements in Conservation*; by World Conservation Strategy and Environment Canada (Ottawa May, 1986) p 1

It is important to have a basic idea about the geographical features of Canada so that one could have an understanding of the gravity of the environmental issue that has garnered attention. Canada's diverse landscapes and wildlife has been attributed to its climatic condition and therefore a broad division of Canada on the basis of the Ecozones can be divided into 5 broad categories which has been briefly discussed as follows:

- (1) The Northern Arctic
- (2) The Atlantic and Pacific Maritimes
- (3) The Prairie
- (4) The Mixed Wood Plain
- (5) The Boreal Shield and Plains⁵

The Northern Arctic:

In its literal sense the word "Arctic" refers to the area north of the arctic circle (66° 30' N latitude). The Northern Arctic Ecozones comprises most of the non mountainous arctic islands plus portion of northeastern Keewatin and northern Quebec. The terrain is predominantly low plateaus and hills covered with glacial moraine, with frequent rock outcrops and marine deposits. The climate is dry and very cold; the average number of frost-free days is about 20; and continuous permafrost is present at shallow depths below the weakly developed soils. Important terrestrial animals are caribou, muskox, wolf, and polar bear and in the sea, walrus, seals, narwhal, and beluga (white whales) Native hunting and trapping primarily with a marine focus, remain important activities. Much of the sedimentary area is targeted for hydrocarbons development, and one or two mining enterprises are in progress. Climatic change will be dramatically felt in Northern Canada where heating effects are expected to be the greatest.

(2) The Atlantic and Pacific Maritimes:

These two distinctly different coastal Ecozones refer to the ecosystems of the Upper Bay of Fundy Dike lands in the eastern coast towards the coastal area of

⁵ Ecozones and Human Activities in "Perspectives: The Ecospheres where we live" *The State of Canada's Environment*; Government Of Canada (Ottawa, 1991) p 1-11

Atlantic Ocean and the Lower Fraser river basin in the western coast towards the Pacific Ocean; share the similarity of maritime climates: adequate dependable rainfall and moderate winter temperatures. Both are forest areas, and the Pacific coast especially is noted for its prosperous forest industry. Mixed agriculture is important along both the coasts in the major valleys where fruit and horticultural crops are grown, and where pressures for urban development are frequently strong. The zones are hilly to mountainous, with rivers providing many sources of hydroelectric power. Their natural beauty is a magnet for tourists and there has been a significant industrial area for both shipping as well as fishing.

(3) The Prairie:

It comprises the Ecozones of southern Alberta, Saskatchewan, and native grasses originally dominated Manitoba. During a century of settlement, their levels from gently rolling plains have been converted to cropland and its rougher morainic uplands to range lands and pastures. It is now a culturally molded landscape, providing much of Canada's cereal and oilseed production. Only fragments of the natural grasslands survive, and the larger wildlife species are increasingly rare. Low precipitation and periodic droughts characterize natural grasslands, and water management is essentially designed to sustain the agricultural goals of the western plains. In some places the natural precipitation is supplemented by irrigation from rivers that are also drawn upon for municipal and industrial uses, as well as for recreation. Prairie wetlands play an important role in the hydrological cycle and as waterfowl habitat has been significantly reduced by ploughing them down in dry years and by draining them in wet years.

(4) The Mixed Wood Plains:

Southern Quebec and adjacent southern Ontario constitute the largest favourable people-habitat in the country, as evidenced by the concentrated population and intensive land use. Proximity to the Great lakes and the St Lawrence River is one of the zone's natural advantages. The predominant landforms are level to rolling plains with extensive tracts of productive agricultural soils in a benevolent climate. Forests of the northern part are mixtures of evergreen and deciduous trees, and in the south, where most land has been deforested, they were primarily deciduous. Although urban and industrial pressures on land, water and air are intense, the broader

natural resource problems are not readily apparent, and environmental responsibility is equated with clean, efficient industry.

The Great Lakes constitute the largest freshwater lake system in the world. It is the source of the St. Lawrence River, through which nearly all Great Lakes water drains on its journey to the Atlantic Ocean. St. Lawrence River has been instrumental in shaping Canada's history. The European colonist used it to reach the continent's heartland or settled along its shores, where they did so well that the history of New France is tied closely to that of St. Lawrence, which explains the kind of close relationship Quebecers have with this river. For centuries, the St. Lawrence was the focus of settlement and figured prominently in the development of the bustling economy. Some of Canada's largest cities sprang up its shores: more than 80% of the population of Quebec is concentrated in a narrow corridor on either side of the river. Many industrial plants, including some of the country's biggest were also built along its shores.

(5) The Boreal Shield and Plains:

This large, saddle-shaped area, comprising two Ecozones, stretches from Newfoundland to the Yukon, occupying the glacially eroded Precambrian plain. Most soils are shallow and acidic, interspersed with deeper peat lands and occasional tracts of sediments deposits in glacial lakes. Southward towards the Great Lakes/ St. Lawrence River system, the closed –crown forests comprise mixed evergreen and deciduous stands, whereas to the north the conifers dominate. The zone is marginal for agricultures, and the principal economic activities are mining, hunting, trapping, recreation, and especially forestry. Logging for the pulp and paper industries is prominent, and flights over almost any section show a patchwork of clear –cut areas. Environmental problems at mill sites are those of effluent discharges into water, air, and landfill, while problems in the forest are those of maintaining diverse renewable resources – the forestland ecosystem.

Thus, Canada being a large country covering 13 million square kilometers of land and water has diverse ecosystems. Being a high-latitude country, it is dominated by arctic, sub arctic, and boreal ecosystems – the reflection of short growing seasons and rigorous climatic regimes. In summer the polar air mass retreats so that its

southern edge, recorded in - 7 of the cold arctic front – lies near the subarctic line, but in winter it advances to cover most of the country.⁶

The climatic variations range from the permanently frozen icecaps of the north of the 70th parallel to the luxuriant vegetation of British Columbia's west coast. Canada's most populous regions, which lie in the country's south along the U.S. border and enjoys four distinct seasons. Here, daytime summer temperatures can rise to 35^o C and while lows of -25^o C is not uncommon in winter. More moderate temperatures are the norm in spring and fall⁷

The milder west coast temperatures range from 0 to 6^o Celsius in January and rainfall during this month can be as heavy as 132 millimeters. In Prairies it is as low as -25 degrees Celsius in Winnipeg for example. In Ontario and Quebec temperatures can drop to minus mid-teens, although it gets a little milder in the East Coast but a little rainier with January temperatures ranging from -9 to -1 in Halifax, Nova Scotia*. The mean annual temperatures range from 10 degree C in southern British Columbia to 18 degree C in the arctic archipelago. Temperatures below -40 degree C have been recorded in all territories and provinces except Prince Edward Island; temperatures exceeding 40 degree C have been our 10 provinces. Within a single province, British Columbia, rainfall ranges from 206mm a year, near Ashcroft to 4387 mm in Ocean Falls.⁸

It is due to this diverse climatic variations, which have contributed to Canada's diversity of wildlife, and landscapes, which contribute to its unique biodiversity. However, Canada has not been in isolation with regard to the Climate Change i.e. with regard to the issue of global warming. Canada has experienced its 9th warmest winter ever since nation wide records began in 1948 at 2.2^o C above normal, based on preliminary data. It has also been noted that the winter of 2002/2003 was the driest out of the 56- year period of record⁹.

⁶ Ecozones and Human Activities in The State of Canada's Environment; Government of Canada; Ottawa (1991)

⁷ Canada in Brief; Fact Sheet pg no 3

* www.weathernetwork.com

⁸ World Conservation Strategy-Canada: A report on Achievements in Conservation; Prepared by D.F.W Pollard and M.R. Mc Keihine; Environment Canada, Ottawa,(1986)May.

⁹ National bulletin of Canadian Weather in www.mscsmc.ec.gc.ca/ccrm_e.cfm

The change in the climate will have a serious repercussion on the environment, as it will influence the biodiversity of the ecosystem and its impact is not only felt by the flora and fauna but also on the demographic population and their economic activities. With nearly 10 distinct forest regions occupy 8% of Canada. Tundra takes up another 28%, Peat land 12%, and Grasslands 3%; Canada's terrain incorporates a number of mountain ranges; the Torngats, Appalachians, and Laurentians in the east; the Rocky, Coastal and Mackenzie range in the west; and Mount St. Elias and the Pelly Mountains in the North. At 5950 m, Mount Logan in the Yukon is Canada's tallest peak ¹⁰

In addition, almost 8% of the land surface is covered by the lakes, which hold 15% of the world's lake water, and has the largest reserve of fresh water. There are some two million lakes in Canada. The main lakes in order of the surface area located in Canada (many large lakes are traversed by the Canada- U.S. border) are Huron, Great Bear, Superior, Great Slave, Winnipeg, Erie and Ontario. The largest lake situated entirely in Canada is the Great Bear Lake (31328 km sq) in the Northwest Territories. The St. Lawrence (3058km long) is Canada's most important river, providing a seaway for ships from the Great Lakes to the Atlantic Ocean. The longest Canadian river is the Mackenzie, which flows 4241 km through the Northwest Territories. Other large watercourses include the Yukon and the Columbia (parts of which flow through U.S. territory), the Nelson the Churchill, and the Fraser- along with major tributaries such as the Saskatchewan, the Peas, the Ottawa, the Athabasca, and the Liard. The landmass is bordered by a continental shelf that harbours rich marine life. ¹¹

The Canadian shore is washed by the three bountiful oceans –Atlantic, Pacific, and Arctic-Ocean. At 4400km, the country's coastline is the longest in the world and has a continental shelf, at 3.7 million square kilometers, which is the second largest in the world. Given Canada's maritime preeminence, it is hardly surprising that, historically, oceans and coasts have played an important role in helping Canadians meet vital subsistence- as well as economic, social, and cultural - needs in addition to their role in supplying a wealth of natural resources, essential to their economy and society. Canada's ocean has been important as corridors for sea borne trade and

¹⁰ World Conservation Strategy pg no 1

¹¹ Canada in Brief, Fact Sheet pg no 4

commerce, as well as sources of energy and nonrenewable mineral resources. It also serves as recreational areas, and as unique natural wildlife areas in their own right. Industries such as ship building and marine services, shipping fishing, offshore oil and gas, transportation, tourism, and oceans-related manufacturing and services industries are key components of the Canadian economy.¹²

The multiformity of natural environment is reflected in the range of species and ecosystem, both managed and unmanaged. These living resources have immense importance in the Canadian economy. Agriculture, forestry and fisheries make major contributions to commodity trade. Employment in the resource sectors is of equal importance. Almost one-quarter of the entire Canadian labour force is employed in resources dependent activities at the primary and manufacturing levels. The sustainability of resource utilization is thus of paramount importance to the economic and social well being of Canada's 31 million people, three quarters of whom are urban dwellers.

That is why, the economic benefits provided by the Ocean or any of the other natural resources be it the freshwater reserves or the Arctic region cannot be considered in isolation from the ecosystem in which they interact in diverse and complex ways. Overexploitation of the natural resources can have adverse effects on both the ecosystems and human welfare. If resource-use practices are not sustainable, the environment and, ultimately, the economy will suffer leaving behind man as the not only the culprit but as the lone sufferer, at the rate at which the 'development' initiative has led to the habitat loss for both the flora and faunas well as environmental degradation.

2.ENVIRONMENTAL ISSUE IN CANADA

Canada's economy is as how Harold Innis termed as the 'Staple Economy'

i.e., a resource dependent economy and the resources are generated from the environment. It is in this process of development that the environment gets altered with unfavorable results affecting air, water, land and wildlife in Canada and thereby threatening the very life that the ecosystem supports. The key conditions of the

¹² Oceans: charting a course in The State of Canada's Environment; pg no 4-4Government of Canada; Ottawa(1991)

environment and the trends caused due to the linkage of human activities and environmental changes with the ecological, economic, and health implications of these changes has posed a challenge of sustaining a safe and healthy environment and a sound and prosperous economy for both the current and future generations. The path to sustainability is not so smooth as the emerging environmental concerns have emerged into a serious issue of crisis not only for the policy makers but also for the common man living in Canada. These environmental issues have posed a serious challenge to the question of how to sustain Canada's resources. These issues range from the basic concern in environment to a more complex one as a result of its accumulation which has led to the growing horizon as not only a hazard which the scientist identifies but also the ordinary man relates to.

The main issue in the environmental crisis has caused problems as a consequence of the environmental degradation due to both ignorance as well as neglect. This concern has accumulated gravity and has culminated into a serious issue even in the domain of the policy makers. It has moved from the periphery to the central concern of the agenda in the policy domain. Canada's Green Plan (1990) has committed Canada to the path of Sustainable Development, which aims to secure for the present and future generation a safe and healthy environment and a sound and prosperous economy. It is through this goal that the key to long term change is through environmentally responsible decision making at all levels of society. The path towards Sustainability can be achieved from the primary realization that 'human welfare depends on the health of the ecosystems- for the very good reasons that our bodies, like the industries are maintained by constantly taking in and digesting parts of the external world and when the quality of the environment deteriorates so does the economy and the life which it supports. In order to ensure sustainability, it is important to be a caretaker of the environment and ensure clean air, clean water, wildlife and land so that development of the present generations is not only met but also ensure to that of the future generation.¹³

Therefore, in order to ensure such a situation the following obstacles have been identified in Canada as the major environmental issues, which are discussed as follows:

¹³ Brundtland Commission Report (1987)

- (a) Air Pollution
- (b) Climate Change
- (c) Water Pollution
- (d) Loss of Biodiversity

(a) AIR POLLUTION

The ambient air is said to be a mixture of gases, normally comprising 78% of Nitrogen (N₂), 21% of Oxygen (O₂), and small amounts of Carbon Dioxide (CO₂), Hydrogen (H₂) and other gases. Other naturally occurring components include suspended particles and water droplets. The Air is mostly made of nitrogen, oxygen, argon, hydrogen, carbon dioxide, helium, water vapour, neon, krypton and xenon. Oxygen in air gives life to plants, animals and humans. Air Pollution can be broadly defined as the presence in the air of any substance that can affect our health, of plants and animals or causes damages to property and to our environment. These substances are in a large part emitted by human activities but can also have natural origins. They are also the source of well known environmental issues such as smog and acid rain some also raise to the atmosphere above us to affect the ozone layer or to contribute to climate change Air Pollution can also affect indoor air quality.

Air pollutants come from different sources. They come from transportation – from the many cars and trucks on the roads. They also come from the smokestacks of industries, and from the production of energy. Other sources of air pollutants are paints, pesticides and other products that contain certain chemicals. There are also “natural” causes of air pollution, such as the dust carried on the wind, smoke from forest fires and ash from volcanoes.

Air pollution is much more than smog or a summertime problem Hazardous air pollutants coming from the release of heavy metals, pesticides and other chemicals are one of the concern, which causes air pollution. The emission of Sulphur dioxide from metal production, power plants and industry cause acid rain and affect water and the ecosystems.

Air pollution has manifested itself in different phenomenon such as:

- (i) Acid Rain
- (ii) Smog
- (iii) Depletion of Ozone Layer
- (iv) Transboundary Pollutants

The air quality, in this way, is affected by the human activities even if it is in faraway parts of the globe; which shows the interconnection of the globe in a complex web of interdependence. The concentrations of air pollutants are high enough to cause illness in more susceptible individuals and premature death among the elderly, especially with respiratory problems. Poor air quality affects health and well-being. Air pollution affects how trees and plants grow. It also affects animals, water quality and visibility. It has been estimated 1.4 billion urban residents are exposed to annual averages for suspended particulates matter or sulphur dioxide or both which are higher than the minimum recommended according to the WHO standards. Since pollution of air does not only endanger human health through the manifestation of smog and acid rain which has an adverse effect on the plant and animals but also lead to global warming due to the depletion of the ozone layer. In order to understand the gravity of the problem raised by the pollution of air let us discuss about the different manifestation and their causes in brief:

(i) **Acid Rain:**

Rain is naturally slightly acidic having a pH level of 5 since it contains acids formed when carbon dioxide and chlorine gases with moisture in the atmosphere. If it has a pH lower than 5, it is considered acid rain. A pH scale is used to measure the amount of acid in a liquid like water, because acids release hydrogen ions, the acid content of a solution is based on the concentration of hydrogen ions and is expressed as "pH". This scale is used to measure the acidity of rain samples.¹⁴

Acid Rain occurs in rain, snow, or fog that is polluted by acid in the atmosphere and damages the environment. It is caused primarily by two common air pollutants – sulphur dioxide (SO₂) and nitrogen oxides (NO_x) that are produced by the burning of fossil fuels. When these substances are released into the atmosphere, they can be

¹⁴ www.ec.gc.ca

carried over long distances by prevailing winds before returning to the earth as acidic rain, snow, fog or dust. When the environment cannot neutralize the acid being deposited, damage occurs. Most Sulphur dioxide emissions come from smelters and power stations, while most nitrogen Oxide emissions are produced by motor vehicles. These pollutants can travel thousands of kilometers in the atmosphere, where they mix with water vapour to form a mild solution of sulphur and nitric acid. Rain, snow, hail, fog, and other precipitation wash this solution down to earth as acid rain. Acids can also be transformed chemically into sulphur dioxide gas or sulphur and nitrogen salts that are deposited dry in dust or other particles.

(ii) Smog:

The term “smog” was first coined more than three decades ago to describe a mixture of smoke and fog in the air. Today “smog” refers to a noxious mixture of air pollutants that can often be seen as a haze in the air. Smog can make breathing more difficult – even for healthy people- and it can make us more susceptible to cardio-respiratory diseases. Even healthy young adults breathe less efficiently on days when the air is heavily polluted, especially if exercising outdoors. Particularly vulnerable to smog are people with heart or lung diseases, the elderly and the small children. The two main Ingredients that affect our health are Ground level Ozone and the fine Airbourne Particles; which shall be discussed in *the Ecological Effects of the Environmental Issue* in the next section of the same chapter.

(iii) Depletion of Ozone Layer:

The depletion of the ozone layer is a significant environmental issue not only in Canada but also in the global issues. Ozone is a naturally occurring gas, formed from normal oxygen that protects the earth by filtering out ultraviolet radiation from the sun. Most of the world’s ozone is concentrated in the stratosphere, 10-50 kilometers above the earth’s surface .The ozone layer is all that protects life from the harmful

effects of UV radiation. Canada is responsible for less than 2% of global production of chlorofluorocarbons (CFCs); on a per capita basis ¹⁵

The issue of the depletion of the Ozone layer is intricately connected with the theme of 'Climate Change', as the depletion of the ozone layer leads to global warming and change the climate, as such. Hence this issue is discuss in detail under the heading of Climate Change.

(iii) Transboundary Pollution:

It refers to the pollution caused in other places and affects across the boundary, such as the airborne Particular Matter, known as PM, Persistent Organic Pollutants, or POPs, which include industrial chemicals such as polychlorinated biphenyls or PCBs, Pesticides such as DDT, chlordane and toxaphane, and contaminants and by products such as dioxins and furans, Hydrogen Sulphide (H₂S), Total Reduced Sulphur (TRS) Compounds, toxic metals (Cadmium, Chromium, Nickel, (Manganese) and Formaldehyde. POPs bioaccumulate in living organisms, persist in the environment as a result of human activity. Each of these contaminants is released by human sources and associated with direct effects on human health.

(b) CLIMATE CHANGE

The chemical composition of the atmosphere are altered by human activities through the build up of greenhouse gases that trap heat and reflect it back to the earth's surface, which results in changes to our climate, including a rise in the global temperatures and more frequent extreme weather events. Climate is the average weather (usually taken over a 30 year time period) for a particular region and time period. It is not the same as weather, for weather describes the short term state of the

¹⁵ The Global Atmospheric Experiment: Everyone's environmental problem in "A New Kind of Sharing-Why we cannot ignore global environmental change" p 55; International Research Center, Ottawa (1992)

atmosphere while climate is the broader term since it includes the phenomena such as the measures of weather like fog, frost and hailstorms and also climatic elements include precipitation, temperature, humidity, sunshine, wind velocity.

Climate change is one of the most significant environmental challenges the world has ever faced. It is a shift in the “average weather” that a given region experiences; which is measured in all the features i.e., associated with weather, such as temperature, wind patterns, precipitation and storms .Global climate change means change in the climate of the earth as a whole.

The Earth’s natural climate has always been, and still is, constantly changing .For example, it was through the global climate change which occur naturally in the ice age. However, the climate change witnessed today differs from previous climate change in both its rate and magnitude. Climate change can cause longer and more intense heat waves that can cause Longer and more intense heat waves that could worsen air pollution, and could bring droughts in some areas and more flooding in others These can result in severe weather events such as thunderstorms, heavy rain, hail and tornadoes.

Completed on 12/25
The effect of Global warming is also experienced in Canada as it continue to experienced its 9th warmest winter since the nation wide records began in 1948 at 2.2^o C above normal on preliminary data. The temperatures that were above normal were experienced right through the Ontario border, with the Yukon having as much as 6.5^o above normal. From southern Ontario through the Maritimes, temperatures were around a degree below normal. Quebec and Northern Ontario were near normal in 2002-2003. It has also been noted that the last four winters have been drier than normal for Canada, with only 4 of the last 22 years receiving above normal precipitation ¹⁶. The following chart depicts the change in the climate variations experienced by both Canada and at the global level as a result of the climate change.

¹⁶ Archives National Environmental Indicator Series in www.ec.gc.ca

The nature and magnitude of the climate change can be better understood in the brief discussion that follows:

- (i) Green House Effect
- (ii) Depletion of the ozone layer
- (iii) Global Warming

(i)Green House Effect:

It is the phenomenon whereby certain gases that are identified as greenhouse gases which absorb and trap heat in the atmosphere and cause a warming effect on earth known as “Green House Effect” .The planet is warm enough to support life because greenhouse gases in the atmosphere trap in the sun’s heat. While most gases in the atmosphere do little to alter the Earth’s energy, which balance the greenhouse gases.They are transparent to incoming solar radiation .yet absorb the long wave radiation re-emitted by the earth, thus trapping the escaping heat.

These “greenhouse gases”, although presenting very small quantities, are absolutely essential for the maintenance of life on Earth; without them, the Earth would be 33 degree colder than it is today Of the 40 or so greenhouse gases, the most important are water vapour, Carbon dioxide (CO₂), nitrous oxide (N₂O), Ozone (O₃), and Chlorofluorocarbons CFCs. Since they occur in small amounts, it is relatively easy to change their concentrations, disturbing the atmosphere’s dynamic balance¹⁷

The excess of the greenhouse gases affect the atmosphere- the earth’s insulating blanket; which result in warmer average temperatures and a change in the climate. The increases in the green house gases comes from the increase in human activities such as the growth of industries, transportation, tailpipe emissions containing carbon dioxide, which lead to “global warming”.¹⁸ The following table shows the sources of carbon emissions (in %) from fossils fuels, 1950 and 1980.

¹⁷ The Global Atmospheric Experiment: Everyone’s Environmental Problem in June D.Hall and Arthur J.Hanson’s ‘A New Kind of Sharing: Why we can’t ignore global environmental change’ p 60;international Development Research Center; (1992)Ottawa .

¹⁸ climate in www.ec.gc.ca/home-e.html

Table 1: Sources of Carbon emissions (1950-1980)

<u>Region</u>	<u>1950</u>	<u>1980</u>
North America	44.7	26.7
Western Europe	23.4	16.5
Eastern Europe and (former) Soviet Union	18.0	24.2
Developing World	5.7	12.2
Japan and Australia	2.8	5.8
China and Communist Asia	1.4	8.5
Others	3.9	6.0
Total (billions of tones)	1.62	5.55

Source: UNEP and Beijer Institute (1989,p.4)¹⁹

(ii) Depletion of the Ozone Layer:

The ozone layer is all that protects life from the harmful effects of UV radiation; which has far-ranging effects on biological tissues, damaging both protein and DNA, the carrier of our genetic code. It has been suspected since 1974 that chlorofluorocarbons (CFCs), Halons, and certain other synthetic organic compounds (including carbon tetrachloride and methyl chloroform) had the potential to harm the ozone layer. The concentrations of all these gases are increasing, with CFCs at a rate of at least 4% per year. The chief danger is that the gases can take years to reach the stratosphere, so today's ozone depletion reflects yesterday's emissions. According to the scientist, since 1985, the hole in the ozone layer has become larger and more persistent and almost all the ozone was destroyed in the stratospheric cloud region over Antarctica at altitude between 15 and 23 kilometers.

¹⁹ UNEP; Beijer Institute ; *'The Full Range of response to climate change'* ;Nairobi, Kenya (1989)

(iv) **Global Warming** :

The term global warming has become popularized as the term that encompasses all aspects of the global warming problem, including the potential changes that will be brought about by an increase in global temperatures. Although, strictly speaking, the natural warming and cooling trends that the earth has experienced all through its history right from the Ice age.²⁰

The issue of global warming has been one of the rare issue which enjoy a strong consensus in every aspect of the human community. Historically, the claim that the climate is getting warmer goes back to the 1890s when Svante Arrhenius, a Swedish chemist, contended that the unprecedented amount of CO₂ in the atmosphere is increasing. Based on measurements of gas trapped in glacial ice, scientists estimate that in the 1850s, at the start of the Industrial Revolution, the atmosphere had nearly 290 parts of CO₂ per million parts of air; that has risen to over 340ppm, an increase of about 20% over some 135 years²¹.

Global warming is not being driven solely by energy production .It is caused also by changes in land use (deforestation and the increase in grazing lands and rice paddies), industry (especially the use of chlorofluorocarbons or CFCs) and the growing use of agriculture chemicals (especially nitrogen fertilizers) Energy production generates about 49% of greenhouse gases, deforestation 14%, agriculture 13% and industry 24%²⁵.

This is because of the increased human activities due to increased industrialization, which lead to urbanization resulting in the loss of forests and wetlands - which absorb and store greenhouse gases and naturally regulate the atmosphere .The increased sophistication and mechanized lifestyle, has led to the

²⁰ Global Warming and Ozone Depletion in Jane S. Shaw and Richard L. Stroup's '*Economics and Environment :A reconciliation*' Walter Block (ed);Fraser Institute,(1990)Vancouver, Canada.

²¹ Johan Holmberg, Stephan Bass, and Lloyd Timberlake "climate and energy" *Defending the Future-A Guide to Sustainable Development* (International Institution for Environment and Development and Earthscan London,, 1991)

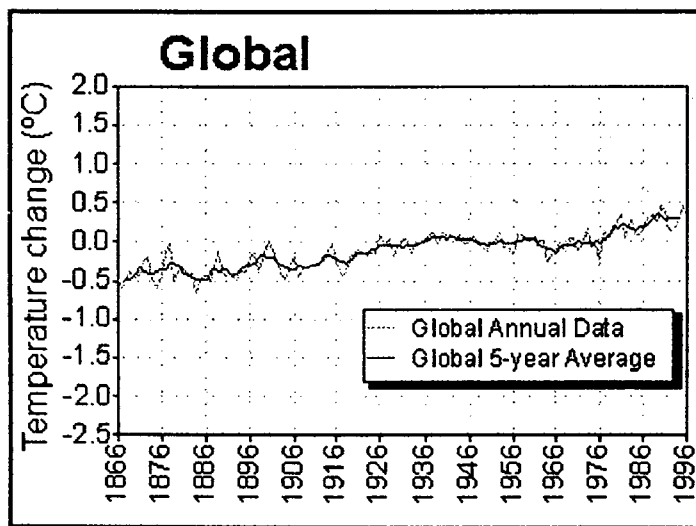
burning of fossil fuels such as coal, oil and natural gas to generate electricity and in factories and cars.

The effect of Global warming is also experienced in Canada as it continue to experienced its 9th warmest winter since the nation wide records began in 1948 at 2.2^o C above normal on preliminary data. The temperatures that were above normal were experienced right through the Ontario border, with the Yukon having as much as 6.5^o above normal. From southern Ontario through the Maritimes, temperatures were around a degree below normal. Quebec and Northern Ontario were near normal in 2002-2003.

It has also been noted that the last four winters have been drier than normal for Canada, with only 4 of the last 22 years receiving above normal precipitation²². The following chart depicts the change in the climate variations experienced by both Canada and at the global level as a result of the climate change

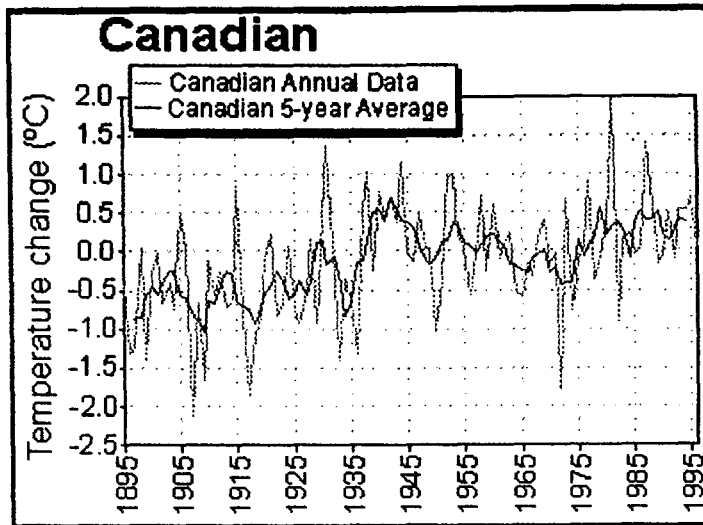
Table 2: Climate Change

Indicator: Global and Canadian temperature variations



Source

²² Ibid



Source: State of the Environment InfoBase²³

As the chart shows that the average global temperatures has increased by Approximately 0.5⁰ C over the past century and Canada's average temperatures has Increased to about 0 .4⁰ C since nationally representative temperature records began in 1948 and the average normal (for the period 1951-1980) in 1996, in contrast to the global situation.²⁴

Canadian scientist have developed one of the most advanced climate models in the international research community to determine what these projected increased in greenhouse gas could mean. The potential impacts of global warming will be experienced greater in the Arctic regions than in equatorial regions, and that contents will warm more than oceans. As a northern country, Canada will warm more likely than many other countries. These warmer temperatures could provide some benefits longer growing seasons in the summer, less demand for heating in the winter, but these benefits will come at a cost and, without strategies in place the benefits may be missed out entirely.

The impacts of climate change in Canada will have a much wider implication on _____

²³ Archives National Environmental Indicator Series in www.ec.gc.ca

²⁴ www.climatechange.gc.ca

the environment as well as on the economy. Warmer temperatures could create conditions for more severe events, including thunderstorms and an increased frequency of tornadoes, with attendant risk to life and property. Drier conditions and warmer temperatures could also cause more frequent forest fires. Higher air temperatures and removal of the insulating vegetative cover could lead to a melting of permafrost in the Arctic; which could create more landslides in some areas, and problems for the construction and maintenance of pipelines roads and bridges. Glaciers could retreat more quickly because of higher air temperatures, resulting in less late season runoff, and placing fish habitats and water supplies in dependent communities at risk.

(c) WATER POLLUTION

Water is essential for life and plays a vital part in life-support services. It is an indispensable resource for people and the habitat of many animals' plants and other organisms. Canada is among the fortunate country in the world, to have a landmass, which contains approximately 7% of the world's renewable water supply, and enjoys an abundant supply of freshwater. Historically, Canadians have taken for granted the feasibility of large scale water that she possesses.

The Great Lakes which straddles between the US –Canada boundary contain 25%of the world's fresh water. It has been estimated that 7.6% of Canada is covered by fresh water in lakes and river i.e., around 755165 km²⁵. The Great Lakes are the largest freshwater bodies in the world, covering 246,050 sq kms; they hold enough water to cover all of Canada to a depth of three meters.

However, Canadians are the world's second largest per capita users of water. The average daily household use is 360L per person. The major water using sectors in Canada are the Municipalities, Agriculture, Transportation, Energy, Recreation, and industries including oil, pulp and paper and mining.²⁶

²⁵ The science of climate change in www.ecgc.ca/climate/overview

²⁶ Water Resources in The State of Canada's Environment, Government of Canada, Ottawa(1991)

Canada has been blessed by the water resources that it possess from the three bountiful oceans – the Atlantic, Pacific, and Arctic-Ocean that washes her shores to the Great Lakes, which accounts for as sixth of the world’s total freshwater supply.²⁷

Water Levels in the system are regulated by natural hydrological forces with the maximum system outflow ever recorded being less than two and one- half times the minimum recorded outflow²⁸. The main Lakes, located in the Great Lakes include Lake Huron, Lake Superior, Lake Michigan, Lake Ontario, Lake Eerie; the first three is called as the Upper lakes while the later two are called as the Lower Lakes. The Great Lakes is also the world’s largest freshwater inland Lake system, which is between the Canadian –U.S border consists of 3,145 miles of land and 2, 381 miles of water.

The largest lake situated entirely in Canada is the Great Bear Lake (31328 km.sq). The St.Lawrence (3058km long) is Canada’s most important river, providing a seaway for ships from the Great Lakes to the Atlantic Ocean. The longest Canadian river is the Mackenzie, which flows 4241 km through the Northwest Territories.²⁹ Other large watercourses include the Yukon and the Columbia (parts of which flow through U.S. territory), the Nelson the Churchill, and the Fraser- along with major tributaries such as the Saskatchewan, the Peas, the Ottawa, the Athabasca, and the Liard. The landmass is bordered by a continental shelf that harbours rich marine life.

In Canada, there are 891 863 sq kms of freshwater lakes, ponds and rivers (i.e. rivers that are more than 100 meters wide). Wollaston Lake, Saskatchewan, 2681 sq km, is the largest lake that drains naturally in two directions. It flows into the Mackenzie River basin and east into Hudson Bay.³⁰

²⁷ “Issues in the Great Lakes in John E.Carroll’s *Environmental Diplomacy:An Examination andC.aProspectiveof Canadian –U.S Transboundary Environmental Relations*; John E. Carroll; C.D.Howe Institute ;John Wiley and sons(Canada) and the university of Michigan Press (1986)

²⁸ *Boundary Rivers Management in Ralph L.Pentland’s Canadian American Natural Resource Papers 1975-76*, ed John Carroll (Durham, N.H University of New Hampshire; p 15(1976)

²⁹ Canadian Heritage “Lakes and Rivers” in Fact Sheets of Canada in Brief p4

³⁰Resources of Freshwater in Facts about Canada from [www.ec.gc.ca /atlas-e.html](http://www.ec.gc.ca/atlas-e.html)

The increase of population has increased the demand on water resources; such as in highly populated regions, which are close to the limits of their immediate water supplies. In addition, many aquatic ecosystems receive unacceptable levels of pollutants from industrial effluents, treated and untreated municipal discharges and atmospheric deposition.

The Pollutants may include toxic contaminants, nutrients, oxygen depleting material, fecal material and other suspended solids, and pathogenic bacteria. These substances causes immediate harm to humans as well as animals by accumulating in the food chain and eventually cause mutations, genetic damage, reproductive failure, cancer and other effects in fish, bird, human beings and other species in the food chain. The problem of water pollution is the greatest in the vicinity of large urban and industrial centers.

The issue of water pollution is basically about the contamination of heavy metal pollution on the local rivers, lakes or estuaries. Sewers, which come from the industrial pipes, receive minimal or no treatment before entering into local rivers estuaries or lakes and untreated wastes are washed into streams, rivers, lakes, which increase the biochemical oxygen demand.³¹

The issue of water pollution is on the three sources of water i.e.,

- (i) On Oceans
- (ii) On Rivers
- (iii) On Lakes.

On Oceans:

There are many inshore areas and estuaries on Canada's coast, which exhibit evidence of environmental degradation, in some cases severe, with significant risk to living resources, habitats, and occasionally even public health. The ocean include the three Oceans such as ; Arctic, Atlantic and Pacific Ocean.

³¹ Water Pollution in the Paper titled 'Cities and Sustainable Development' for Global Forum '94, IIED(1994)

Each of Canada's oceans has unique physical features that influence the plant and animal life it supports. The Atlantic has a much wider continental shelf- in some places 300 km wide- that supports major fisheries in the Labrador Sea and on the Grand Banks, Scotian Shelf, and Georges Bank.

The place of environmental concern in the coastal region of the Atlantic oceans due to the water pollution caused; can be best illustrated with the help of the tables given as follows:

Table 3: Places of environmental pollution on the Atlantic Coast

Location	Concerns
St.Lawrence River and estuary	-multiple industrial inputs -contamination in species regulated by the fishery -chlorinated organic compounds in whales
Chaleur Bay	-multiple industrial inputs -ocean disposal/dumping
Restigouche estuary, Chaleur Bay	-industrial contaminants -ocean dumping degradation of fish(especially salmon)habitat
Miramachi River estuary	-pulp and paper contaminant -dredging -metals
Northumberland Strait	--pesticides -nutrient/sediments loading -natural toxins
Bras d'Or Lake, Cape Breton	-aquaculture/other use conflicts
Shuenacidié- Stewiacke basin, N.S	-multiple conflicting use
Lower Bay of Fundy: St Croix estuary'Letang estuary, Annapolis basin	contamination of shellfish, disruption of fish migration, destruction of lobster habitat
Georges Bank	-conflict between oil and gas development and fisheries
Southeast coast of Newfoundland	-Grand Banks oil and gas -coastal shipping
Various Harbours	-municipal and industrial pollution -conflicting use
P.E.I coasts	-bacteria/contaminants/paralytic shellfish poisoning

The Pacific Coast

This coast has a continental shelf less than 50 km wide and a rugged shoreline characterized by numerous islands and fjords the Pacific has been polluted due to the contaminant in the productive areas of the shores by the municipal or industrial effluents

The environmental hotspots and concern of the Pacific Coast, on account of the water pollution has been identified in the following table³³:

Table: 4 Places of Environmental Pollution on the Pacific Coast

Locations	Concerns
Lower Fraser River and Estuary	-discharge of municipal wastewater -PAHs and Dioxins -pulp and paper effluents -contaminated fish
False Creek, Vancouver Harbour	-contaminated sediment -PCBs and PAHs
Victoria Harbour	-disposal of municipal sewage -contaminated sediments
Howe Sound	-contaminated fish -pulp and paper effluents -contaminated emissions and effluents from industry -ocean dumping -mercury
Kitimat Arm	-effluents from aluminum smelter --contaminated fish - contaminated sediments
Rupert Inlet and Alice Arm	-disposal mine tailings -metal contamination of sediments and biota
Neroutsos and Albern inlets	-disposal mine tailings -sediments contamination - pulp and paper contamination
Prince Rupert	-Dioxins and crab fishery

³² Wells. P.G., and S.J Rolston (eds) *Health of our Oceans :a status report on Canadian Marine environmental quality* ; Dartmouth and Ottawa; Environment Canada, Coservation and Protection (1991)

³³ Ibid

	<ul style="list-style-type: none"> -metal contamination of foreshore - disposal of municipal sewage.
Vancouver Harbour	<ul style="list-style-type: none"> -metals -organotins and PCBs -contaminated fish

Source: Wells and Rolston (1991)

Arctic Ocean

The Arctic water has a much wider continental shelf- in some places 300km wide- that supports major fisheries in the Labrador Sea and on the Grand Banks, Scotian Shelf, and Georges Bank and in the Table: 3 identifies the following concern as a consequent of water pollution faced in the Oceans³⁴

Table: 5 Places of Environmental Concern in the Arctic Ocean

Location	Concerns
Tuktoyaktuk Harbour	<ul style="list-style-type: none"> -contaminated sediments -hydrocarbon spills - disposal of municipal sewage.
Western Arctic	<ul style="list-style-type: none"> -industrial noise and cetaceans -disposal of drilling mud -long range transport of airborne pollutants -disposal of municipal sewage -dredging/habitat disruption/turbidity -oil spills
Lancaster Sound	<ul style="list-style-type: none"> -habitat protection from ships -impact of ice-breaking vessels -industrial noise and cetaceans -mine tailings/habitat disruption -disposal of municipal sewage -long range transport of airborne pollutants
Hudson Bay	<ul style="list-style-type: none"> -hydroelectric development/ change in freshwater discharge cycle, mercury release -toxin contaminants in wildlife

Source: Wells and Rolston(1991)

³⁴ Ibid

On Rivers:

Rivers, which form extensive networks across the country, are natural drainage channels for surface waters. Surface waters are received from two major sources: run off and base flow. Run off is that part of precipitation that flows toward the rivers or streams on the ground surface or within the soil (subsurface runoff or interflow). Base flow is the part of stream flow that enters the stream channel from ground water. Rivers in Canada flow into 5 major oceans drainage basins: Pacific, Arctic and Atlantic Oceans, Hudson Bay and the Gulf of Mexico. The drainage basin areas are separated by a drainage divide or height of land. In Canada, given its northern environment, snow and ice are significant repositories of freshwater. Canada's 1,00,000 glaciers alone contain 1.5 times the volume of its surface water. The water flows in rivers (annual runoff) is the best measure of the fresh water i.e., continuously renewed through the hydrologic cycle.

However, only a small portion, Approx 1%, of water store in lakes and aquifers is renewed annually. Canadian rivers discharge 9% of the world's renewable water supply to the Pacific, Arctic and Atlantic Ocean with the St.Lawrence River and Mackenzie River being the largest contributor. Therefore, Canada's share of the world's renewable water supply is not disproportionate to its 7% share of the global landmass. Though Canada enjoys a generous overall endowments of freshwater (measured as flow in rivers, the distribution of rivers does not coincide with concentration of population and economic activity: 60% of Canada's freshwater drains north to the Arctic Ocean and Hudson Bay, where as 90% of Canadians live within 300 of the Canada –US border.

Pollution has impaired the water quality of the rivers in many part of Canada. The Fraser River in British Columbia, is contaminated with poorly treated sewage, land filled leachates, wood treatment chemicals, run off from forestry and agricultural operations, and pollutants from pulp and paper mills and other industrial plants. Water quality in the Red River, Manitoba, like other prairie rivers, is degraded due to agricultural runoff and inadequately treated sewage.

The Great Lakes and St.Lawrence suffer from industrial and municipal pollution, as well as urban and agricultural runoff and atmospheric deposition. Prince Edward's Island is also threatened with contamination by agricultural pesticides. The alteration in the distribution of freshwater for immediate human convenience has increased soil moisture in dry areas by irrigation and built diversions and dams and reservoirs for water supplies and hydroelectric power, and they drain wetlands and convert them firm fields and subdivisions. The Fraser River carries the largest mean annual flow of any river in British Columbia and also the third largest in Canada. The annual average discharge of the Fraser River at Hope is about 2800m³/s, but flows can be as high as 15000m³/s during spring and as low as 400m³/s in winter. It's headwaters on the western slopes of the Rocky Mountains, near Jasper National Park.

On Lakes:

The Great Lakes constitute the largest freshwater lake systems in the world. It is the source of the St.Lawrence River through which nearly all Great Lakes water drains on its journey to the Atlantic Ocean. In addition, to the five Great Lakes,(Superior, Michigan, Huron, Erie, and Ontario) and their connecting water bodies(St. Mary's, St Clair, Detroit and Niagara Rivers plus St.Clair), the surface water system includes 750,000 km of tributary streams and rivers and over 80,000 small uplands lakes, which, combine exceed the area of Lake Erie. Almost 20% of the world's supply of freshwater in lakes and rivers is held in this massive system, which drains an area of 7,65,990 km².

The table belows give us the detail of the Physical Characteristics about the Lakes:

Table: 5 Physical Characteristics of the Great Lakes:

Lakes	Area of lake (km ²)	Average depth (m)	Volume (km ²) time(years)	Retention
Superior	82 100	147	12 100	191
Michigan	57 800	85	4 920	99
Huron	59 600	59	3 540	22
Erie	25 700	19	484	26

Source: Colborn *et al*(1990)³⁵

³⁵ Colborn T.E Great Lakes toxics working Paper; Report prepare for Environment Canada (1988)

In the Great Lakes, Lake Huron, Lake Superior, Lake Michigan consist of the Upper Lakes while the Lower Lakes are Lake Erie and Lake Ontario. It is the large surface area of the Great Lakes makes them vulnerable to direct atmospheric pollution-recognized as the dominant source of contaminants in the upper lakes. The poignant environmental history of the Great Lakes has been marked by a number of environmental crises. The first arose earlier in the last century, when raw sewage contaminated the drinking water, leading to tragic typhoid and cholera epidemics. Between 1930s and 1960s, native fish population were decimated by over fishing, introduction of exotic fish species, and deterioration of water quality .By the 1960s algal blooms fed by domestic phosphate detergents, human wastes and inorganic agriculture fertilizers conspired to “kill” lake Erie .At the same time, oil, organic sludge, and debris from industrial and municipal sources polluted many near shore areas to such an extent that, in 1 notorious instance the Cuyahoga River Ohio actually caught fire. More recently, it has become apparent that toxic chemicals in the aquatic environment are causing reproductive effects and deformities in wildlife and therefore must be considered threatening to human health.

(d) BIODIVERSITY

Biological diversity, or biodiversity for short refers to the variety in the web of life on Earth. Biological diversity means the variety of life in all its forms ³⁶. The fundamental “building block” of biological diversity is the species. However the concept of species is a somewhat arbitrary classification to try to put in order into a continuum of variation among individual living organisms. The term “biodiversity” by international agreement refers to variety at three levels:

- the genetic diversity within species (whether or not this variation is apparent)
- the diversity of species (the number and frequency of different species), and
- the diversity of ecosystems (the number and frequency of different communities of organisms and their environment)

³⁶ Biodiversity in www.cbin.ec.gc.ca

It is implicit here that the realization of different ecosystems contain different set of species and ecosystems processes, and that the best way to protect species or the genetic diversity within species is to protect their ecosystems

(i). Genetic Diversity

The maintenance of Genetic *Diversity* and variability within the species is essential for species to adapt and survive; and because variability is the raw material of domestication, plant and animal breeding, and biotechnology

(ii) Species Diversity

Species Diversity needs to be maintained as habitat destroy the species and lead to their extinction which is not desirable as all the species are interconnected and needs to be maintained even their wild relatives and some of the totemic species (i.e., the significant contributors to the socio cultural, spiritual and emotional lives of the people) and serve as a link between people and nature and in order to stimulate conservation behaviour³⁷

(iii) Ecosystem diversity

Ecosystem diversity needs to be maintained as the structural and functional diversity of forests, rangelands, wetlands and aquatic ecosystems maintain their long term productivity and adaptability; providing habitat for a diversity of species; and enables them to support a wide variety of uses timber, livestock, and fish production.³⁸ About 1.5 million life forms have been identified so far and there are estimates that the real total is between 5 and 80 million .In Canada, the issue of biodiversity is all the more important as the northern ecosystem is critical to the way how the whole ecosystem functions .In Canada, around 71,000 species has been recorded and estimate that there are as many again to be discovered.

³⁷ Ecological Sustainability in World Conservation Strategy for the 1990s,p 38-40; UNEP(1989)

³⁸ Maintenance of biological diversity Ibid

The importance of preserving biodiversity can be understood from the fact that it is through the interactions of the species that provide us the ecological services such as the production of oxygen, removal of carbon dioxide from the air, generation of soil, cleansing and regulations of fresh water, and production of organic matter. Canada's economy was built on natural resources the fur trade, fisheries, forestry and agriculture. Therefore the threat to the Canadian biodiversity is perceived as a very important issue. The greatest threat to biodiversity in Canada is the extensive alteration of a number of ecological regions. The Great Lakes is in turmoil as a result of intensive fishing and successive invasions of species, some deliberately introduced to create sports fisheries, combined with other stresses, such as pollution and alteration of habitat. In Atlantic coastal waters, there has been a considerable reduction of diversity in populations of northern cod.

4. THE CAUSAL FACTOR OF ENVIRONMENTAL ISSUES

The ecological causes are sought to be traced by identifying the environmental problem, which has already been identified earlier in the Environmental Issue in Canada.

(a) Air Pollution

The main cause of the air pollution and its related phenomenon can be traced to the following gases:

Nitrogen Oxides (NO_x): include a number of gases that are composed of oxygen and Nitrogen. In the presence of sunlight these substances can transform into acidic air Pollutants such as nitrate particles. The combustion of fuel for transportation, home, and industrial use accounts for approximately 94% of the emissions of nitrogen oxides produced by human activities in Canada. The nitrogen oxides family of gases can be transported long distances in our atmosphere. Nitrogen oxides play a key role in the formation of smog (ground level ozone). At elevated levels, NO_x can impair lung function, irritate the respiratory system and, at very high levels, make breathing difficult, especially for people who already suffer from asthma or bronchitis.

Volatile Organic Compounds (VOCs): are groups of carbon – containing compounds that tend to evaporate quickly at ordinary temperatures. VOCs are present in our atmosphere at very low levels. Generally, VOCs are found in higher oxides to form ground level ozone. Thousands of natural and synthetic chemicals are VOCs, including benzene, which is a natural component of crude oil and petroleum products. Some of VOCs are carcinogenic, such as formaldehyde and benzene, and some irritants as a group of precursors to ozone.

Sulphur Dioxide (SO₂): is a naturally substance that becomes problematic at higher Concentrations. Like nitrogen oxides, sulphur dioxide is produced primarily by industrial process and fuel combustion. SO₂ can be chemically transformed in the atmosphere in the presence of other chemicals and sunlight to form acidic pollutants such as sulfuric acid and sulphates. SO₂ is a common air pollutant found in outdoor environments. SO₂ can cause breathing problems in people with asthma, but at relatively high levels of exposure. There is some evidence that exposure to elevated SO₂ levels may increase hospital admissions and premature deaths. Sulphur Dioxide are emitted from the industrial sources in Canada, which is around 74% and around 67% comes from the electric utilities of U.S. Although, Canada has cut its sulphur dioxide emissions by more than half over the last two decades, and reductions are still underway in the United States since it needs reduction of the emission from both the sides to prevent things from getting worse.

Carbon Monoxide: The principal source of CO is from fuel combustion, primarily vehicles. CO concentration is much higher in urban areas due to the number of human sources such as volcanoes and forest fires. It is an odourless gas which when inhaled, reduces our body's ability to use oxygen. Health effects associated with relatively low level, short term exposure to CO include decreased athletic performance and aggravated cardiac symptoms. At the levels typically found in large cities, CO may increase hospital admission for cardiac diseases and there is also evidence of an association with premature deaths.

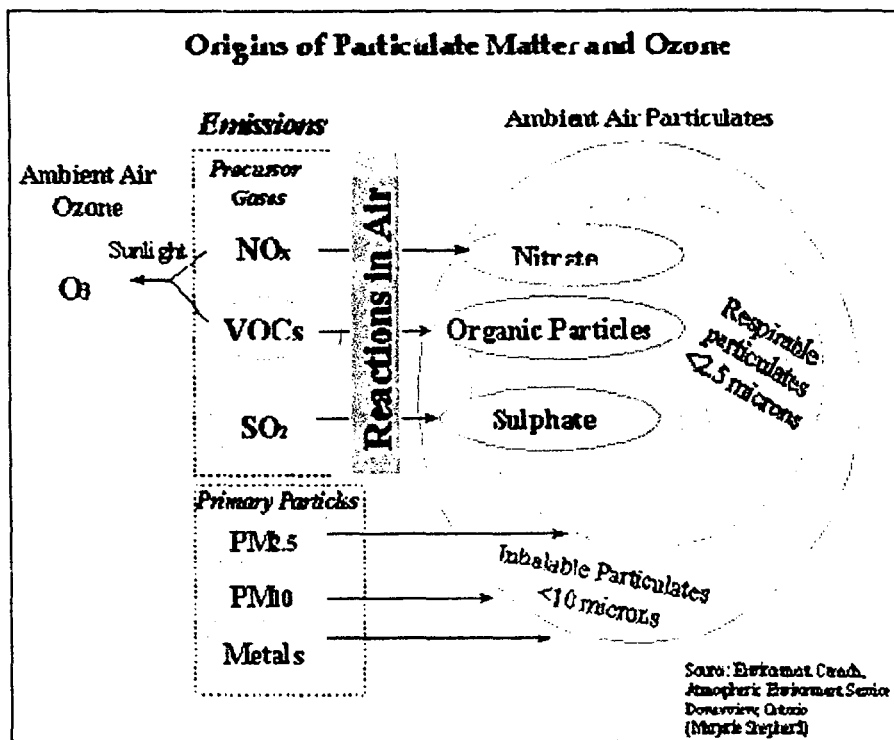
Mercury: is listed as a “toxic substance” under the Canadian Environmental Protection Act. It is basically a liquid heavy metal that can volatilize into the air and be carried by the atmosphere all over the world. It is emitted from a range of natural sources such as volcanoes, soils, under sea vents and mercury-rich geological zones, as well as fresh water and the oceans, plants, forest fires, sea salt spray and meteoric dust. Although natural emissions occur mainly as elemental mercury vapour (HgO); particulate and vaporous oxide, sulfides and halides as well as methyl mercury vapour may also be released. Mercury emitted to the atmosphere is considered a serious environmental threat to both animals and humans. Today, a variety of industrial and combustion processes contribute to mercury releases. The largest sources in Canada are metal mining and smelting, municipal waste incinerations, sewage and medical waste incinerations, coal-fired power plants and cement manufacturing. Other sources of mercury arise from chlor-alkali plants (used to produce chlorine, primarily for bleaching in the pulp and paper industry), minerals ores processing, steel manufacturing, petroleum refining and fossil fuel combustion. In Canada, airborne mercury emissions come mainly from coal-fired power plants in the United States and base metal smelting plants and incinerators in Canada. Scientists have concluded that in Canada and the United States, mercury originates from both domestic and international sources and is deposited in sensitive ecosystems. Mercury has been found in many lakes, streams, forests and fields. It can convert to a very toxic and bioaccumulate form known as methyl mercury – a substance that can affect both humans and wildlife. For example, methyl mercury levels in traditional foods in northern Canada are rising above those established as acceptable by the World Health Organization. In Canada’s Maritime region, methyl mercury leads to reproductive problems in loons. The main effects of mercury exposure to humans are understood to have neurological, renal (kidney), cardiovascular and immunological impacts.

Chronic exposure to mercury can cause damage to the brain, spinal cord, kidneys, liver and developing fetus. Exposure to mercury while in the womb can lead to neurodevelopmental problems in children. Mercury can impair the ability to feel, see, move and taste, and cause numbness and tunnel vision. Long term exposure can lead to

progressively worse symptoms and ultimately personality changes, stupor, and in extreme cases, coma or death³⁹.

The following chart illustrates the origin of the various pollutants as follows:

Table: 7 The Origin of the Air Pollutants



Source: Air Pollution/ www.ec.gc.ca

(b) Climate Change

The culprits, behind increase in climate change are the seemingly innocent Greenhouse Gases which, when in excess leads to all the phenomenon that is associated with the climate like Global Warming, Depletion of Ozone Layer and the Green house Effect.

It is caused by the following gases; which has been described briefly as follows:

Chlorofluorocarbons CFCs as how it is otherwise known as, also acts as highly potent greenhouse gases with long lifetimes. CFCs did not exist till the 1930s, but their rate of increase has been faster than any other greenhouse gas. They now account for about 24% of the human induced greenhouse effect.

³⁹ mercury in www.ec.gc.ca/ehc-e.html

Nitrous Oxide It is formed from microbial action in soils and is a product of fertilizer use; deforestation and the intensification of agriculture may thus be the most important human activities involved. Its rate of increase may be small but its long residing time means that even if emissions have stopped rising today, a steady state would not be reached for perhaps 200 years.

Methane It is the next most important greenhouse gas; formed in conditions of organic breakdown where oxygen is excluded. Its concentration in the atmosphere has roughly doubled since preindustrial times. This rise is linked to changes in land use, although only rough estimates are possible. The natural sources include wetlands and organic soils, especially peat bogs, which account for about 50% of wetland emissions. It is released from rice paddies and the intestines of mammals, especially ruminants, cattle producing $\frac{3}{4}$ th of the rudiments; and also released from coal mining and natural gas transportation, in biomass burning, and in landfill sites all of which are associated with human activity.

Carbon Dioxide It is by far the most abundant of the other greenhouse gases. A careful measurements since 1958, combined with other methods show that the Concentration of CO₂ has increased by about 26% since industrial times. Estimates of future levels of carbon dioxide and of their effects are hampered by our lack of information about the exceedingly complex global carbon cycle.

Ozone It acts as a greenhouse gas at lower levels of the atmosphere, where it appears to be increasing. Complex chemical reactions between atmospheric pollutants such as carbon monoxide and methane, in the presence of sunlight, are responsible for this rise. The visible evidence is Photochemical Smog, present over many urban and industrial areas of the world. It is also important indirectly as a leading cause of forest dieback such as in Europe.

Water Vapour It is the most important green house gas, but it seems to be less susceptible to direct human interference and so will not be included in most of the following

discussions. It is seen, however that huge uncertainties about water, in all its states, are hampers the efforts of scientists to assess the future impacts of global change.

The following table will help us to understand where Canada stand among other major countries which contribute to global warming:

Table 8: Major contributors to global warming

Rank (tones)	Country	% of total	Per capita net emissions
1	United States	17.6	4.2
2	Soviet Union(former)	12.0	2.5
3	Brazil	10.5	4.3
4	China	6.5	0.3
5	India	3.9	0.3
6	Japan	3.9	1.8
7	W.Germany(former)	2.8	2.7
8	United Kingdom	2.7	5.7
9	Indonesia	2.4	0.8
10	France	2.1	2.2
11	Italy	2.1	2.1
12	Canada	2.0	12.5
13	Mexico	1.4	0.9
14	Myanmar	1.3	2.0
15	Poland	1.3	2.0
16	Spain	1.3	1.9
17	Columbia	1.2	2.3
18	Thailand	1.2	1.2

Source: WRI, 1990⁴⁰

⁴⁰ Directory of Environmental Studies: An Annotated bibliography of environmental and natural resource profiles and assessments; Center for International Development and Environment ; World Resource Institute; (Washington, D.C.,; US; 1990)

The action of the greenhouse gases is by no means straightforward. The atmosphere is very much a “chemical soup”, as the gases spewed out by human activity interact in a complex ways, with multiple effects.

The hydroxyl radical, for example, acts as a “detergent” in the atmosphere, reducing many of the greenhouse gas, acts to reduce hydroxyl levels and thus effect the levels of methane and other gases in the atmosphere. Aerosols, made up of mostly of sulphur compounds, are also products of fossil fuels and has been implicated in acid rain, are thought to affect the amount of heat radiated from clouds, leading to a cooling effect that could dampen greenhouse warming over heavily polluted areas.

Canada is undoubtedly a leader in the field of greenhouse gas emissions; emitting about 2% of global emissions of greenhouse gases. They use more energy per person than any other nation, and every sector of Canadian economy depends on fossil fuels, although there are big differences in the type and amount of fuel used with that of U.S In order to have a better understanding the chart above illustrates the point more clearly. The following chart note that Canadians contributed about 726 megatonnes of CO₂ equivalent of greenhouse gases into the atmosphere in 2000, which represent about 2% of total global greenhouse gas emissions in that year.

Approximately, 81% of total greenhouse gas emissions in 2000 resulted from the energy sector. The federal department of Canada has track Canada’s annual total emissions of greenhouse gases, excluding those substances controlled by the Montreal Protocol such as carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), Hydroflurocarbons (HFCs), Perflurocarbons (PFCs), and Sulphur hexafluoride (SF₆). Since 1800s, concentrations of greenhouse gases in the atmosphere have risen substantially, owing to increased emissions caused by human activity, such as the concentration of carbon dioxide has risen 30% since preindustrial times, with half of that increase occurring in just the last 30 years. This has contributed to the “enhanced greenhouse effect”.

(c) Water Pollution:

The factor which leads to water pollution be it in the three bountiful oceans of the arctic, Pacific, Atlantic or the Great Lakes or the fresh river waters of Canada is due to the following:

Contaminants:

A vast number of contaminants enter water be it in ocean, rivers or lakes due to human activity. A substance is “acutely” toxic if it acts quickly to produce short term lethal or sub lethal effects. Or it may exhibit “chronic” toxicity, if it takes a re4latively long time to cause changes to metabolism and reproduction, or mutations and death. Some substance induces both acute and chronic effects in organisms. The contaminants may enter the aquatic environment from many anthropogenic sources including industrial discharges, spills, inputs from coastal and offshore oil and gas development, municipal wastewater discharges, runoff from agricultural and urban areas, ocean dumping, and long range atmospheric transport. Six important types of contamination known to affect marine environmental quality in Canada are nutrients, spills, PAHs, heavy metals, synthetic chlorinated organic compounds, and persistent litter and debris: The myriad contaminants – heavy metals, hydrocarbons, and chlorinated organics have been detected in near shore fauna and their environments. Concentration of chlorinated organic compounds in the egg of seabirds from the St Lawrence estuary indicate the region continues to be one of the most polluted marine areas in Canada, followed by the Bay of Fundy, the Strait OF Georgia, and the west coast of Vancouver.

Nutrients: eutrophication and natural toxins:

Nutrients such as nitrogen and phosphorous are essential to marine life; however, they become a problem when too great a quantity enters the water. Sources of nutrients in nature are decaying in plants and animals, leaching from rocks and soils, and atmospheric deposition. The human sources that often overload the natural system are municipal sewage, fertilizers and animal wastes in runoff, and wastewater from industry, especially the food processing industry.

Eutrophication occurs when elevated levels of nitrogen and phosphorus stimulate excessive growth of phytoplankton and other marine plants. When plants die and

decompose, life-supporting oxygen in the water is depleted. In extreme cases, oxygen depletion may occur widespread mortality among marine organisms. Salmons have died in streams draining into Boundary Bay, British Columbia, mainly as a result of excessive algal growth from over enrichment and subsequent die-down, decay and oxygen depletion. Decomposing bloom in the Strait of Georgia, British Columbia has caused mortality among fish stocks as a result of suffocation.

Spills:

The spills include petroleum, industrial wastes and pulp and paper operations on the coastal areas of the Pacific and Atlantic Ocean. In fact, petroleum spills made up 67% of the number of reported marine spills on the Pacific Coast and 89% of the number of reported marine spills on the Atlantic Coast ⁴¹. One of Canada's early major oil spills, for example, occurred in February 1970 when the tanker *Arrow* ran aground in Chedabucto Bay, Nova Scotia, with a full load of Bunker C (a heavy fraction of crude oil, used in heating plants), resulting in a spill of about 15 000 t⁴²

Polycyclic aromatic hydrocarbons (PAHs):

PAHs are a group of hydrocarbons found in petroleum and other natural sources. They enter the marine environment via many routes: petroleum spills and leaks, especially from tanker accidents and offshore drilling for crude oil; via runoff, leaching, and disposal of refinery effluents; and via atmospheric transport, as a by-product of incomplete combustion of petroleum hydrocarbons. The PAH compounds with higher molecular weights can accumulate in the fatty tissue of marine organisms. Each species takes up each PAH compound at its own rate; thus health effects vary. The gulf of St. Lawrence were found to have elevated levels of PAHs and with the Aluminum smelting plants on the Saguenay River have contributed to high levels of lead, zinc, and mercury as well as PAHs in sediments. The concentration of sediment contaminations including PAHs and certain trace metals has been found in Vancouver Harbour as well as

⁴¹ Oceans: Charting a Course in *The State of Canada's Environment*; p 4-16; Government of Canada ;Ottawa(1991

⁴² National Research Council of Canada, 1983 'Polycyclic aromatic hydrocarbons in the aquatic environment :formation, sources, fate and effects on aquatic biota

in Tuktoyaktuk Harbour where it has lead to be a major cause of liver lesions in Arctic flounder.⁴³

Heavy Metals:

Metals occur in the marine environment both naturally and as a result of human activities. Many are essential to life, but others, such as lead, mercury (as methyl mercury, an organic form), and cadmium, serve no known metabolic function, and in fact, can be highly toxic. Sources of metal pollution include offshore oil and gas development, industrial effluents, discharges of municipal wastewater, mining and loading facilities, ocean dumping, and volatile emissions from incineration and combustion that reach the ocean via the atmosphere .One source of heavy metals in the marine environment is mine tailings (such as in Northwest Coast of Vancouver Island), mercury contamination (Quebec), mine sites (Polaris Bay on Little Cornwallis Island and Nanisivik on Baffin Island, both in the Northwest Territories).

Synthetic Chlorinated Organic Compounds:

These compounds enter marine waters in agricultural runoff, at sewer outfalls, in wastewater from pulp and paper mills and other industries, and from spills on land or at sea .In addition, long range atmospheric transport carries them to Canadian waters from sources as far away as Europe and Asia. DDT, PCBs and toxaphane are generally the most prevalent the most in the marine environment. Others include dioxins and furans and the pesticides mirex, dieldrin, chlordane, and tributyltin- a compound in antifouling paints that prevent growth on the hulls of the boat .The potential effects of chlorinated organic compounds on marine life include growth retardation, reduced reproduction, and diminished resistance to diseases. It is caused due to the extensive spray of DDT in the forest along the Atlantic coast. The St.Lawrence River also accumulates runoff from agricultural and wastewater from the industries along its shores and contributing large quantity of these toxic substances to the Atlantic Ocean.

⁴³ Oceans :Charting a course in The State of Canada's Environment, p 4-11; Government of Canada, (1991)Ottawa

Persistent litter and debris:

The growing population has led to the increase of quantities of litter added by the greater use of plastic, especially disposable products. The growing persistence and buoyancy has led to represent a growing proportion of the debris accumulating in the marine environment. The problem of plastic litter has led to the death of harp seals, harbour porpoises and harbour seals in Newfoundland and Arctic. Disposal diapers, empty oil containers, garbage bags, six pack yokes, and spent shotgun shells are common forms of domestic refuse found in arctic coastal waters.

(d) Loss of Biodiversity:

Canada has lost a number of distinct life forms over the 250 years of intensive settlement, such as the Great Akuk, Dawson caribou, and blue pike .Of the mammals, birds, amphibians, reptiles, fish and other vascular plants that has been reviewed, 106 are currently classified as endangered or threatened. The federal department of Canada, Environment Canada has identified that the high risk for the loss of biodiversity is because of competing land uses such as agriculture and urbanization. Only a few hectares of the tall grass prairie remain intact, and the Carolinian forest survives only in tiny patches. Old growth forests exist only in patches in the three Maritime provinces, only small stands of old red and white pines remain in Central Canada, and the number of pristine temperate west coast rain forests keeps shrinking. Even in settled parts of Canada, wetlands, which are among the habitats richest in species, have been reduced by as much as 90%, and drainage, at least on private lands, shows little sign of abatement.

Most of the species to these regions at risk still exist in Canada, but their populations have been greatly reduced or fragmented, which has reduced the genetic diversity within species. It is this genetic diversity that gives species the best chance to adapt to future stresses through selection. The 12 or 13 forms of lake trout in Lake Superior have been reduced to two or three. While these have been going on, Canada has also been gaining species; as the European Starling deliberately introduced it and several ornamented plants. However, ecosystems are not static, and some shifts in species composition are normal and unavoidable.

taste that is characterized chemically by the ability to react with a base to form a salt. Strong acids can even burn a skin. In North America, most acid rain falls on the eastern part of the continent, which also affects the eastern part of Canada because most acidic air pollutants are produced there and winds tend to blow towards the east. Besides, many of the water and soil systems in this region lack natural alkalinity – such as lime base – and therefore cannot neutralize acid naturally. It affects the provinces that are part of the Precambrian Shield, like Ontario, Quebec, New Brunswick and Nova Scotia and are also the hardest hit because their water and soil systems cannot fight the damaging consequences of acid rain. In fact more than half of Canada consists of susceptible hard rock (i.e., granite) areas that cannot neutralize the effects of acid rain. If the water and soil systems were more alkaline as in western Canada- they could neutralize or “buffer” against acid rain naturally. Although in western Canada, acid rain has not reigned its menace owing due to the resistant soils (i.e., soils better able to neutralize acidity) and the lower levels of industrialization, relatively to the eastern part of Canada. However, it continues to affect the lakes in these areas which are defenseless since they rest on granite rocks and cannot neutralize precipitation besides the forests, wildlife and even the health of the Canadians.

Human Health:

The sulphur dioxide that contributes to acid rain can also react with other chemicals in the air to form tiny sulphate particles, which can lodge deep within the lungs and cause respiratory problems. The acid in the acid rain can also burn the skin and lead to other skin ailments.

Lakes:

Acid Rain affects the lakes in the areas of the Canadian Shields in northeastern Alberta, northern Saskatchewan and Manitoba, and parts of western British Columbia. The lakes in these areas are as defenseless to acid rain as those in northern Ontario. They must be shielded from exposure to acid rain if not, environmental damage could be swift and serious. The more acidic a lake becomes, the fewer species it can support. Plankton and invertebrates are among the first to die from acidification, and when the pH of a lake falls below 5, more than 75% of its species disappear.

About 1.5 million life forms have been identified so far and there are estimates that the real total is between 5 and 80 million. In Canada, the issue of biodiversity is all the more important as the northern ecosystem is critical to the way how the whole ecosystem functions. In Canada, around 71,000 species has been recorded and estimate that there are as many again to be discovered.

The importance of preserving biodiversity can be understood from the fact that it is through the interactions of the species that provide us the ecological services such as the production of oxygen, removal of carbon dioxide from the air, generation of soil, cleansing and regulations of fresh water, and production of organic matter. Canada's economy was built on natural resources the fur trade, fisheries, forestry and agriculture. Therefore the threat to the Canadian biodiversity is perceived as a very important issue. The greatest threat to biodiversity in Canada is the extensive alteration of a number of ecological regions. The Great Lakes is in turmoil as a result of intensive fishing and successive invasions of species, some deliberately introduced to create sports fisheries, and combined with other stresses, such as pollution and alteration of habitat. In Atlantic coastal waters, there has been a considerable reduction of diversity in populations of northern cod.

In Canada, agriculture, forestry and urbanization are three of the major economic uses of land and due to the widespread effect; these three have the potential to bring the human economy and Canadian biodiversity into conflict.

5. THE ECOLOGICAL EFFECTS OF THESE ENVIRONMENTAL ISSUES:

The ecological effects of the environmental issue is immense as it is caused due to the pollution which calls for a serious concern and be better understood the magnitude of the problem only if one understands the following:

(i) Air Pollution:

Among the different manifestation of the Air Pollution; Acid Rain has the most grave and serious ecological impacts on the environment

The effects of Acid Rain in Canada:

It is highly acidic and can affect virtually anything when it comes into contact – such as soil, water, plants and building materials. Since an acid is a substance with a sour

This causes a ripple effect in the food chain, and has a significant impact on fish eating birds, such as loons. However, not all lakes are exposed to acid rain become acidified as the bases found in certain types of rock and soil help to neutralize acidity, but most acid rains falls in eastern Canada, where coarsely textured soil and granite bedrock have little ability to neutralize acid It has been predicted that even after 2010 emissions targets are reached, up to one quarter of the lakes in eastern Canada will remain chemically damaged.

Forests:

Acid rain dissolves nutrients and helpful nutrients in the soil and washes them away before trees can use them to grow .It also releases toxic chemicals, such as aluminums, which interferes with the uptake of nutrients. Nutrient starved trees can experience stunted growth and loss of leaves, and are more vulnerable to climatic stresses, pests and disease .A forest ability to withstand acid rain like that of a lakes depend on the neutralizing capacity of its soil. The forests in Eastern Canada receive roughly twice the level of acid they can tolerate without long-term damage. Forests in the coastal and Upland areas also experience damage from acidic fog.⁴⁴

Corrosions:

Acid rain can also accelerate the corrosion of materials such as limestone, sandstone, marble, brick, concrete and metal, causing serious concerns for older buildings and outdoor sculptures and monuments. Acid rain damages stonework because it dissolves calcium carbonate, leaving behind crystals in the rock when it evaporates; as the crystals grow they break apart the stone.

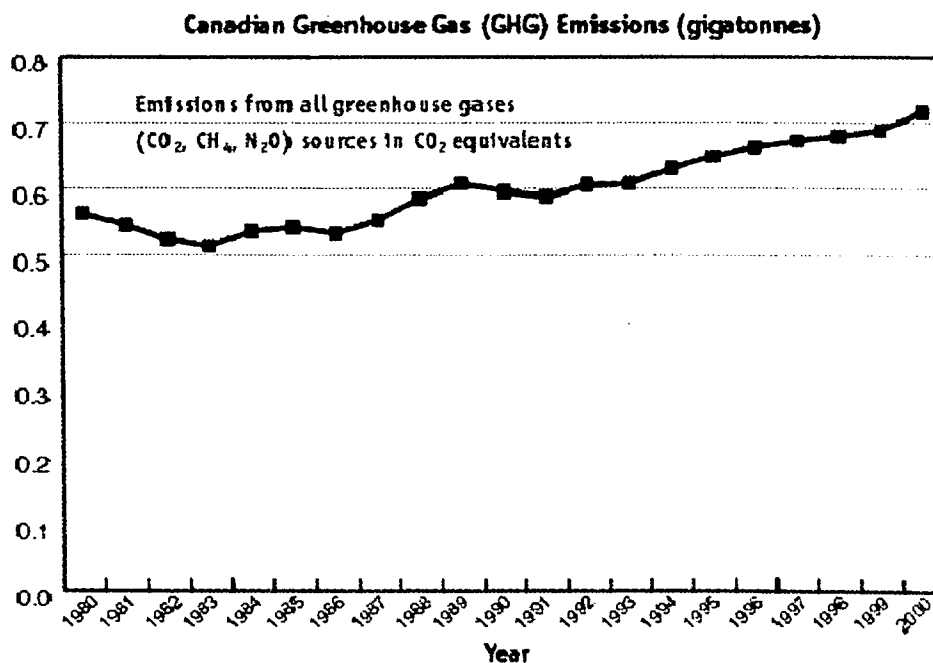
(ii) Climate Change

The federal department of Canada has track Canada's annual total emissions of greenhouse gases, excluding those substances controlled by the Montreal Protocol such as carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), Hydrofluorocarbons HFCs), Perfluorocarbons (PFCs), and Sulphur hexafluoride (SF₆). Since 1800s, concentrations of greenhouse gases in the atmosphere have risen substantially, owing to increased

⁴⁴ Acid Rain in www.ec.gc.ca/air_e.html

emissions caused by human activity., such as the concentration of carbon dioxide has risen 30% since preindustrial times, with half of that increase occurring in just the last 30 years .This has contributed to the “enhanced greenhouse effect” The following table shows the increase of the greenhouse gas emissions

Table 8: Greenhouse Gas Emissions Indicator (1980 –2000)



Emissions from all greenhouse gases (CO₂, CH₄, N₂O) sources in CO₂ equivalents
 Source: Greenhouse Gas Division, Environment Canada; U.S. Carbon Dioxide Information Analysis Center. Adapted by the National Indicators and Reporting Office, Environment Canada.

The continued thinning of the ozone layer has a far-reaching consequence on the world’s ecosystems and on human health. Even a decrease of only 1% in stratospheric ozone concentration can lead to an increase of about 2% in the amount of UV-B light that reaches the earth’s surface.

The report by United Nations Environment Program (UNEP, 1989) has reviewed the effect on the followings:

On Atmosphere

The increase in UV-B light transmission can be expected to increase Tropospheric pollution as a result of photochemical reactions. The production of reactive radical molecules will rise, in both rural and urban areas, resulting in higher levels of ozone and other potentially harmful molecules, which have damaging effects on both the plant and animal life.

On Plants

Since they lack a protective outer covering, phytoplankton is easily damaged by UV light. Phytoplankton are the primary producers of the oceans and account for half of the carbon dioxide fixed globally each year; therefore, ozone depletion could have a long term consequences on the global carbon budget. It would affect even the marine food web as the fish larvae and other small animals appear to be more susceptible to damage. More than 1/3rd of animal protein consumed by humans comes from the sea.

It would affect the growth and reproduction of land plants by decreasing the crops and forest yields. Agricultural productivity could decline especially in rice paddies where nitrogen is fixed by highly sensitive cyanobacteria and blue green algae. The destruction of these microorganisms would have grave implications for food production and change the composition of our ecosystems.

On Human Health

The effect will be manifested in the rise of the diseases such as skin Cancer, other infectious diseases like parasitic infections, sunburned which would lead to nonmelanoma cancer etc. Skin cancer rates will rise in tandem with UV-B light transmission and vaccinations will be less effective as making prevention will be more of a problem. The eye is particularly more susceptible to ultraviolet light, so eye disorders, such as cataracts may increase in humans and domestic stock alike.

On Materials

Many common synthetic materials, such as plastics, paints, and window glazing are degraded by ultraviolet radiation. Rubber, wood, and textiles are also affected. The

substantial economic costs are possible, especially in the tropics where plastics are popular building materials, and heat and stronger sunlight already inflict damage. When the sunlight strikes nitrogen oxides and reactive hydrocarbons in the atmosphere, ozone is produced. The depletion of the ozone layer has also been discovered in the Arctic ozone, where evidence supported that there was a local loss of up to 50% of the arctic ozone in winter 1989, which was associated with very high levels of the principal indicator of severe ozone loss –chlorine monoxide ⁴⁵.

The Environment Canada has reasoned it that the arctic stratosphere is warmer, and the circumpolar vortex is weaker and less persistent (usually breaking up before the arrival of the spring time sunlight). Consequently, the special conditions that lead to major depletions do not occur as readily or as consistently from year to year as the ozone hole of the Antarctic. Although ozone in the stratosphere performs a protective role by absorbing ultraviolet solar radiation, ozone at ground level is harmful to health and can affect plant growth as \already mentioned .The Final Report of the city of Vancouver task force on atmospheric change has estimated that ozone damage to crops in the Fraser Valley totals about \$8.8 million annually and between 1978 and 1987, the ozone objectives were exceeded with declining frequency. ⁴⁶

Effect of Climate Change on Health

Higher temperatures, more frequent storms, increases pollution episodes affect the health of the Canadians. Changes in the transmission of insect or waterborne diseases could also have an impact on Canadian health. These changes would place additional stresses on the health infrastructure and social support system.

The Key Effects

The World Health Organisation has warn that heat stress and climate induced respiratory problems as a result of reduced air quality could occur in large urban areas,

⁴⁵ Environment Canada . 1989. Depletion of the arctic ozone layer .Fact Sheet .Ontario: Environment Canada, Atmospheric Environment Service

⁴⁶ vocabulary of climate in [www.nrtee-trnee/climate change/glossary/programs](http://www.nrtee-trnee/climate_change/glossary/programs).

and could lead to increased death rates. The change in the ecosystem may also affect the supply of foods available to those who depend on hunting and gathering, such as the aboriginal people of Northern Canada; and also different species of plants to flourish which may cause problems for asthma and allergy sufferers.

(iii) Water Pollution

The effects of the water pollution have been well documented but it is not only the conventional factors of the water pollution but also climate change, which will have tremendous adverse effects on the water resources.

Water plays a central role in many economic and societal functions; the implications of climate change for water resources are key to defining overall impacts. Climate change is expected to directly affect both the quantity of water available and its quality, creating competing demands for this resource from multiple sectors.

Lakes:

The effects will be felt in the Great Lakes and St. Lawrence River which are expected to decline and major impacts will be felt in the decrease in both groundwater and surface water; concerns regarding integrity and quality of the shoreline and associated facilities as well as a decrease in shipping capacity. In 1964, low water levels caused a \$35 million loss for Great Lakes and hydropower, and one third of municipalities along the lakes had water supply problems.

In the Prairies there was a drought which had resulted in a 31% reduction in grain production and export losses of \$4 billion in 1988. There has been a projection of increased temperatures, decreased snow pack with an earlier melt season, and a more vigorous hydrological cycle are of particular concern in terms of their water availability and soil moisture, as well as the frequency of flood and drought.

Projections of water availability and flows suggest differentiated impacts on hydroelectric generation potential, with possible increases in Labrador and northern Quebec, and possible decreases in Ontario, the Prairies, and southeastern British Columbia.

On Fisheries

Climate change has a significant impact on fisheries in Canada, which affect both the productivity of fish populations and their distribution throughout the lakes, streams and oceans. Any change in the water temperature, currents, water quality, food supply, and predators has its effect on fish populations.

The Key Effects

In the Pacific, the abundance of the southern salmon populations are expected to decline, as are those of Pacific cod. As lake and stream temperatures warm, species at the warmer southern limit will either die or migrate northward to more favourable habitats. Cool and cold -water freshwater fish populations, including species such as trout, white fish and grayling, could be reduced in many lakes and streams on the Canadian Shields due to declining water levels and flow and reductions in nutrient loading and recycling. However, freshwater fish species that currently live at the northern limit, or cold water limit, of their preferred habitats in larger lakes will likely benefit from warmer water temperatures, experiencing increased survival and growth.

(iv) Biodiversity

In the ecosystem everything is interconnected in a complex web and therefore all the above environmental pollution has a direct bearing on the biodiversity or rather the loss of it.

The effects of the loss of biodiversity:

The loss of biodiversity will have its disastrous effects and consequence on the following:

- Atmospheric Change
- Fishing in Canadian Waters
- Forestry as well as Agriculture.

Biodiversity and atmospheric change:

The change of climate pattern has a tremendous impact on the species as both plants and animals are very sensitive to any change in the climate. With the change of

climate, species cannot survive in some sites and colonize new ones and if no suitable sites are available, a species becomes extinct if it is unable to adapt in time. The response of biological communities to these changes has been worked out by analyzing tree rings, ice cores, and sediments containing pollen, charcoal, invertebrates, and chemical elements. Some of the climate changes were abrupt, occurring with a few decades or centuries, and some of these have been associated with periods of mass extinction. Significant displacements have occurred since the last ice age in the boundaries between the tundra and the boreal forest, between forest and grassland, and between the Great Lakes- St.Lawrence forest and the boreal forest. These displacements were correlated with changes in climate and can be considered to be regional expressions of global climate events.

Fire is a climate – related disturbance that has caused major changes to northern forests. They were instrumental in shaping the vegetation mosaic of northern Quebec and these fires were controlled by climate, not by stand age or fuel loading. Instances such as the summer of 1988, which proved to be one of the worst droughts in history, especially in the Canadian Prairies and waterfowl numbers were greatly reduced during the dry climate of 1980s. Recently, increases in ultraviolet radiation due to changes in stratospheric ozone have been detected, and there is preliminary evidence of damage to some agricultural crops and to plants and animals in wetlands, shallow ponds, and near-shore marine environments.

Air pollution alone or in combination with the changing climate has potential to adversely affect biodiversity at all scales. The effects, unlike those of habitat destruction, are subtle, interrelated, and difficult to assess. Acid precipitation is the air pollutant that has caused the greatest and most widespread changes in biodiversity in Canada. The effects on biodiversity of other damaging air pollutants such as ground level ozone, nitrogen oxides, volatile organic compounds, and toxic chemicals are less well known.

Effects of Fishing on biodiversity in Canadian Waters:

The issue of biodiversity in Canadian waters refers to the aquatic ecosystems. There are five principal ways in which people affect aquatic ecosystems exploiting them for fish and other resources, adding nutrients, introducing exotic species, modifying

habitat structure, and adding contaminants. Fishes are ubiquitous, there are many kinds with a variety of functions, and are important to people.

Approximately 1000 species of fishes live in Canadian waters – less than 200 fresh in fresh water and the others in salt water along the Atlantic, Arctic, and Pacific coasts. Four stocks or species are thought to be extinct, two have been extirpated from Canadian waters, and 49 are listed as endangered, threatened, or vulnerable. These species have become at risk for a number of reasons. For some, over fishing was the main cause such as the blue pike of Lake Erie. The blue pike meant a significant loss, as it was endemic to Lake Erie, and no other native fish has a similar ecological role. The 12 or 13 original stocks of lake trout in Lake Superior have been reduced to 2 or 3 by the combined effects of fishing and predation by the sea lamprey, one of many species that have invaded the Great Lakes through human activities.

Fishing has had profound effects on the fish communities of the Great Lakes, compounded by the nutrients, contaminants, habitat changes, and species introductions caused by the huge human populations living in the Great Lakes drainage area.

In Atlantic coastal waters, heavy exploitation of the ecosystem of Georges Bank between 1963 and 1986 led to the proportion of cods in the catch dropping from 55% to 11%, while the proportion of dogfishes increased from 2% to 41%. This is one of the major changes in the composition of aquatic communities that fishing can cause. The heavy pressure on fishing has reduced the diversity of forms and the genetic diversity within species. Some early spring and late fall spawning stocks of cod have apparently disappeared.

The fishes of Arctic marine waters have not been significantly affected by fishing, although these fragile systems are certainly vulnerable to exploitation. In the Arctic, the effects of hydroelectric impoundments on river flows into the sea and the effects of oil and gas developments are more likely to cause problems.

On the Pacific Coast, the principal quarry species of salmon, halibut, and herring have gone through major fluctuations. Some of these are attributable to fishing pressure, but others are due to environmental conditions in the North Pacific, and loss of spawning habitat in rivers.

On both the Atlantic and Pacific coasts, aquaculture now includes the rearing of large numbers of fish in sea cages. Although, cage culture could be beneficial in protecting a species against overexploitation, there are potential biodiversity risks from this practice, in particular the accidental release of species not native to the site such as Atlantic Salmon are being reared to the Pacific Coast. Though they occasionally escape, the concern is that they might become established and compete or even hybridize with the native Pacific Salmon and trout.

Effects on Forestry as well as Agriculture:

Forestry covers almost half of Canada and are also central to the economic and social life of the country, with over 800,000 Canadians, 350 communities, and \$18 billion a year in exports which are dependent on the forest industry. It is impossible to protect Canadian biodiversity without protecting its forest species and ecosystems. Many Canadian forests, especially boreal forests, are dominated by natural disturbances such as fire, which is a climate related disturbance that has caused major disturbances and caused major changes to the northern forests.

Harvesting can support a thriving forest industry without compromising biodiversity if it mimics the natural disturbance regime. The amount of woody material removed must be matched by the amount of regrowth elsewhere. The landscape configuration must be maintained – for example, the proportion of patches at different stages of regeneration, including old growth, and their relationship. The steady state of landscapes that can, in principal, be attained is essential for both economic and biodiversity values. There are many acute conflicts between biodiversity and economic values in Canada's forests.

Agriculture:

Canadian agriculture has a significant influence on biodiversity because of its prevalence over such a large portion of the landscape, especially in a few southern biomes, because of the management intensity associated with modern ways of farming, and because the boundaries of the management practices (e.g., pesticide and fertilizer

usage) go beyond the boundaries of the cropped area .The loss of native habitat because of agricultural conversion has been significant, as less than 13% of short grass prairie, 19% of mixed grass prairie, 16%of aspen parkland and almost none of the tall grass prairie remaining in their native state. Loss of habitat to agriculture accounts for the endangerment of a disproportionately high number of species in Canada.

Yet it is possible for agricultural lands to play a positive role in the maintenance of biodiversity, especially in those areas where they are competing, more disruptive land uses such as urbanization. A number of indicators point to an environmental crisis on agricultural land: soil losses, reduced soil and water quality, contamination of receiving watersheds, and reduction or even local extirpations of species traditionally associated with agricultural landscapes such as grassland and scrubland birds, as well as wild pollinating insects.

That is why agriculture can be made more conducive to conservation of biodiversity, and possibly less dependent on the subsidies of fossil fuel inputs, through the adoption of measures intended to reintroduce heterogeneity into the existing cropland: rotation, crop diversification, intercropping and reduced field size.

The loss of biodiversity is caused by the destruction of natural resources, over harvesting, pollution and the inappropriate introduction of exotic plants and animals, all of which threaten human development.⁴⁷ The effects on biodiversity are ranked within each of the three-biodiversity levels- genetic, population, and ecosystem. The important attributes that influence has impact of a pollutant at the ecoregional scale and its selectivity, the extent of its distribution, and its persistence.

Genetic effects of pollutants are the most difficult to assess at this point because there has been very little done to measure such efforts in natural populations. Pesticides have clearly produced genetic shifts, as the appearance of resistant strains of target plants and animals demonstrates. The development of resistance may be at the cost of loss of variability, which reduces the organism's ability, to resist their stressors .For population effects of pollutants, the challenge is to distinguish them from natural fluctuations.

⁴⁷ Biological Diversity in *The Earth Summit ECO'92 Different Visions*; Earth Council p 77;(1994),September

Ecosystem effects of pollutants show as changes that send an ecosystem along a different developmental path that it would otherwise have followed. The impacts of the pollutants groups on the biodiversity is caused the most by acidic deposition, nutrients and which also has the most serious threats at the ecoregion level. The others such as hydrocarbons (particularly crude oil), halogenated organics (pesticides and others such as (PCBs), radio nuclides, nonorganochlorine pesticides, metal. ⁴⁸

After all, biological diversity is the source of all biological the source of all biological wealth - food, raw materials, and a store of goods and services. Therefore, conserving biodiversity of the resources and ecosystem is the core of what the concept of sustainable development stands for. ⁴⁹

Effects of Climate Change on Forestry

A general trend towards warmer conditions combined with increasing levels of carbon dioxide could increase forest distribution and growth in Canada. However, it could take decades or centuries, before forests adjust to the new climatic conditions. During this period of adjustment, the boreal forest in particular could be more vulnerable to insects and diseases, forest fires and competition from unwanted species, and the forest industry will have to adapt to new climatic conditions. The rate of change, as well as the number and severity of extreme events, will dramatically affect the magnitude of impacts and our ability our to cope with them.

The Key Effects

The Taiga and Boreal forest belts could shift northward by about 500 km, if carbon dioxide levels were to double. The Boreal forest itself is expected to undergo an extensive reduction in size, as grasslands and temperate deciduous species may invade from the south, and the expansion is limited by poor soils and insufficient nutrients. Forest fires and pest infestation are expected to increase in frequency, areas and intensity

⁴⁸ Biodiversity :Conserving the variety of Life in *Caring for the world-A strategy for Sustainability P61;* World Conservation Union, IUCN ;(1990);June.

⁴⁹ Biodiversity :Conserving the variety of Life in *Caring for the world-A strategy for Sustainability P61;* World Conservation Union, IUCN ;(1990);June

due to warmer, drier conditions. Increased fire incident will lead to lose of habitat for species that inhabit mature forest.

In 1994, Canada lost 4 million hectare to forest. Since 1980 Canada has lost an average of 2, 4 million hectares of forest to fires each year a 140% over the previous 30 years. Forest could shift upward in elevation under the worse scenario, disappear entirely from some zones due to a lack of winter cooling, drought, forest regeneration, stress and increased sensitivity to spring frosts in the temperate conifer zone of British Columbia.

Conclusion:

Thus, the environmental issues in Canada has not only emerge as a distinct subjects of the scientific community for the ecological groups but rather as a domain of public debate due to its very nature of being spilled over the issue of survival as the environment is not dependent on the economy or politics but rather it is the vice versa and that is the basic reason why the growing interest in the environmental issues has culminated into the adoption of the policy for 'sustainable development'.

There has been different interest groups which has emerged as a consequence of promoting the environmental concerns as well their own patriarchal interest and how they try to accommodate with the basic tenet in the issues of sustainable development which makes up the core idea in the study of the 'politics of interest in Sustainable Development'. The interest that has been generated from various quarters of the Canadian civil society such as the Environmental NGOs and the different department of the federal government of Canada in the arena of the political domain in the Canadian Politics will be discussed in the next chapter titled as 'The Politics of Interest in Sustainable Development'.

It is no conclusion

Chapter 3

The Environmental Interest in Sustainable Development

“Ten persons who speak more noise than ten thousand who are silent”

Napoleon I Maxims

INTRODUCTIONS:

In this chapter an attempt is made to discuss on the nature of the Interest Groups in the political domain of the federal Government of Canada – the nature of the Interest Groups and how they act as the Pressure Groups in influencing the federal policy; different classification of the Interest Groups and the different Interest Groups towards the environmental issue of Sustainable Development through the different agencies that have taken up, such as the Federal Department, Environmental NGOs and other social as well as cultural Organisations.

1.THE NATURE OF ENVIRONMENTAL INTEREST GROUPS AS A CATALYST OF POLITICAL CHANGE:

The environmental issues has asserted the growing reality of the threat on account of the serious degradation of the natural resources such as that of the fishery due to the pollution in the water resources, soils which affects the forest, biological diversity and the other vital life support system like the ozone layer, climate system, oceans and atmosphere as a result of the recent acceleration of the economic activities.¹ The threats that the environment faces has led to increasing awareness among the people and has generated awareness which led to the increasing interest in the issue that has penetrated from the corridors of the traditional agencies of environmental interest across the departmental agencies of the federal government into the domain of the politics competing along with the other traditional issue in the political domain as well as interaction across Canada.

The 20th century has witnessed a change in the pattern of the political interaction due to the growing prominence of organized groups and interest. The growing increase of the Interest Groups has further expanded; particularly from the 1960s onwards by the growing

¹ Gareth Porter's ' *Environmental Security as a National Security Issue* ' in Current History (May, 1994) p 218-22

awareness of the nature and significance of the issue, as well as the growth of the single issue protest groups taking up causes ranging from consumer protection to animal rights and from gender equality to environmental protection. Such groups were often associated with broader social movement such as the Green Movement and so on. It has been characterized by the adoption of new styles of activism and campaigning, that has been termed as 'New Politics'².

What really constitute 'Interest' for these Groups needs to be understood." Interest" has been defined as 'that which benefits an individual or group; and unlike wants or preference are usually understood to be objective and 'real'³; as defined by Andrew Heywood. Interest Group (or pressure group) is an organized association, which aims to influence the policies, or actions of government Interest Groups differ from political parties as the latter is organized for the purpose of winning government power through polls. Further, interest groups typically have a narrow issue focus, in that they are usually concerned with a specific cause or interest of a particular group and seldom have a broader programme or ideological features that are generally associate with political parties. Interest Groups are distinguished from social movements by their greater degree of formal organization. Nevertheless; not all interest groups have members in the formal sense, hence the preference of some commentators for the looser term 'organized interest'.

Interest in social movements has been revived by the emergence of so called 'new social movements' since the 1960s has emerged such as: the women's movement, the Environmental or Green Movement, the Peace Movement and so on. A Social Movement is a particular form of collective behaviour in which the motive springs largely from the attitudes and aspirations of members typically acting with a loose organizational framework. A movement is different from spontaneous mass action (such as an uprising or rebellion) in that it implies a level of intended and planned action in pursuit of a recognized social goal. Not uncommonly, social movements embrace interest groups and may even spawn Political Parties .In Canada the existence of Environmental-NGOs does not only the does not only represent the interest Groups of the Green Movement as there are Political Party such as the

² David Robertson; *The Penguin Dictionary of Politics*; Penguin Books (1993)

³ Andrew Heywood; *Politics in "the groups, interest and Movements"* Macmillan Press Limited; (1997); p 251-267

Green Party of Canada which reflects the growing dynamics of the politics in Canada especially with regard to these "Green Movement"³

2. CLASSIFICATION OF THE INTEREST GROUPS IN POLITICS

Here, an attempt is being made to identify the different environmental interest Groups for sustaining development through their policies in Canada by; first classifying them and taking into account their nature of the Interest Groups and its influence in determining the policies Sustainable Development. According to the classification made by Andrew Heywood, interest groups can be classified into three main groups⁴:

-Associational Interest Groups ✓

-Institutional Interest Groups ✓

-Communal Interest Groups ✓

Associational Interest Groups

The Associational Interest Groups are formed by people who come together to pursue shared, but limited goals. Groups as association are characterized by voluntary action and the existence of common interests, aspirations or attitudes. The distinction between the Associational Interest Groups and the Communal Interest Groups may sometimes be blurred; such as when class loyalties are strong and solidaristic. For example when the associational interest groups such as trade union may be more an expression of social identity than an instrumental act aimed at furthering a particular goal.

Here the Associational Interest Groups are discussed which are Insider as well as Outsider groups of Associational Interest Groups; and also Promotional groups and not the Sectional groups. The Sectional groups seek to advance their interest of their members such as the Business Corporations while the Promotional Groups are set up to advance shared values, ideals or principles such as the environmental NGOs identified like Greenpeace, Friends of the Earth; just to name a few which are discussed. Insider Groups enjoy privileged and usually institutionalized access to government through routine consultation or representation on government bodies such as the World Wildlife Fund Canada. The Outsider Groups, on the

⁴ Ibid p 252

other hand are either not consulted by government or consulted irregularly and not usually by a senior level but nevertheless promote the cause of the values, which they promote.

Institutional Interest Groups

The Institutional Interest Groups are groups that are part of the machinery of government who attempt to exert influence in and through that machinery. They differ with the other interest groups, as they do not enjoy any measures of autonomy or independence. The best examples are the Bureaucracies and Military.

Here for the Institutional Interest Groups the Federal department of Canada who have taken interest as well initiatives towards Sustainable Development are discussed.

Communal Interest Groups

The chief characteristics of Communal Interest Groups is that they are embedded in the social fabric, in the sense that membership is based on birth, rather than recruitment. The best examples are the Tribes, Castes and Ethnic Groups. Unlike conventional interest groups, to which member choose to belong, and which possess a formal structure and organisation, communal groups are founded on the basis of a shared heritage and traditional bonds and loyalties. Communal Groups also continue to survive and exert influence in advanced industrial states. The significance of the Catholic Groups in countries like Italy and Ireland demonstrates this point.

In this chapter the Communal groups formed on the basis of the region such as the Arctic Council, Inuit Circumpolar Conference; and on religion basis such as the Canadian Council Of Churches; and Gender like the Indigenous women group like Pauktuutit.

3. THE ASSOCIATIONAL INTEREST GROUPS OF PROTECTING ENVIRONMENT THROUGH SUSTAINABLE DEVELOPMENT

The Associational Interest Groups which promote Interest Groups are the environmental Non-Governmental Organisation such as:

- (a) WWF Canada
- (b) Greenpeace
- (c) Sierra Club

(a) WWF Canada

The raison d'être for the existence of WWF is to stop the decline of the natural world "due to man's folly, greed and neglect" as stated in the Daily Mirror in UK on 8 October 1961. It was founded by a small group of wildlife enthusiasts such as the eminent British biologist Sir Julian Huxley also the first Director General of UNESCO and the World Conservation Union (IUCN) along with Max Nicholson - an ecologist and Director General of Britain's Nature Conservancy, Peter Scott - founder of the Wildfowl Trust, and Guy Mountfort - Director of a large international advertising agency and amateur ornithologist and Victor Stolan who has helped raise the fund in dedication to the conservation of Nature. Hence, formed from a unique blend of business leaders, scientists and government leaders, and with the support and guidance of HRH Prince Bernhard of the Netherlands and HRH The Duke of Edinburgh, WWF came into being on September 11, 1961 in the Swiss town of Morges, where IUCN had its headquarter⁵.

WWF as a family aims to stop the degradation of the planet's natural environment and build a future in which humans live in harmony with nature. WWF Canada is also one of the 27 national offices in the international WWF family. Founded by Senator Alan Macnaughton in 1967. The head office is located in Toronto and has a small regional Offices in British Columbia, Nova Scotia, Nunavut, the Yukon and the Northwest Territories. The President of WWF Canada since 1987 till today has been Monte Hummel.

The area of interest for WWF Canada is in environmental issues of Sustainable Development, focusing in its Conservation Programs; and is also the country's leading conservation organizations, which actively enjoys the active support of more than 50,000 Canadians. As a member of the WWF International network, it contribute to the achievement of the organization's mission towards the goal of sustaining life on earth; by stopping the degradation of the natural environment and build a future in which humans live in harmony with nature.

It deals with the following issues which are also the very goal of Sustainable Development:

-Conserving the world's biological diversity

⁵ www.wwf.org/structure

- Ensuring that the use of renewable resources is sustainable
- Promoting the reduction of pollution and wasteful consumption.

The focus of interest for bringing these issues into actions has been witnessed in their concern towards the objectives identified as “to stop climate change, reduce toxics in the environment, protect our oceans and fresh waters to stop deforestation and save species” as Dr Claude Martin, Director General of WWF International says.⁶

WWF Canada’s Conservation Programs of 2002-2005 is tackling some of the most daunting conservation challenges facing the country as well as the broader international community. The effort is to complete the network of marine protected areas, safeguarding the Arctic, supporting leading edge research to protect Canadian wildlife and habitats, addressing priority conservation concerns for North America, and protecting the wildlife and its habitats.

WWF’s conservation results include the protection of 96 million acres of Canadian wilderness through the Endangered Species Campaign; the development and implementation of recovery plans for a number of species, including the St.Lawrence beluga whale; the banning of carboufan, a grasshopper spray implicated in the decline of the burrowing owls; and the protection of thousand of tropical forests throughout Latin America.

(b) Greenpeace

Greenpeace is an international organization that prioritizes on global environmental campaign in saving and protecting the earth for the future in a peaceful manner. That is the main motivation with which the small team of activists set sail from Vancouver, Canada in an old fishing boat to share their vision of a green and peaceful world. These activists are the founders of Greenpeace who believed that even a few individuals could make a difference. Their mission was to “bear witness” to US underground nuclear testing at a tiny island off the West Coast of Alaska in Amchitika; which is also one of the world’s most earthquake-prone regions. It is also one of the last refuge for 3000 endangered sea otters, and home to bald eagles, peregrine falcons and other wildlife. Although the old boat Phyllis Cormack, was intercepted before it got to Amchitika, the journey sparked a flurry of public interest and the voice of reason was heard even when the US still detonated the bomb.⁷

⁶ Ibid, how we work

⁷ [www. Greepeace.org](http://www.Greepeace.org) / About Greenpeace

Today it is based in Amsterdam, the Netherlands and has 2.8 million supporters worldwide and national as well as regional in 41 countries. In fact, Greenpeace sought to not only focus its work on the most crucial threats to the planet but also expose environmental criminals and challenge both government and corporations, when they fail to live up to their mandate to safeguard our environment and our future.

Greenpeace is a non-profit organization and in order to maintain their independence, Greenpeace does not accept donations from both governments and corporations but relies on contributions from individual supporters and foundation grants. Greenpeace Canada has a seven member Board of Directors that determines the priorities and annual budget of Greenpeace Canada. The Executive Director, Peter Tabuns, handles day-to-day management responsibilities. Greenpeace Canada has offices in Toronto, Montreal, and Vancouver⁸. Both as a global organization as well as a Canadian Organisation, Greenpeace focuses on the most crucial worldwide threats to our planet's biodiversity and environment which will affect the sustenance of life, such as the following issue:

-Stopping Climate Change:

Climate Change occurs such as global warming which results in extreme weather events, such as droughts and floods, disruption of water supplies, melting Polar Regions, rising sea levels, loss of coral reefs and much more. All this is going to affect Canada the most as, rise of sea levels is bound to affect the coastal region along with the habitat and create disruption of water supplies with the melting of the polar region especially in the supply of the freshwater.

-Protect Ancient Forests:

Forest store huge amounts of carbon, helping to stabilize climatic change. In Canada it is estimated that ancient forest provides habitat for about two-thirds of the country's 140,000 species of plants animals and microorganisms. It is these ancient forest of North America which is extremely diverse and include the boreal forest belt stretching between Newfoundland and Alaska, the coastal temperate rainforest of Alaska and Western Canada, and the myriad of residual pockets of temperate forest surviving in more remote regions.

⁸ www.greenpeacecanada.org/organizational_profile

Moreover, of Canada's one million indigenous people (First Nation, Inuit and Metis), almost 80 % live in reserves and communities in boreal or temperate forests, where historically the forest provided their food and shelter, and shaped their way of life.

-Save the Oceans:

The number of species living in the oceans is estimated at 178,00, although continued exploration of the deep sea will reveal more. Each of these species are part of complex marine ecosystems and are currently being driven towards extinction through devastating human impacts: overfishing, pollution, and commercial whaling among others. Although, oceans cover more than two-thirds of the planet's surface, it is clear that our oceans are limitless no more. For too long access to marine life has been largely open for use by anyone possessing the means to exploit it. Rapid advances in technology have meant that the ability, reach and power of vessels and equipment used to exploit marine life now far outweigh nature's ability to maintain it. If left unchecked it will have tragic consequences both for the marine environment and for people dependent on healthy, functioning ecosystems. That is why, Greenpeace ocean campaigns currently focuses on three major threats to the world's oceans: overfishing, pirate fishing, whaling and intensive shrimp aquaculture.

The main campaign of Greenpeace are focused in the following area:

-Stopping the Nuclear Threat:

Greenpeace is campaigning to end nuclear power, reprocessing and waste dumping. Safe nuclear power is a myth for the use of nuclear power has never been "peaceful" as there are no safe disposal of the nuclear wastes which will be radioactive for tens or hundreds of thousands of years as how US President Eisenhower says that "no safe solutions for its safe disposal exists anywhere in the world. This has been well exemplified in the Arctic region which was earlier used for the dumping ground of the Nuclear Wastes in Canada.. Radiation released into the environment has led to the contamination of soil, air, rivers and oceans; causing cancer and other diseases in people.

-Eliminating toxic Chemicals:

A large, stylized handwritten signature in black ink, appearing to read 'D. Smith' or similar, with a long horizontal line extending to the right.

Greenpeace is working to eliminate the toxic linked to cancers, reproductive disorders and mental development such as the Persistent Organic Pollutants (POPs) and to convince consumers to reject the most toxic of Plastics: polyvinyl chloride (PVC) The toxic are produced by the industries and contaminate air, water, and food .In fact even climate changing chemicals such as Hydro chlorofluorocarbons (HCFS) and Hydroflurocarbons (HFCs) which are all man made chemicals and are responsible for depleting Ozone as well as increasing the global warming. Even in this respect, Greenpeace is developing an alternative for a green technology.

-Encouraging Sustainable Trade:

Greenpeace aims to empower governments and international institutions to ensure that this process does not adversely affect the environment or environmental policy, with the world economy becoming more global .A safe trade is important because trade should not be at the expense of the environment and remove the trade-related environmental conflicts or else it will jeopardize international trade and environment. Greenpeace is also working to eliminate environmentally destructive subsidies by national and regional governments and the World Bank, in the Agriculture, fisheries and energy sectors.⁹

The basic reason for the effectiveness of Greenpeace is due to its tradition of combining direct action with research to achieve and informing the members and the public about these threats through press releases, magazines and websites.

(c) Friends of the Earth:

The group called as Friends of the Earth Canada has been established in 1978 and since then it has been a respected advocate for the environment both on the national and international level generating creative, practical solutions to environmental problems, including air pollution, climate change and ozone depletion. Friends of the Earth Canada joined Friends of the earth International in 1983; which is basically a federation of autonomous environmental organisations from all over the world. The Friends of the Earth Canada like the other members of the Friends of the Earth International campaign on the most

⁹ www.greenpeacecanada.org/environmental campaign

urgent environmental and social issues of the day while simultaneously catalyzing a shift toward sustainable societies. A friend of the Earth International has a democratic structure with autonomous national groups, which comply with the guidelines established by the federation.

Friends of the Earth member groups are united by a common conviction that these aims require both strong grassroots activism and effective national and international campaigning and coordination. They see Friends of the Earth International as a unique and diverse forum to pursue international initiatives, taking advantage of the varied backgrounds and perspectives of its members. By sharing information, knowledge, skills and resources on both the bilateral and multilateral levels, Friends of the Earth Canada support with the members of the grouping its development and strengthen their international campaign and if necessary put pressure on decision-makers to provide the necessary measures to protect the environment for a truly sustainable societies.

Friends of the Earth founder David Brower had held press conference announcing the Friends of the Earth's birth in San Francisco, US in September 15, 1969 and had published Environmental Handbook for the occasion, which sold one million copies. Friends of the Earth International (FoEI) was founded in 1970 by four organizations from France, Sweden, England and US. Today, Friends of the Earth Canada as a member of the Friends of the Earth International (FoEI) enjoys a support of more than 10,000 individual supporters and has established itself as a charitable, non-profit environmental organization with the mission to serve as a national voice for the environment, working with others to inspire the renewal of our communities and the earth, through research, education and advocacy.⁹

It focused its campaign and awareness in the following areas:

-Struggle against toxic chemicals in the environment;

Such as the release of persistent organic pollutants such as dioxins and furans from the mills located in the Eastern Canada which has resulted in the "Areas of Concern" especially in the Great Lake basin.

-Identify the main environmental polluters in water pollution:

⁹ www.foei.org/organisation

Canadian pulp and paper mills have been identified as the largest polluters in the water resources as the Canada's 157 mills draw water from lakes and rivers for their processes and return most of the water to the natural environment adding tones of harmful substances to the waterways and cause extensive harm to the aquatic ecosystems. It has been the effort of FoE to ensure safe and clean drinking water; to prevent illness and death on account of the lack of quality of drinking water in an otherwise water rich nation like Canada for the sustenance of development.

-Practical solutions to environmental problems:

Friends of Earth Canada, has actively advocated through their awareness campaign and education about the alternative technology such as green electricity, which is produced from clean, renewable sources and not from fossil fuels such as in the provinces of Ontario and Alberta.¹⁰

(d) Sierra Club:

Naturalist and writer John Muir founded the Sierra Club in 1892 to protect the wilderness of the Sierra Nevada. The Sierra Club has been active in Canada since 1969, working on matters of public policy and environmental awareness. There are local chapters and working groups in every region of the country.

Over the years, the activities of the Sierra Club have expanded to include issues ranging from climate change and energy to toxic chemical contamination and loss of biological diversity.¹¹

-Climate Change:

The climate change campaign of Sierra Club has successfully moved decision makers towards planning for reduction of carbon emissions. The federal government commitment to reduce carbon dioxide emissions to 20% of 1998 levels by the year 2005 was made in a letter to the Sierra Club of Canada.

¹⁰ www.foecanada.org

¹¹ www.sierraclub.org

-Energy:

Sierra Club of Canada has coordinated Rational Energy Program- a package of initiatives designed to improve energy efficiency in transportation and other sectors as well as increase the use of renewable energy in the electricity sector –suggest that its implementation by government could add 1.5 million jobs to the economy while meeting Canada’s global warming commitments.

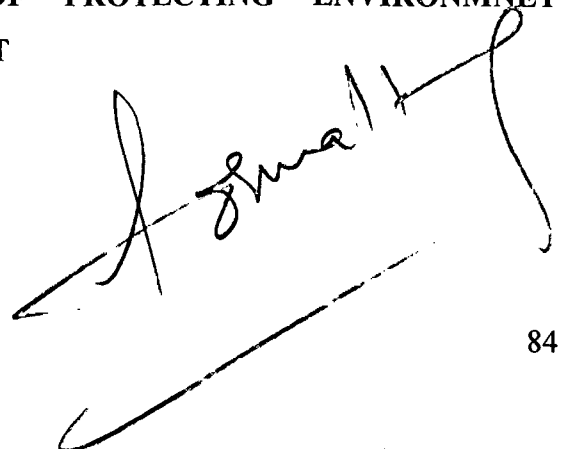
Biological Diversity:

Sierra Club’s effort in protecting the Biological Diversity can be seen in its effort to campaign against the uncontrolled plundering of Fisheries on Canada’s Pacific Coast calling for Major Policy Overhaul, especially with regard to the “keystone species” such as the Pacific salmon-upon which a myriad of terrestrial species depend from wolves to bears, eagles, and ravens. It is not limited to the Fisheries and the oceans as the campaign for the protection of Forest and preservation of wilderness since they provide many important “ecological services” such as regulating climate (carbon sequestration), protecting aquatic ecosystems (in streams and rivers), and serving as repositories for biological diversity¹².

In addition to the above campaign, Sierra Club campaign against the Pesticides as they pose particular problems for human health and the environment. Most of the pesticides are a product of the post World War II boom, and are based on research into chemical warfare. Organophosphates and carbamate insecticides, large classes within which hundreds of pesticides are registered, were based on Nazi research for nerve gas. At a large dose, they can kill people and at a tiny dose, they kill “pests”. Besides the proper management of the nuclear waste management and campaign for the Nuclear phase out is also one of the important campaign of the Sierra Club of Canada.

4. THE INSTITUTIONAL GROUPS OF PROTECTING ENVIRONMENT THROUGH SUSTAINABLE DEVELOPMENT

¹² www.sierraclub.ca

A large, stylized handwritten signature in black ink, slanted upwards from left to right. The signature appears to be 'J. Small' or similar, with a long horizontal stroke at the bottom.

In Canada, the Institutional interest Groups for environmental protection through the policy of Sustainable Development includes the Federal Government Departments. They play the role of the Institutional groups for protecting the environment through Sustainable Development policies, which has been made an attempt to be classified in the following manner.

(a) Commissioner of Environment and Sustainable development

It is this federal department, which acts as the principal form of interest articulation in Sustainable Development. The mandate of the Commissioner of the Environment and Sustainable Development is to make the government accountable for greening policies, operations, and programs. The Commissioner assists parliamentarians in overseeing the federal government's efforts to protect the environment and foster sustainable development. The Commissioner also assists the Auditor General in auditing environmental sustainable development issues¹³.

The commissioner is an integral part of the Office of the Auditor General of Canada, and works with about 35 highly qualified staff with backgrounds in environmental studies, business management, accounting, political science, economics, geology, biology, law, urban planning, public administration, and engineering. The team draws the expertise and methods of the Office of the Auditor General of Canada and assists the other teams in the office to incorporate environmental considerations in their work by adopting sustainable development strategies.

The present Commissioner of Environment and Sustainable Development is Johanne Gilenas who has been appointed in August 2000 in the position of what is described as "Canada's environmental watchdog". She is the second person to be appointed in this position as after Brian Emmett (1996-2000) She provides them with objective, independent analysis of progress and recommendation about further action. The position of the Commissioner of Environment and Sustainable Development is the result of the important amendments to the Auditor general Act in 1995 which encourage stronger performance by federal government in sustainable development and environmental areas. In her capacity as Commissioner, Ms Gelinas conducts numerous public hearings and mediations on environmental issues. The

¹³ [www.oag-bvc.gc.ca /who we are](http://www.oag-bvc.gc.ca/who%20we%20are)

Commissioner is an integral part of the Office of the Auditor General of Canada. She and her team function as a specialized unit within the Office, investigating issues of concern to Canadians by auditing how well the federal government meets its environmental and sustainable development commitments. Like the Auditor General, the Commissioner reports directly to the Parliament.

According to the Auditor General Act, twenty-five federal departments and federal agencies are required to prepare sustainable development strategies. The first round were tabled in the House of Commons in December 1997 and the second round in February 2001. The Commissioner monitors the extent to which departments have implemented the action plans and met the objective outlined in their strategies. And on a yearly basis, the Commissioner reports on environmental and sustainable development matters that she believes should be brought to the attention of the House of Commons. The reports include chapters on sustainable development strategies, audits, and on special issues.

The Commissioner's staff conducts studies on cutting edge environmental and sustainable development issues such as:

- Canada's international environmental commitments and the extent to which they are being met;
- environmental issues in the Arctic
- managing for sustainable development in both public and private sectors; and
- partnerships of federal departments with the province, the private sector, or other federal departments

The 1999 report of the Commissioner of the Environment and Sustainable Development expressed three expectations. First, each department would carry out an assessment of its initial sustainable development strategy and include the results in the second one. Second, they would strengthen the planning of their strategy, linking activities, impacts and priorities. Third, they would accelerate development of management systems to turn talk into action.

The prominent departments which have been asked to prepare sustainable development strategies includes :

- Environment Canada

- Health Canada
- Department of Foreign Affairs and International Trade
- Canadian International Development Agency
- Indian and Northern Affairs, Canada

(b) Environment Canada:

It was created in 1971 as Ottawa's response to the demand for greater environmental protection and represents the use of high design instrument in several respects¹⁴.

First, it brought together a variety of existing agencies, having responsibility for various aspects of environmental protection and renewable resource management- including sea coast and inland fisheries, forests, migratory birds and other 'non-domestic flora and fauna' water and meteorology.

Second, it featured an entirely new Environmental Protection Service (EPS), which was to spearhead Ottawa's effort to combat pollution, and thus protect and enhance water, air and soil quality.

Third, it was by statute to 'co-ordinate programs of the Government of Canada designed to promote the establishment or adoption of objectives or standards relating to environmental quality, or to control pollution'; in other words, it was to achieve its conservation and protection objectives by 'influencing and co-ordinating the activities of the other departments.'¹⁵

Environment Canada's mission is to make sustainable development a reality in Canada by helping the Canadians live and prosper in an environment that needs to be respected, protected and conserved. Although, Sustainable Development is a national goal, a policy for the Government of Canada, and the context in which Environment Canada interprets its mandate. The Department plays two distinct but complementary roles in advancing sustainable development. The first is a transitional leadership and advocacy role in integrating sustainable development into decision-making processes throughout the federal government. The second is an abiding role of providing leadership in environmental sustainability.

¹⁴ [www.ec.gc.ca/about us](http://www.ec.gc.ca/about-us)

¹⁵ M. Paul Brown's "Organisational Design as Policy Instrument: Environment Canada in the Canadian Bureaucracy" in Robert Boardman (ed); *Canadian Environmental Policy: Ecosystems, Politics, and Process*; Oxford University Press: (Toronto/ Oxford/ New York; July 1991)

It is the aim of Environment Canada to further the following strategic priorities:

- Provide leadership nationally and internationally on matters pertaining to the sustainability of the environment;
- Act on behalf of all Canadians to address environmental issues of national concern and to administer and enforce federal environmental laws and regulations;
- Deliver services to Canadians that enable them to adapt to their environment in ways, which safeguard their health and safety and optimize economic efficiency;
- Build capacity throughout society to take decisions that lead to environmental sustainability, and cooperate with others having similar objectives.

In each of these priorities, science is the foundation of Environment Canada's policies, programs and regulations, and is essential to achieving results.

(c) Department of Foreign Affairs and International Trade:

The international orientation of DFAIT is unique in Canada's government structure as it is the only department, which has the protection and advancement of Canada's international interests as its core mandate. It operates 160 missions and satellite offices abroad, employing approximately 8400 people in total, with approximately 3000 of them based in Canada and the rest abroad.¹⁶

The legal mandate of the Department is set out in the Department of Foreign Affairs and International Trade Act (1985); which empowers to conduct Canada's international relations, coordinate Canada's economic relations and promote international trade, and provide assistance to Canadians abroad.

Four main roles flow from this mandate, which has been summed up as follows:

- Developing and coordinating the government's international policy
- Advocating Canadian interests and values overseas
- Providing assistance to Canadians, including trade, investment, passport and consular services
- Supporting the agencies overseas.

¹⁶ www.dfait-maeci.gc.ca

Canadian foreign and trade policies are vehicles for making the world more secure, prosperous and sustainable. Over the years, the Department's role has been defined in a variety of ways in both official and unofficial documents as it must meet the challenges of the external events and participate in a very broad range of domestic and international activities. That is why the benefits of Sustainable Development as policy have been incorporated in the Department of Foreign Affairs and International Trade. As a policy, and as an operating premise, Sustainable Development affords the Department the following benefits:

- It strengthens the cost effectiveness of management systems and decision-making processes;
- It helps to eliminate or minimize any negative departmental impacts;
- It helps to ensure lasting positive results;
- It promotes dialogue and the building of partnerships for effective collaboration and resource allocation;
- It offers a means to measure progress upon which long term planning can be based.

DFAIT on Canada's behalf, can and does make a difference in addressing the issue within the interconnectedness of global system through incorporating sustainable development principles:

- in to the design and negotiation of international agreements ;
- in its participation in international Organisation;
- in its participation in international processes, Organisation and negotiations that seek to address regional issues/conflicts;
- in its bilateral relations and negotiations to address the opportunities and needs of individual countries;
- by direct assistance to developing countries;
- in the direct development and application of sustainable development tools.

Thus, sustainable development is a cornerstone of Canadian foreign policy and Department of Foreign Affairs and International Trade has strives to meet the following sustainable development goals in its work by¹⁷:

¹⁷ www.dfait-macci.gc.ca/agenda 2000

Making sustainable development an operating premise - by improving Sustainable Development communication and training; valuing employees as a non-renewable resource; and developing an environmental management system.

Strengthening linkages between trade promotion and policy and environmental protection - by applying environmental assessment to trade negotiations and export credits; promoting corporate social responsibility; supporting environmental technologies and voluntary environmental labeling and certification programs; and supporting developing countries in a Sustainable Development approach to trade.

Promoting sustainable development in the department's international activities - by ensuring progress on climate change issues; addressing transboundary threats from persistent organic pollutants (POPs); pursuing an international convention on forests; negotiating agreements to conserve and manage natural resources; improving information sharing between international monetary organizations; enhancing the effectiveness of the Global Environmental Facility; and meeting Canada's agreements under CITES COP5.

It seeks to clarify the interaction of social, economic, and environmental components of sustainable development, and how human security and human rights relate to sustainable development - by articulating the conceptual, policy, and practical implications of the social dimensions of Sustainable Development and promoting cooperation in combating crime. youth engagement in peace processes, and Sustainable Development policy coherence in Canadian positions. Implementing the sustainable development aspects of the northern dimension of Canada's foreign policy - by reinforcing Sustainable Development efforts of the Arctic Council; participating in developing the University of the Arctic; expanding SD opportunities in the North for small and medium-sized businesses; and focusing on projects in northern Russia

Preparing for the World Summit on Sustainable Development in 2002 - by engaging Canadians in the process; developing a comprehensive negotiating mandate; and ensuring a credible action plan and follow-up process.

According to The Auditor General Act DFAIT has tabled its sustainable development strategy as such committing the following goals in Agenda 2003:

- Improve the departmental mechanisms to ensure that sustainable development is an operating premise in the department.
- strengthen the linkages between trade promotion and policy and the protection of the environment
- Promote sustainable development in the department's international activities
- Clarify understanding of the interaction among the social, economic and environmental pillars of sustainable development, and of how human security and human rights relate to sustainable development
- Implement the sustainable development aspects of *The Northern Dimension of Canada's Foreign Policy*, released in June 2000

(d) Canadian International Development Agency

CIDA's raison d'être is sustainable development. The Agency's development programs and projects, as well as its participation in multilateral initiatives aim to improve sustainably the quality of life for women and men in the world CIDA supports sustainable development activities in order to reduce poverty and contribute to a more secure, equitable and prosperous world. Development is a complex, long-term process that involves all of the world's people, governments and organizations at all levels.¹⁸

CIDA works with partners both in the private and public sectors in Canada as well as in developing countries, and with also international organizations and agencies, supporting foreign aid projects in more than 100 of the poorest countries of the world. The objective is to work with developing countries and countries in transition to develop the tools to eventually meet their own needs.

It is this department, which has been designated for the purposes of the Financial Administration Act by Order-in Council P.C. 1968-923 of May 8, 1968. It reports to Parliament through the Minister for International Cooperation. The authority of The Minister and of CIDA is found in the Department of Foreign Affairs and International Trade Act, in the Annual Appropriations Act.

¹⁸ www.acdi-cida.gc.ca

The main objective of the CIDA program is to facilitate the efforts of the people of developing countries to achieve self-sustainable economic and social development in accordance with their needs and environment by cooperating with them in developing activities; and to provide humanitarian assistance, thereby contributing to Canada's political and economic interests abroad in promoting social justice, international stability and long term relationships for the benefit of the global community.

CIDA has incorporated sustainable development policies, based on its substantial experience with integrating the economic, social, political, environmental and cultural aspects of development. Thereby, as a element of its Official Development Assistance (ODA) program CIDA has identified six priorities:

-basic human needs, to meet the needs of people living in poverty in primary health care, basic education, family planning, nutrition, water and sanitation, and shelter, as well as to respond to emergencies with humanitarian assistance-Canada commits the Government to providing 25%of its ODA to basic human needs.

-gender equality, to support the achievement of equality between women and men to ensure sustainable development;

-environment, to help developing countries protect their environment and contribute to addressing global and regional environmental issues

-human rights, democracy, and good governance, to increase respect for human rights, including children's rights, to support democracy and responsible government, and to strengthen civil society

-infrastructure services-, to help developing countries deliver environmentally sound infrastructure services such as rural electricity and communications- with an emphasis on poorer groups and on building capacity ,;and

-private sector development-, to promote sustained and equitable economic growth by supporting private sector development in developing countries and organizations which are working in micro-enterprise and small business development to promote income generation.

CIDA has set the following sustainable development goals in Sustainable Development Strategy 2001-2003; in its work of offering international development assistance¹⁹:

-Assisting developing countries to reduce poverty and to improve security, equitability, and prosperity, and supporting democratic development and economic liberalization- by strengthening the economic, political, and social-cultural capabilities of all people; improving the programs which seek to reduce poverty and inequality; engaging client countries in addressing key global challenges, such as a clean environment and human rights, and changing Canadian policy to reflect new perspectives gained from this; and building on public support for international development.

Applying a management system approach based on continuous improvement in implementing CIDA's sustainable development mandate-by becoming a leading knowledge based, continuous-learning organisation; strengthening strategic planning and integrated decision making; improving accountability and aligning corporate services with sustainable development goals; and complying with relevant environmental legislation.

Thus, CIDA is working to deliver the kind of international sustainable development cooperation that will be effective and equitable in the 21st century. It is with “these initiatives” that the President of CIDA, Len Good says “will position Canada as a world leader in addressing the key global challenges of poverty reduction and sustainable development”.

(e) Health Canada

There is a close relationship between a healthy environment and human health throughout the countries of the world, as environmental degradation has become a leading cause of the deterioration of human health, thereby putting a constraint in economic and social development. Health Canada is a federal department responsible for helping the people of Canada maintain and improve their health. It is the vision of Health Canada to strive to improve the health of all Canada's people, while respecting individual choices and circumstances, and therefore seeks to put Canada among the countries with the healthiest

¹⁹ www.acdi-cida.gc.ca/departamental strategy

people in the world. It is this close interconnection between human health and environmental degradation that Health Canada feels is the core of achieving sustainable development²⁰

Sustainable Development is fundamental to Health Canada's activities and its success as has a direct, intimate and critical connection between Sustainable Development and health. In getting sustainable development right, the health of Canadians is improved in applying the determinants of health approach in the population model. Health Canada contributes significantly to sustainable development. It is in this regard that one can see Health Canada's partnership with provincial and territorial governments providing :

- National leadership to develop health policy, enforce health regulations, promote disease prevention and enhance healthy living for all Canadians.

- Ensuring that health services are available and accessible to First Nations and Inuit communities.

- Works very closely with other Federal Departments, agencies and health stakeholders to reduce health and safety risks to Canadians.

- Through its Health Intelligence Network, works with other levels of government and the health care system in the surveillance, prevention, control and research of disease outbreak across Canada and around the World.

- Monitors health and safety risks related to the sale and use of drugs, food, chemicals, pesticides, medical devices and certain consumer products

- Negotiates agreements regarding hazardous materials in the workplace; and

- Performs medical assessment for pilots and air traffic controllers and conduct environmental health assessments.

The link between health and sustainable development could not be stronger as the first principle of the Rio Declaration of 1992 states that human beings are "...entitled to a healthy and productive life in harmony with nature"²¹ The relationship between health and environment was also a key consideration during the international preparatory process leading up to the Johannesburg Summit 2002 and was also seen as an important part of Canadian preparations. Canada pursued the Summit outcomes to promote improved understanding of

²⁰ www.hs-sc.gc.ca

²¹ www.wssd-smdd.gc.ca

the links between health and environment and the ability to provide a better quality of life for people.

The Health Department has responded to the Auditor General Act 1997 to prepare a table of sustainable development strategies which was first started in 1997 and later the second strategies adopted is in 2000 which is focused on the following area:

-Identify gaps, manage risks to health, improve capacity to deliver services, and improve overall management practices in 10 working groups in partnership with First Nations and Inuit.

-Implementing the non-insured Health Benefits claims-processing contracts especially with regards to the First Nation.

-Ensure that the community-based programming, appropriate reporting requirements that meet their needs; and a strong Non-Insured Health Benefits management process that can support the transfer of Non-Insured Health Benefits to First Nations.

(f) Indian and Northern Affairs Canada (INAC)

The broad mandate of the department is reflected in its mission statement, “Working together to make Canada a better place for First Nations, Inuit and the Northern People”. It has the primary responsibility for meeting the federal government’s constitutional, political and responsibilities to the First Nations and the North. INAC’s mandate is carried out under the extensive legislative base that includes the *Indian Act*, *Department of Indian Affairs and Northern Development Act* and legislation pertaining to the territory. Although, INAC has the primary but not exclusive responsibility to meet the Federal’s government constitutional, treaty, political, legal responsibilities to First Nations, Inuit and Northerners²².

The department’s role including the channelising of funds to enable Status Indians living on reserve to have access to basic services comparable to other Canadians such as community infrastructure, housing, education, social assistance and social support services. It also negotiates and oversees implementation of treaties, comprehensive and specific land claim settlements, and self-government agreements on behalf of the federal government. The

²² www.ainc-inac.gc.ca

department also plays a significant role in the promotion and facilitation of economic development opportunities for First Nations, Inuit and Northerners.

Beyond the overall mandate, the department promotes political evolution and sustainable development in Canada's North by fostering leadership in northern sustainable development and environmental stewardship, both domestically and among circumpolar nations. The awareness towards environmental conservation among the Aboriginal groups identified the need for environmental conservation for the federal government to strengthen its performance on environmental and sustainable development issues, and held more accountable for their performance; which dates back to as early as 1989.

A significant aspect of the sustainable development strategy renewal process for most federal department and federal agencies was the commitment to pursue a coordinated approach across departmental portfolios in an attempt to create a coherent a horizontal sustainable development agenda for the federal government. As a result INAC is working with other federal departments on many interdepartmental initiatives that relate to the promotion and understanding of sustainable development

INAC has an interest as well as indirect involvement in all the themes of Sustainable Development Co-ordinated Action Plan (SDCAP)* and in specific direct involvement in the four themes of SDCAP. INAC also coordinates with other departments on issues that support Sustainable Development but are not directly related to SDCAP issues.

INAC is committed to work cooperatively toward linking the data collection and information management mechanisms to broader federal processes.

-First Nations Forestry program(FNFP) was designed to improve economic conditions in status Indian communities. It supports communities in developing better and more cooperative venture from which viable sustainable, long term jobs will be created. This program is jointly undertaken by INAC and Natural Resources Canada.

*SDCAP theme areas are Sustainable Development (SD) in government operations; A Federal Strategy for SD in the North; SD and Healthy Canadians; Sustainable Communities; SD Indicators and Reporting/Knowledge and Information; Productivity through Eco-efficiency; Socio-Cultural aspects of SD; AND International Aspects of SD.

Climate Change –INAC’S challenge to climate change requires the coordination of the program, policies and other initiatives of a number of federal government departments and other players like Environment Canada and Natural Resource Canada and Aboriginal and Northern Communities.

International Issues-The significant role of the Aboriginal people in sustainable development was internationally recognized at the United Conference on Environment and Development held in Rio de Janeiro in 1992. The Indigenous group from around the world provided key inputs in Agenda 21’ Chapter 26 called “Recognizing and Strengthening the Role of Indigenous People and Their Communities” INAC has committed with working with other government departments and Aboriginal peoples in the World Summit on Sustainable Development (WSSD), in Johannesburg (Rio +10, October 2002) It is also committed in continuing its cooperation with the Secretariat to the Convention on Biological Diversity to facilitate the implementation of Article 8J of the Convention which commits Canada to preserve and maintain traditional knowledge, innovation and practices. INAC continue to play a significant role in the actions of the Arctic Council, encouraging the development of the Aboriginals group in its activities.

Sustainable First Nations, Inuit, and Northern communities are an integral part of sustainable development in Canada. INAC has set the following goals for sustainable development:

-Enhancing Gathering strength- by consolidating the approach to long-term community planning, developing an environmental stewardship strategy to address environmental management issues on reserve lands, and by developing an environmental assessment process for First Nations Land Management Act communities.

-Sustaining and enhancing healthy northern environments and communities- by preserving economic, biological, and cultural diversity, increasing understanding of climate change issues, demographics, and cultural trends, remediating contaminated sites, and balancing traditional and modern ways of life.

-Integrating sustainable development into departmental management processes- by raising awareness of sustainable development within the department, ensuring senior departmental managers to effectively champion the implementation of the strategy,

establishing report and accountability structures; to assess the policies and business lines for consistency with strategy commitments.

-Involving Aboriginal peoples in sustainable development-by involving First Nations, Inuit, and Northerners in strategy implementation and in responding to climate change issues; incorporating traditional knowledge into decision making processes whenever possible.

-“Greening” departmental operations and programs-by increasing “green” purchases; adopting an environmental management system; multi-material recycling; reducing the environmental impact of the vehicle fleet; and managing departmental facilities in an eco-efficient manner.

-Promoting Aboriginal sustainable development issues throughout the federal government and internationally-by contributing to international agreements in ways which reflect the rights and interests of Aboriginal peoples and northerners; and coordinating the activities of federal agencies and departments regarding First Nation, Inuit and northern communities.

INAC quest for sustainable development opens new windows of opportunity as well as challenges .The initiative for the vision of sustainable development is to ensure the Aboriginal and Northern communities are economically, environmentally, socially viable for the sustenance of development This is an opportunity that the Strategy for Sustainable Development will provide at the same time, the challenge will be on how the issues of natural resources access, management and land tenure are settled. Ensuring the effective implementation of Sustainable Development Strategy is consistent with the department’s mission “to make Canada a better place for First Nation, Inuit, Northern peoples”. A shared vision will resolve and work and strive together for a bright tomorrow.

5. COMMUNAL GROUPS OF PROTECTING ENVIRONMENT THROUGH SUSTAINABLE DEVELOPMENT

The chief characteristics of communal groups is that they are embedded in the social fabric, in the sense that membership is based on birth, rather than recruitment. Unlike the conventional interest groups, to which membership chose to belong to, communal groups are founded on the basis of a shared heritage and traditional bonds and loyalties. Communal

groups continue to survive and exert influence in advanced industrial states as the resurgence of ethnic nationalism and the significance of Catholic groups in countries like Italy and Ireland where they play an important role in their Politics. In the case of Canada, it is Canadian Council of Churches. (CCC) which also play a vital role in formulating an active endorsement of environmental protection through sustainable development. The interest groups classified as Communal groups includes the Indigenous Groups like the Arctic Council, Inuit Circumpolar Conference, Pauktuutit whose membership is on the basis of births, ethnic Groups, religion and gender.

(a) Arctic Council

In order to advance circumpolar cooperation, the Arctic Council was created in Ottawa, September 19th 1996 Canada. The Ottawa Declaration, which established the Council in 1996 says it, will:

- Work to find a balance between environmental protection and sustainable development in Far North;
- Co-ordinate environmental monitoring work and wildlife preservation;
- Attempt to oversee sustainable development programs for Arctic aboriginal peoples;
- Promote trade and eco-tourism;
- Collect and organize information about health and social welfare.²³

The mandate of the council is to protect the arctic environment and promote the economic, social and cultural well being of northern peoples. It is made up of eight Arctic states: Canada, Norway, Denmark, Greenland, Finland, Iceland, Russia, Sweden and United States (Alaska). It was first conceived as an intergovernmental organisation through which these eight Arctic governments and Arctic's indigenous people organisation would have an open forum to discuss matters of common concern. The Aboriginal groups are permanent members of the Council, however, only national governments are able to decide issues.

In September 1998, ministers of Arctic Council members met for the first time in Iqaluit, the capital of Nunavut, and issued a report of the decisions they made. Among other things, The Iqaluit Declaration announces:

²³ www.dfait-maeci.gc.ca

- The establishment of the Sustainable Development Program which will work in the areas of: children and youth, health, telemedicine, resource management, fisheries, cultural and ecotourism, technology transfer to improve Arctic sanitation systems, and national sustainable development strategies;
- That Canada will take the lead in, and provide support staff for, the project on Arctic children and youth. Similarly, the United States will handle the telemedicine project, and the Saami Council will head two fisheries projects;
- That working groups looking into sustainable development issues seek the advice of Native peoples whose traditional knowledge will be of great value;
 - The setting up of a University of the Arctic in which Finland will take the lead. This will be a university “without walls”, using the Internet and other communications to maintain contact between the teaching staff and the students.

Canada chaired the Arctic Council for its first two years of operation. Every two years the ministers meet to review progress and approve work plans. Canada provides funding to indigenous Canadian Permanent Participants to support their full support in the work of the Arctic Council and contributes to the five working groups by providing expertise and/or funding to specific projects on a case-by-case basis²⁴.

The Arctic Council has five working groups, which are as follows:

- The Sustainable Development Working Group (SDWG)
- The Arctic Monitoring and Assessment Programme (AMAP)
- The working group on Conservation of Arctic Flora and Fauna (CAFF)
- The Emergency Prevention, Preparedness and Response (EPPR); and
- The Protection of the Arctic Marine Environmental working group (PAME)

Arctic Councils projects supported financially by Canada are in the following areas:

- Persistent Toxic Substance, Food Security and Indigenous Peoples of Arctic Russia**- undertaken by the Arctic Monitoring and Assessment Program along with the

²⁴ www.arcticpeoples.org

Russian Association of Indigenous Peoples of the North and the United Nation's Global Environmental Facility, as well as other states. It aims to assess the impact of pollution on the health of the indigenous peoples in the Arctic Russia to determine the level of contamination of country food, and to develop recommendations to reduce these impacts.

-Capacity Building of the Arctic-

Under the auspices of the Sustainable Development Working Group, Canada organized a workshop on capacity building in the Arctic at the Finnish Ministry of the Environment in Helsinki. The workshop produced a number of recommendations to increase capacity building focus of Arctic Council activities and assist the Arctic Council in supporting capacity building throughout the Arctic. As a result the Arctic Council will develop a capacity – building strategy to implement these recommendations.

-The Future of children and youth of the Arctic

It was undertaken by the Sustainable development Working Group. This initiative aims to improve the health and well being of children and youth in the Arctic and to increase the knowledge and understanding of sustainable development among Arctic youth and children. The project has three components: health, internships, and networking. The health component promotes the health of all children and youth living in the Arctic with special emphasis on underprivileged regions, populations and groups. The internship components enhance awareness of northern sustainable development issues among future circumpolar leaders and help them acquire the knowledge, skills and attitudes needed to address these issues in their communities. The networking component engages and empowers youth on issues of sustainable development.

-Ecosystem Approach to Conserve Biodiversity and Minimize Habitat Fragmentation in the Russian arctic-

It was undertaken by the Conservation for Flora and Fauna working Group. The goal of this project is to safeguard large tracts of the natural landscape and to ensure the sustainable use of biodiversity in the Russian Arctic; through the development and implementation of ecosystem-based management strategies in the selected regions, which

will serve as models for the rest of Russia. The project partners include the Russian Federation State Committee for Environmental Protection, United Environmental Program, GRID –Arendal and the Global Environmental Facility

The work of the Council is supervised and directed by the Arctic Council Senior Arctic Officials. The Ambassador for Circumpolar Affairs, Mary Simon, is Canada's Senior Arctic Official. The Ambassador calls on the Arctic Council Advisory Committee for input and guidance on Canadian priorities and positions to be brought to the Council. The Advisory Committee includes federal departments, territorial governments, indigenous Canadian Permanent Participants to the Arctic Council, and non-governmental organizations with an interest in arctic issues. The Arctic Council also involves international indigenous peoples organizations as Permanent Participants. These organizations include the Inuit Circumpolar Conference, the Arctic Athabaskan Council, the Gwich'in Council International, the Saami Council, the Russian Association of Indigenous Peoples of the North and the Aleut International Association. Several non-arctic states, international organizations and non-governmental organizations participate as observers.

It was through the Arctic Environmental Protection Strategy (AEPS) through which most of the environmental work of ICC is being done. It has, however, had difficulty getting off the ground and has done minimal work other than that continued under the former AEPS. Yet, ICC was given a strong mandate from the 1998 General Assembly to work hard within the Arctic Council so that it will make a positive difference for Circumpolar Inuit.

(b) Inuit Circumpolar Conference (ICC)

In order to thrive in the inhospitable terrain of their circumpolar homeland, Inuit had the vision of realizing to speak with a united voice on issues of their common concern and combine their energies and talents in protecting and promoting their way of life. The Inuit Circumpolar Conference was an initiative taken by late Eben Hopson of barrow, Alaska who

founded the organisation in 1977. It has flourished and grown into a major international non-government organization representing approximately 150,000 Inuit of Alaska, Canada, Greenland, and Chukotka (Russia). The organisation also holds Consultative Status II at the United Nations. ICC has a mandate to continue to play a strong environmental role through the Arctic Council as it had in the former Arctic Environmental Protection Strategy. In particular, ICC was mandated to work cooperatively in international negotiations to reduce emissions of transboundary contaminants²⁵.

The principal goals of ICC are therefore, to:

- Strengthen unity among Inuit of the circumpolar region.
- Promote Inuit rights and interests on an international level
- Develop and encourage long-term policies that safeguard the Arctic environment; and
- Seek full and active partnership in the political, economic, and social development of circumpolar regions.

ICC holds a General Assembly every four years at which delegates from across the circumpolar region elect a new president and an executive council, develop policies, and adopt Resolutions that will guide the activities of the organization for the coming term. The General Assembly is in the heart of the organization, providing an opportunity for sharing information, discussing common concerns, debating issues, and strengthening the bonds between all Inuit. Representatives from the Inuit Circumpolar Youth Council and the International Elders Council attend, thereby improving communications and creating synergies with these important affiliated organizations.

The ICC international office is housed with the president. Each member country maintains a national office. Canadian Inuit are an integral part of the Inuit Circumpolar Conference. ICC in Canada conducts its activities as a legally incorporated non-profit organisation under the Canadian Board of Directors, which is comprised, of the elected leaders of the four-land claim settlements organisation.

The main aims and objectives of ICC Canada has been classified as:

²⁵ www.inuitcircumpolar.com

-To represent the interests of Canadian Inuit through their national organisation (Inuit Tapirisat of Canada), and through their settlement claim organisations, on matters of an international nature.

- To preserve and promote the unity of Inuit as a single people within the Circumpolar Arctic and to assist Canadian Inuit in speaking collectively with Inuit in Russia, Alaska and Greenland on international matters.
- To cooperate with Inuit Tapirisat of Canada in presenting the position of Canadian Inuit on international matters.
- To represent Canadian Inuit views on the Executive Council of the Inuit Circumpolar Conference (International) and to implement, in Canada, the resolutions emanating from the general assemblies of the Inuit Circumpolar Conference
- To coordinate and facilitate cooperation among the Inuit settlement claim organisation on international matters
- To serve as a facilitator, in coordination with Inuit Tapirisat of Canada, for promoting cooperation between Canadian Inuit and Inuit from Russia, Alaska, and Greenland
- To take measures to further enable Canadian Inuit to fully exercise their international rights and interests as Indigenous People within Canada and globally;
- To act as the international vehicle through which all Canadian Inuit can voice concerns to world bodies, international; conventions, intergovernmental forums, international non-governmental organisations, and global indigenous movements;
- To take measure at the international level to protect the Arctic environment and its renewable resources so that present and future generations of Canadian Inuit can fully benefit from the land and marine environment and its flora and fauna;
- To take measures at the international level to protect and promote Inuit rights related to their health, culture, language, values, human rights, or any other matters that has an impact on the ability of Inuit to shape the future of their society within the circumpolar Arctic and the world at large;
- To take measures at the international level to foster trade and economic development for Canadian Inuit and to assist in the development of successful business endeavors abroad; -To bring to the attention of Canadian Inuit the ongoing issues and concerns of

Inuit in Russia, Alaska, and Greenland and to solicit Canadian Inuit assistance when required;

- To maintain an on-going dialogue with ministries of the Canadian Government on issues of international importance to Canadian Inuit;
- To maintain an on-going dialogue with the ministries of the Canadian Government on issues of importance to Inuit in Russia, Alaska and Greenland and to promote their rights and interests within Canada

The ICC delegates has called for the Arctic Council to implement the sustainable development programme and put it on paper, as there is a close link between the two organisation²⁶.

The financial arrangements between ICC and the Arctic Council promotes to ensure how effective the working groups, task forces can plan and work effectively .ICC needs to lobby hard to addressed the urgent social and economic plight of the Arctic's indigenous people in order to ensure sustainability. The Chair of the Council rotates among the member countries every two years. Canada was the Council's first chair to 1998, followed by the United States to 2000 and Finland to 2002. Iceland is the current chair and will serve until October 2004.

(c) Canadian Council of Churches:

The Canadian Council of Churches was founded more than a half century ago, bringing together representatives from 10 churches and building on earlier Canadian ecumenical initiatives .The council was born out of a vision of unity and the need to co-ordinate and provide support for the joint work of several Canadian churches in education, social service, evangelization and mission. The Canadian Council of Churches is a “community of churches which confesses the Lord Jesus Christ as God and Saviour according to the scriptures and therefore seek to fulfill together their common calling to the glory of one God, Father, Son and Holy Spirit, and also other churches which affirm the same faith but which do not make doctrinal confessions”(Article II of the Council's Constitution.)²⁷

²⁶ www.amap.no

²⁷ www.ccc-cce.ca

The council has become the agency through which member churches and other ecumenical groups can together undertake Christian ventures, initiating and responding to life in Canada and beyond.

The word 'ecumenism' itself comes from the Greek *oikoumene*, a Biblical word referring to God's whole created order, 'the earth and its fullness' (Ps.24). Ecumenism is the commitment to the search for the fullness and unity God intended for creation. It calls us to name what we believe in common and to celebrate that common faith, as well as to name our differences and to work to overcome obstacles to a united witness to Jesus Christ.

In its constitution, the multifaceted work of the Council is summarized as follows:

To provide the churches with an agency for conference and consultation, and for such common planning and common actions as they wish to take;

-to encourage ecumenical understanding and action throughout Canada;

-to relate to the World Council of Churches and to other agencies serving the worldwide ecumenical movement.

In November 1995, the Governing Board of the Canadian Council of Churches determined that the Council, and all its components, would function as a forum. The forum model recognizes the unity as Christians and yet trying to remain faithful to the particularity of their respective traditions. It allows the widening of the ecumenical circle and has the potential for providing renewed commitment to ecumenism. To function properly, this model relies on the concept that all representatives are able to speak for their churches. It is recognized that the authority with which the members speak will depend on the polity of the church they represent. Such a method of interaction will facilitate the engagement of members and member churches in theological reflection on issues of common concern and in determining action as appropriate.

The structure of the Council expresses the nature of ecumenism both as a movement of people and a coming together of churches. The Governing Board reflects the Council members' size, variety and geographic distribution. It meets twice yearly to review ecumenical life in Canada, reflect on its significance, identity needs and direct the affairs of the Council.

An Execution Committee brings together the officers of the Council (President, three Vice-presidents, Treasurer and General Secretary) and the chairs of the Council two Commissions and standing committees. It directs the me of the Council between the meetings of the Governing Board, for the implementation of policy and the support of staff.

The Commission on Faith and Witness engages the churches in theological study to foster greater understanding of the faith they hold in common, and to provide an ecumenical witness to the mission of Christ in the world. The Commission develops theological resources to support the wider work of the Council, and co-ordinates churches' participation in interfaith dialogue.

The Commission on Justice and Peace is a forum for consultation, coordination, planning and co-operation in matters of justice and peace it works with churches and various ecumenical groups.²⁸

The General Secretary of the Canadian Council of Churches promotes relationships between churches and religious bodies in Canada. She and an Executive Assistant are responsible for the day-to-day work of the Council. An Associate Secretary staffs each of the Council's Commissions

The Commission on Faith and witness, and

The Commission on Justice and Peace.

(d) Pauktuutit:

The Pauktuutit as an Interest Group is formed as a women organisation for the Indigenous people of Canada focusing on the environmental concern as well as on Social Sustainability. Environmental protection and management are the significant challenges that the indigenous communities are facing, given that they generally do not have recognized jurisdiction to manage resources on their traditional territories. Aboriginal people are the first to be affected by environmental degradation and in particular their traditional diet has suffered. Pauktuutit was incorporated in 1984 as the national association that represents all Inuit (First Nation) women in Canada with the mandate to foster a greater awareness of the needs of Inuit women, and to encourage their participation in community, regional and national concerns in relation to social, cultural and economic development. Pauktuutit has

²⁸ www.wcc-coe.org

been directed by its membership, which is all Inuit women in Canada, to ensure the protection of their rights contained in the *Canadian Charter of Rights and Freedoms*²⁹

The Royal Commission on Aboriginal Peoples(1998) has noted that the Aboriginal people are worse off than the non –Aboriginal people as the average annual income for Aboriginal people is half that of non-Aboriginal people, 50% of Aboriginal children live in poverty, the unemployment rate is three times higher in some places reaching as high as 90% .Infant mortality rate is two times higher and the death rate for First Nations' infants from injury, poisoning and violence is five times higher; rates of tuberculosis are six times the national average; and life expectancy for First Nations people is seven to eight years less than the national average.

It addressed diverse issues that affect the communities such as:

- the negotiation of the land claims
- social issues of the communities like violence against women
- health issues plaguing the community
- economic development through traditional and contemporary livelihoods
- cultural development issue in protecting the individual and collective individual property rights.

The theme of environmentalism has been interpreted as an evolving ideology to assist the transition from industrial to postindustrial society, 'much as liberalism, conservatism, and socialism saw through the formation of a new society during the Industrial Revolution'³⁰. According to the tradition of the study of politics the different nature of the interest groups has been classified into three distinct interest groups but; when it comes to the interest of sustainable development there are a wide number of governmental, non governmental, churches, social agencies and department which has shown active and direct interest to the theme that sustainable development generates and it is not only related to the interest of ecological sustainability as per se and divulge to the other theme

²⁹ www.paktuutit.on.ca

³⁰ Robert Boardman's *Introduction* in Robert Boardman (ed); *Canadian Environmental Policy: Ecosystems, Politics, and Process* (Oxford University Press; Toronto/ Oxford/ New York; July 1991)

No conclusion

Chapter 4

The Mechanisms in the Sustainable Development Policies

INTRODUCTION

In this chapter an attempt is being made to discuss about the stand taken by Canada in the international forum and how the commitment to the different stand has been met and what are the mechanism with which the Canadian federal policies has been sought to sustain. It is basically about how the issue of Sustainable Development are processed in the decision making process, i.e., what are the mechanisms in Canadian Federal Politics for Sustainable development.

The mechanism here imply the technique of procedure in the Canadian Bureaucracy, federal laws, the international commitment that it made and the impact that the non-federal department such as the associational as well as communal interest groups on the environmental groups for sustainable development have on the decision making process called as the mechanism.

1.CANADA'S STAND IN INTERNATIONAL FORUM

Canada understands that sustainable development means ensuring environmental, economic and social activities and policies are mutually reinforcing. The issues of Sustainable Development endorsed by Canada have been diverse, as Canada believes in working towards a global agreement and convention, to achieve the conservation and sustainable development. This approach aims to bring about a higher quality of life and provide better access to the necessities of life for present and future generations.

United Nation Conference on Environment and Development (UNCED) which was held in Rio de Janeiro, 3-14 June 1992 saw Canada to be very responsive; even among the various strata of the society. There was public hearing of the proceedings and local round tables in Ontario among the citizens who were interested in shaping the development with their "vision circles" Moreover, the Canadian government has not only called for the expeditious signing, ratification and implementation on Biological Diversity and the United

Nations Framework Convention on Climate Change. Canada has ratified both Conventions in December 1992, becoming the first country to do so.¹

Canada has renewed its commitment to the United Nations, to the establishment of the Commission on Sustainable Development, and to other multilateral institutions. The World Summit on Sustainable Development, Johannesburg August 26-September 4, 2002, South Africa (2002) has provided an opportunity to re-energize global action on sustainable development, integrating solutions to critical environmental, economic and social development factors. Canada promoted a focus on practical action to build the capacity to implement existing commitments, rather than launching negotiations on new agreements. Canada believes that this practical action can only be achieved through cooperation at many levels.

Given the extensive number of sustainable development issues, Canada focused more where they can contribute most effectively. Canada has undertaken to review and assess its progress since Rio in acting on a focused set of key issues, which had already been addressed in 1992. To fulfill their international obligation as part of the preparations for the 2002 Summit, in the Earth Summit 2002 Canadian Secretariat has commissioned Stratos Inc to prepare an objective National Assessment, drawing on contributions from within and outside government to prepare a National Report where, it reviews ten years of the country's progress in their implementation of sustainable development since the Rio Summit of 1992. The Federal Government is committed in ensuring that Canada's national report will be an honest and transparent accounting of Canada's progress.²

Canada has also signed Agenda 21, a global plan of action for sustainable development in the 21st Century in Rio. In other issues Canada has urged states to work toward a global agreement to prevent overfishing on the high seas and toward establishing criteria ideally through a global convention, to achieve the conservation and sustainable development of the world's forest.

The Government of Canada commissioned, *Sustainable Development: A Canadian perspectives* as part of Canada's preparations for the Summit. The Report involved in collecting the views on accomplishment and challenges from the different segments of society

¹ Canada and Sustainable Development in www.wssd-smd.ca

² Sustainable Development: A Canadian Perspective in www.sinfo.gc.ca

decade. The report highlights some of Canada's progress towards sustainable development over the past decades. The Report highlights some of Canada's considerable success, speaks of the remaining challenges and explores some of the current efforts underway to meet those challenges. The input to the draft has been provided by members of the public through roundtable consultations, discussions with Aboriginal representatives and through individual and group submissions; by 18 federal government departments, including World Summit thematic working groups, by provinces and territories; and by 27 contributing authors from both inside and outside government who had provided their perspectives on issues raised in the report. The draft synthesis report was released for public review, and the lead authors of the report in preparing the final draft also considered comments received. Moreover, the "third party" was brought in to recognize the experts who can contribute to the views of independent stakeholders.

The Canadian preparations for the 2002 Summit are being undertaken at several levels including through a national process coordinated by the Earth 2002 Canadian Secretariat, established by the Federal Government and by a wide range of Canadian groups, ranging from Aboriginal peoples to Canadian Business to NGOs.

Canada's International Commitment in the Issues of Sustainable Development

Canada's commitment to sustainable development is a complex challenge in an increasingly interdependent and integrated world as Sustainable development is inherently an international concept and due to the transboundary nature of many sustainable development issues, local issues often have international ramifications. Many of the issues that require cooperation among individuals, industry, and governments within Canada also require cooperation among nations. To resolve sustainable development issues such as climate change, ozone depletion, and resource conservation, Canada had to work effectively with other countries towards the common goals. Canada has led the international community in establishing such cooperation, and now must follow its own leadership with domestic action.

Canada has sought to meet the international obligations through both the bilateral and multilateral agreements that have been used as a key means which Canada has used to cooperate with other countries in resolving sustainable development problems. The key international agreements involve efforts in:³

Protecting the Ozone layer

In 1987, recognizing the human health, environmental and economic implications of ozone depletion, 139 countries signed the Montreal Protocol on Ozone Depleting Substances, which established a timetable for the reduction and elimination of specific ozone depleting substances. Canada has made real progress in phasing-out the production and use of ozone depleting substances, and those efforts need to continue. However, the recovery of the ozone layer will take time.

Reducing greenhouse gas emissions

Canada, along with over 150 nations, signed the Climate Change Convention in June 1992. The Convention requires developed countries to report on actions with the aim of returning their emissions of greenhouse gases to 1990 levels by the end of the decade. Actions are underway federally and in all provinces to limit greenhouse gas emissions. Current projections had indicated that with no further action, Canada's emissions in the year 2000 would be 13 percent higher than in 1990, contingent on underlying assumptions about energy prices and economic growth. The National Action Program on Climate Change is supposed to help to close the stabilization gap, by developing measures, carrying out economic analysis and working internationally. In order to continue to close the gap, Federal, Provincial and Territorial Environment and Energy Ministers have agreed to proceed with the development of options that will meet to stabilize greenhouse gas emissions Canada's current commitment in 2000 is to develop sustainable options to achieve further progress in the reduction of emissions by the year 2005.

³ www.sustainabledevelopment.org

Conserving biodiversity

Biodiversity is the variety, richness, and complexity of life that exists within nature. Development is sustainable if it maintains this diversity. Some human activity is resulting in an unprecedented loss of biodiversity. Canada has signed the United Nations Convention on Biological Diversity in June 1992 as part of the global response to this loss. The Canadian Biodiversity Strategy will set out the vision, goals, and strategic directions to guide the actions of governments and citizens in protecting Canada's vital interests and meeting its commitments under the Convention. A number of other agreements exist or are being negotiated, including those on acid rain, the transboundary transportation of hazardous substances, environment and trade, forestry and the management of high-seas fisheries.

Promoting Equity

Sustainable development is an ethical principle. It incorporates a two-dimensional commitment to equity, between the current generation and those that will follow. Again between the poor and the more affluent. Canada has also plan for implementing the Beijing Platform for Action after the Fourth World Conference on Women in 1995, with the Federal Plan for Gender Equality; where it seeks to ensure the integration of women's perspectives in the development, analysis and implementation of government's legislation, policies and programs. Even in the Official Assistance Development program, it has incorporated Women in Development (WID) in its goal to strengthen the full participation of women as equal partners in sustainable development.

Ensuring a fair distribution of the costs and benefits between generations.

The question of inter-generational equity is one of the key aspects of sustainable development. Sustainable development should not be achieved by simply passing the costs of human activity from one generation to another. Although it is not possible to predict with precision the likely interests of future generations, it is safe to assume that their needs will not be significantly less than our own. Sustainable development requires that future generations be able to benefit from the environment to the same degree as current generations.

Ensuring a fair distribution of the current costs and benefits of sustainable development.

The Brundtland Commission has pointed to the inequitable distribution of wealth between the nations of North and South as a major barrier for achieving sustainable development. The aid, trade and debt policies of higher income countries should foster higher standards of living, without increasing pressure on global ecosystems. Domestically, the principal challenge is to extend the benefits of our economic prosperity and high quality of life to a broader segment of the population while maintaining the fundamental integrity of our ecosystems. Poverty, gender equity, unemployment, regional impacts, and the rights and responsibilities of First Nations are some of the key issues for Canada.

Improving Our Quality of Life and Well-being

The ultimate aim of development is to improve the quality of human life. People depend on their environment and on economic development to meet their basic needs and to improve their quality of life. Economic growth is an important component of development, and reviving growth through improved productivity is the primary focus of economic policy. Economic growth also provides the wealth to make investments in protecting the environment, supporting education, science and technology, and in maintaining the health and well being of Canadians.

Fostering improved productivity through environmental efficiency.

The key to Government's Jobs and Growth Agenda focuses on improved productivity — the efficiency with which people, capital, resources, and ideas are combined — as the key to providing Canadians with more job opportunities and greater income. Environmental efficiency is an important dimension of productivity. It means producing more with less — less resource inputs, less waste. Many environmental improvements, including better energy and water efficiency, waste minimization and pollution prevention are achieved by, or result in, the reduction of inputs, which translates into a reduction of costs.

Supporting innovation towards sustainable development.

The challenge is to design policies and programs that help to make measurable progress on the full range of sustainable development issues while stimulating innovation and

competitiveness. This entails an emphasis on developing a predictable policy regime with longer-term time horizons, a focus on results, the use of flexible instruments to achieve them, and full consideration of the environmental and economic implications. It also requires the Government to direct available funds for promising new research and development oriented initiatives, to foster and commercialize new technologies, and to seek out new domestic and global market opportunities. The Government's Jobs and Growth Agenda, Environmental Industries Strategy, and Science and Technology Review provide important policy context for innovation towards sustainable development.

Broadening measures of progress to include its non-monetary dimensions.

Achieving Sustainable development involves adopting a broader view of progress that incorporates those elements that are critical to Canadians, their quality of life, their health and their well-being. Without systematic, accessible information, Canadians are unable to assess, predict and respond to their sustainable development challenges and respond to their sustainable development challenges. This is why Canada wants to play a leadership role in turning sustainable development, thinking into action; by taking the step of establishing a framework in which environmental and economic signals point to the same way. It is a framework, which integrates sustainable development into the workings of the federal government — right across the board. A cornerstone of Canada's foreign policy is global progress on sustainable development issues.

Canada is well positioned to participate in the resolution of these issues through activity in many key intergovernmental organisations, both within and outside the United Nations system. Canada has therefore developed many international agreements with sustainable development objectives, inside and outside the UNCED context; which has been discussed in detail as follows:

(a) Protecting the Biodiversity

Canadian governments undertook to fulfill their obligations under the Convention on Biological Diversity (The Biological Convention) well before the ratification. The Canadian

Biodiversity Strategy was prepared by November 1994 in which different responsibilities over natural resources has endorsed a follow-up plan. The development of this strategy is a co-operative effort by governments, with an advice provided by the Biodiversity Convention Advisory Group, which consists of representatives from a variety of sectors including environment, parks and wildlife, forestry, fisheries, Agriculture, Mining, Biotechnology, Law, Academia, Business, Labour and Indigenous People.

Federal, provincial and territorial governments, through the CCME, the Canadian Parks Ministers' Council of Canada, have developed a joint commitment to complete Canada's network of protected areas. They are cooperating to expand park systems and to protect special spaces and species, with a goal set aside 12% of the country as protected space.

Therefore, Canada has taken the initiative to apply to the United Nations, Educational, Scientific & Cultural Organisation (UNESCO) to designate a proposed areas as the biosphere reserves- which will serve as biodiversity conservation and sustainable development sites; representing the planet's important ecosystems i.e., in accordance to the formalities of applying to UNESCO whereby the people and organisations of the area have the willingness and means to support the proposal and if so; then the area joins the world network of over 400 biospheres reserves.

The core of a Biosphere Reserves is that it is a protected area, such as park, which serves as a reference point on the natural state of the ecosystem, and is surrounded by a buffer zone. The large outer part of the reserve, where most of its resident live and work, is called the area of cooperation. The organisations and volunteers demonstrate the greatest scope of sustainable development, to implement projects that address local needs at the same time paying attention to the broader themes that reflect the interrelationships of ecosystems, regions and countries around the biosphere.

The Canadian system of biosphere reserves began in 1978, with the designation of Mont Saint-Hilaire in Quebec, and ten more reserves since have been added across seven of Canada's provinces. The Successful projects include the voluntary development of forested

corridors, monitoring camps for children, and naturalization of grazing lands, promotion of local products in tourist restaurants and other efforts to support rural economies.

The Canadian Biosphere Reserves Association (CBRA), a non-profit organization formed by members of biosphere reserves, and supported in part through Parks Canada and Environment Canada, provides national coordination of Canada's biosphere reserves.

Conserving Biodiversity in Canada: Conserving Areas of Ecological Importance

Canada has seen unprecedented growth in its federal, provincial and territorial networks of protected areas over the past 10 years. Over 24 million hectares of land — an area the size of the United Kingdom - have been added, ranging from small parks to huge wilderness areas.

Five new national parks have been created, encompassing more than 66 000 km² of Arctic and Boreal landscapes. Interim protection is in place for another 51 300 km² of land, which will become four new parks once the agreements are in place. All of these parks were created through agreements with First Nations communities.

Canada continues to expand the List of World Heritage Sites recognized for their universal value. New sites were added in Quebec and Nova Scotia. Waterton Lakes National Park in Alberta is now on the List as part of the Waterton/Glacier International Peace Park World Heritage Site. British Columbia's Tatshenshini-Alsek Provincial Park was added to the Kluane/Wrangell-St. Elias/Glacier Bay World Heritage Site, making it the largest natural World Heritage Site on the planet.

The United Nations Educational, Scientific and Cultural Organization declared five natural areas in Canada, including British Columbia's Clayoquot Sound, Biosphere Reserves. To strengthen the program further, the Canadian Biosphere Reserve Association was formed in 1997.

The federal *Income Tax Act* was amended to strengthen the ability of Canadians to contribute personally to conserving biodiversity. As a result, there have been more than 265 donations of private land made through the Ecological Gifts Program, protecting over 21 000 hectares of wildlife habitat.

To further strengthen the program, the Canadian Biosphere Reserve Association was formed in 1997.

(b) The United Nations Framework Convention on Climate Change

The Canadian governments and representatives of major groups, particularly industry, have been pursuing the domestic implementation of the United Nations Framework Convention on Climate Change through the quick start agenda on climate change announced at UNCED. Canada has ratified the convention and is committed to adopting measures to mitigate climate change, adapt to its possible effects, increase public awareness and scientific understanding of climate change and possible responses, and work together with other countries in all of these areas.⁴

The Government of Canada established the Climate Change Action Fund (CCAF) in the 1998 federal budget, as part of Canada's commitment under the United Nations Framework in Climate Change, and the potential obligations arising under a completed Kyoto Protocol. Canada remains committed to meet its climate change objectives set in the 1997 Kyoto Protocol- to reduce green house gas (GHG) emissions to 6% below 1990 levels by the 2008-2012 periods. The Government of Canada has invested \$1.1 billion in action on climate change over five years (2000-2005) by taking most of its action to reduce GHGs at home, working closely with provinces and territories, businesses and industry, academia, non-governmental organisations, municipalities, and individual Canadians.

Canada has established a 'national goal to stabilize the net emissions of greenhouse 'gases not controlled by the Montreal Protocol at 1990 levels by 2000' as a first step towards this end. Canadian governments have joined with major groups and individuals to develop and implement actions to achieve that goal with various initiatives that the Canadian government has taken. Canada's National Action Strategy on Global Warming is one of the strategies that the Federal Government has taken, whereby, all the actions will be based on the principles of supporting technologies that reduce greenhouse gases (GHG) emissions.

Technology Early Action Measures (TEAM), which is a component of CCAFhas, sought to take early action on climate change by including supporting technologies that reduce greenhouse gas (GHG) emissions. By January 2001, \$700 million in projects that included 50 domestic and 17 international initiatives were approved. Of that amount, more

⁴ www.canada and the world.gc.ca

than \$500 million came from the private sector and \$90 million from provincial territorial, municipal, and foreign governments.

The new system is a public-private partnership between Sudbury and Toromont Energy. It uses high- efficiency, natural gas-fired co-generation to supply heating and cooling to several buildings in the city's downtown core. The new system has replaced older, less efficient equipment, while feeding electricity into the provincial grid. Electricity provided by the system displaces the generation of coal-fired power, which produces much higher GHG emissions.

Climate Change Action has established Canadian Industry Program for Energy Conservation (CIPEC), which has reduced emissions among its members to 2% below 1990 levels, received \$2.5 million in funding to expand its program to include the electricity-generation, construction, forestry, and upstream oil and gas sectors. The success of CIPEC has been illustrated in the different provinces. The following are some of the examples:

In British Columbia, CIPEC successes include Riverside Forest Products Limited, Canada's largest producer of softwood, plywood, and veneer. In New Brunswick, CIPEC successes include a cogeneration facility in Edmunston, Nexfor Inc. that also produces electricity and usable heat. The company's wood products plant has reduced fuel costs 75% compared to 1996 levels, by replacing fossil fuels, such as oil, gas and coal, with wood waste. In 1998, Nexfor also reduced its GHG emissions 23.1% from 1990 levels, through energy efficiency projects and by replacing fossil fuels with biomass-energy produced from plant and wood materials. In Saskatchewan, Weyerhaeuser Canada completed a \$315- million project at its Prince Albert Pulp and Paper plant, which features several environmental and economic benefits of converting an existing recovery boiler into a wood waste boiler, and reduce purchases of natural gas and electricity. The Prince Albert plant achieved energy self-sufficiency, eliminated the land filling of waste wood, and dramatically reduced GHG emissions.

In Northwest Territories, BHP Diamonds Inc. operates Canada's first diamond mine, located 200 kilometers south of the Arctic Circle. At the EKATI Diamond Mine, BHP recovers waste heat from their generators to produce building heat and conserve fuel. Exhaust stacks on the generators are specially insulated to reduce the demand for heat from diesel heating boilers, thereby reducing fuel consumption. An ongoing preventative maintenance

program ensures the generators to operate as efficiently as possible and the mine conserves electrical power by using energy-efficient lighting, motors and diamond recovery processes.

Canada is one of the few countries with the expertise and computing capacity required to develop and apply advanced climate models such as the Global Climate Models (GCM). It is a powerful computer program that incorporates physical processes to simulate as accurately as possible, the functioning of the global climate system. The Canadian GCM is one of a few such models being used by the Intergovernmental Panel on Climate Change Data Distribution Centre for international research into climate change impacts. Canada has also been researching the effect of climate change on fire in the Boreal forest by using daily data from the Canadian GCM and the Canadian RCM (Regional Climate Model) in the calculation of fire danger scenarios.

Canada has also issued a draft of the first National Report on Climate Change for discussion to provide a snapshot of current actions by Canadian governments, NGOs, communities and the private sector. It is supposed to help a common understanding on progress and provide a solid foundation on meeting domestic commitments and international obligations.

(c) Sustainable Development through International Leadership in Pollution Prevention

Pollution prevention is a priority for the Government of Canada's sustainable development agenda. Recognizing the need for international collaboration to address this issue, Canada has taken a lead in promoting pollution prevention as a cornerstone of sustainable development ⁵such as in the case of:

- Persistent Organic Pollutants (POPs)
- Ozone.

Persistent Organic Pollutants (POPs)

Canada has played a leadership role in the development of the global, legally binding Stockholm Convention, including becoming the first country to ratify the agreement in May 2001. Canadian leadership in developing the Stockholm Convention is recognized by the

⁵ www.dfait-maeci.gc.ca

global community. Scientific research undertaken in Canada helped to place POPs on the international environmental agenda.

Canada hosted the first international negotiating session for the Convention in Montreal in 1998, and the expert guidance of the Canadian Chair of the International Negotiating Committee was critical to the successful conclusion of the global agreement. In addition, Canada was the first country to make a specific commitment of funds to support the Convention by establishing the \$20 million Canada POPs Fund with the World Bank for capacity building in developing countries and countries with economies in transition. The fund has already assisted a number of countries towards signing and ratifying the Convention. Canada is currently working to encourage other countries to ratify and implement the Stockholm Convention, which is ultimately the only means to protect Canada from transboundary flow of these substances through the atmosphere.

As with many of Canada's successful sustainable development initiatives, POPs was and is informed by strong horizontal partnerships and consultation with federal, provincial and territorial governments, non-governmental organizations, industry, and northern aboriginal communities.

Ozone Annex

It was signed by Canada and the United States of America in 2000, the Ozone Annex set in place, for the first time in a decade, a new bilateral agreement to address transboundary air pollution. The Ozone Annex breaks new ground by reflecting, in legal terms, that the ozone air quality in each country is transboundary in scope, and by defining a region in the eastern half of each country to which the commitments in the Annex will apply. Together, these regions represent about 40 percent of the population of the United States and over 50 percent of the population of Canada.

Agenda 21

Canada has signed Agenda 21 in the Earth Summit held in Rio de Janeiro, 1992. The Agenda 21 is a comprehensive consensus-based plan that gives equal weight to a broad set of issues, including combating poverty, the protection and promotion of human health, the protection of freshwater resources, and strengthening the role of major groups. Among the

group identified are the Indigenous People, Women and Youth. It seeks to provide guidance for business and government policies and for personal choices; emphasizing the need for global partnerships in pursuit of sustainable development, leaving it up to individual countries to determine appropriate follow-up of 1992. Agenda 21 emphasizes the need for global partnerships in pursuit of sustainable development, leaving it up to individual countries to determine appropriate follow-up.

In recognition of women as an equal partner Canada has implemented the Beijing Plan for Action through the Canada's federal plan; *Setting the Stage for the Next Century: The Federal Plan for Gender Equality*. The Federal Plan is a commitment to consider the gender issue in the development of legislation and policies related to environment and sustainable development, and strengthen the full participation of women as equal partners of sustainable development. Canada has ratified the *Convention on the Elimination of All Forms of Discrimination Against Women* and has also presented its national third report in 1997.⁶

In accordance to the Agenda 21, Canada has developed many international agreements with sustainable development objectives, inside and outside the UNCED context. The Arctic Environmental Protection Strategy (AEPS) a cooperative program of the eight Arctic states, was established to protect their common environment and promote the sustainable use of Arctic natural resources for the benefit of all people living in the Arctic, including future generations.

The Northern Dimension of Canada's Foreign Policy (NDFP) which has been implemented in June 2000; has set out a vision for Canada in the circumpolar world, based on co-operation with Northerners and the circumpolar neighbours. The northern foreign policy promotes Canadian interests and values in addressing the issues that they have in common with their northern partners.⁷

The NDFP identifies five Canadian priorities in the circumpolar world: strengthening the Arctic Council; establishing a University of the Arctic and a Canadian and circumpolar

⁶ www.un.org/commission n sustainable development

⁷ www.arctic-council.org

policy research network; working with Russia to address its northern challenges; promoting sustainable economic opportunities and trade in the North; and, increasing northern co-operation with the European Union and circumpolar countries. Various federal departments involved in the Arctic work together to achieve these priorities, in partnership with provincial, territorial and international governments, and northern stakeholders.

It is for the purposes of the NDFP, Canada's North comprises the Yukon, the Northwest Territories and Nunavut, plus Nunavik (northern Quebec), Labrador, and the Canadian "mid-North" - large areas of British Columbia, Alberta, Saskatchewan, Manitoba, Ontario and Quebec that reflect northern conditions.

In September 1996, the Arctic countries signed a declaration establishing the Arctic Council. The Council, (to be chaired by Canada for the first term) was the intergovernmental forum for regional issues. Canada engages residents of the Arctic to identify goals and priorities for a sustainable development program for the Arctic. Canada commits the eight arctic circumpolar states to a program of environmental protection and sustainable development that includes the indigenous peoples of the region.

2.CANADA'S ENVIRONMENTAL POLICY

The Canadian Constitution makes no direct reference to the environment so while Canadian governments struggle to divide their institutional and legal capacities to protect the environment. The Green Plan implies greening of the Budget i.e., reforming the tax and expenditures policies announced in the national budget to re-orient them towards protection of the environment. The change in the government budget is one of the several ways to build-in environmental considerations in economic policy. The Canadian Constitution divides powers between the national federal government, and the provincial governments. There is a special case for the aboriginal First Nations, who have an "inherent right to self government". The Yukon and North West Territories derive their powers from federal statute, and municipal governments derive their powers from federal statute, and municipal governments derive their powers from the laws of the province in which they are located.

Across Canada, there has been a shift to more integrated approach towards decision-making. The processes are beginning to reflect the value placed on the natural capital. The approach has been broadened to environmental protection and developed a wider range of tools to achieve the objectives. The importance of partnerships to bring about change, nationally and internationally has been recognized.

In 1971, Canada became the second country to create a distinct environment ministry. Provincial and territorial governments followed suit. The activities of these departments have varied over time in response to evolving policy priorities and fiscal restraint. Canadian environment ministers and departments have worked together through the Canadian Council of Ministers of the Environment (CCME) to develop common approaches to environmental priorities. A recent focus of work for the CCME has been to harmonize environmental protection regimes in Canada to achieve the highest level of environmental quality for all Canadians.⁸

Within governments, there has been an improvement in the integration of economic, environmental, and social considerations into broader decision making. For example, the federal government has established a Commissioner of the Environment and Sustainable Development and introduced a requirement in law for federal government departments to create and pursue sustainable development strategies that include reports to Parliament. The inaugural report of the Commissioner noted that in many areas the federal government's performance falls short of its stated environmental and sustainable development objectives and that there is an implementation gap—a failure to translate policy direction into effective action.

Division of powers – federal and provincial:

The federal and the provincial governments have both wide powers to tax and operate expenditure programs as well as the powers to enact economic instruments for environment protection, but neither level of government has an unbridled power to enact any instrument for any purpose. With respect to the environment, the provinces and the federal government have

⁸ www.ccme.gc.ca

limited powers to regulate, based on “heads of power” over which they have exclusive authority. However, as long as the laws’ “dominant and most important characteristic” is within the heads of power of the level of government passing the law, a provincial law in relation to a matter of provincial jurisdiction may validly affect a matter that comes within federal jurisdiction and federal law may impact on an area of provincial jurisdiction. Municipalities and other regional or local governments have no constitutional realm of power, but can be delegated powers from either level of government.⁹

Government must take decisions about policies in the context of the constitutional limits to their powers. These jurisdictional limits relate to geographic and subject matter. Provincial laws apply only within provincial boundaries, whereas federal laws have national application. The division of powers between the federal and provincial governments regarding the subject matter is based on the Constitution Act, 1867 as interpreted by the courts. If the federal government’s legislation goes beyond the subjects over whom the federal government has jurisdiction, the law can be challenged.

Also, all Canadian governments are bound by constitutional rules that govern relations between government and citizens. Laws cannot limit rights protected by the Canadian Charter of rights and Freedoms (the “Charter”) unless the limitations are reasonable, prescribed by law and “demonstrably justified in a free and democratic society”. If Charter rights are infringed; the Courts can strike down laws that create systems of economic instruments the laws.

Under the Constitution Act 1867, the federal government has the power to raise revenue through both direct and indirect taxation. This potentially could justify federal imposition of some types of discharge fees. However, federal charges that are part of a system of regulation will not necessarily be valid merely because they generate revenue. The Canadian approach to the limits of the taxing power is much more restrictive than in the United States where a tax is valid even if aimed purely at regulation with negligible revenue generating potential. The taxing power cannot be used to indirectly control an area of provincial jurisdiction, but taxes of uniform application throughout Canada can be to

⁹ Papers for Workshop held “*Green Budget Reform in Canada and India*”; International Institute for Sustainable Development (IISD), Tata Energy Research Institute (TERI), Pembina Institute for Appropriate Development, Manitoba (March 9-15, 1998) p6

discourage activities such as smoking and drinking. The Courts have upheld extremely high taxes for foreign publishers of Canadian magazine editions aimed at protecting Canadian publishers.

Federal Powers:

The legislative powers of Parliament as they relate particularly to the management of environment affairs are either paramount to province's authority, or shared with the provinces, on the following issues:

- Federal lands and Indian reserves (includes administration of any non-provincial territories);
- Taxation and spending (taxation powers and leverage through expenditures policies);
- Interprovincial and international trade and commerce (environment control is an indirect result of regulating trade under federal authority);
- Census and statistics (information used to influence national standard setting);
- Navigation and shipping; seacoast and inland fisheries (indirect vehicles for federal environmental regulation);
- Agriculture and immigration (concurrent with provinces);
- Criminal law (allows Parliament to legislate the protection of human life and safety: facilitates the development of national standards);
- Railways and other works and undertakings of an inter- or extra- provincial nature and works of multi-provincial or national importance (environment control is an indirect result of regulating certain industries or transportation modes);
- Treaty powers (the federal government is the sole Canadian signatory authority and implements Empire treaties); and
- General powers- laws for the Peace, Order and Good Government of Canada (Parliament can exercise authority under emergency, residual and national dimension doctrines)¹⁰

Provincial Powers:

Provincial governments also have powers, but it is limited, as it cannot raise revenue through direct taxation. According to the Constitution Act, 1867, Part VI, 'Distribution of

¹⁰ Ibid

Legislative Powers', as amended by subsequent Constitution Acts including the Constitution Act, 1982 states about the exclusive powers of the Provincial Legislatures as:¹¹

- Public lands; the exploration for development, conservation and management of non-renewable natural resources and forestry resources in the province for generation and production of electrical energy.
- Property and civil rights
- Local works and undertakings
- Municipal governments and facilities
- All matters of a local or private nature;
- Education; and
- Agriculture and immigration (concurrent with Parliament).

From a constitutional viewpoint, federal powers in relation to environmental protection are not as clearly established as those of the provinces. Nevertheless, the constitution contains a number of federal heads of power on which economic instruments for environmental protection could be established.

The most important basis for federal involvement in environmental matters is the Peace Order and Good Government power under which the federal government has the authority to establish economic instruments for controlling pollutants that may cross provincial boundaries. It also empowers the federal government to deal with intraprovincial aspects of an environmental problem if provincial inaction may have adverse extra provincial results. However, the Peace Order and Good Government power must be used in a way, which is reconcilable with the Canadian constitution's division of powers and does not unnecessarily entrench on provincial powers.

On the basis of the Peace Order and Good Government power the federal government could likely to establish economic instruments to deal with problems that have substantial Interprovincial elements. Economic instruments, which would probably be justified under Peace Order and Good Government, include:

Tradable permits, emission fees or products charges for sulphur dioxide emissions and fossil fuels production or import;

¹¹ Ibid

Deposit refund systems on persistent toxic substances or pollution precursors, which lead to Interprovincial pollution;

Tradeable permits for solvent production and import or product charges for solvents; and

Tradeable permits for ground level ozone precursors from both stationary and mobile sources to the ozone problem.

Federal action is more likely to be upheld in areas where there is a significant transboundary dimension to the problem and where there are inherent difficulties with provincial governments regulating a problem, for instance, in imposing product charges for solvents and products containing solvents or in establishing a substance deposit system. Since there is some doubt as to the application of Peace Order and Good Government in areas which often been seen as provincial jurisdiction, the federal government should make some attempts to establish the above systems through Interlocking Legislation. However if negotiations are unsuccessful it should move unilaterally.

Federal Provincial coordination

Within Canada the distribution of responsibility between federal, provincial and territorial governments for sustainable development issues is complex. This is a source of constant challenge when Canada prepares for and participates in the negotiation of international legal instruments and in the subsequent implementation of those instruments. While the federal government conducts international treaty negotiations on behalf of Canada, responsibility for environment and sustainable development issues falls within the legislative jurisdiction of both the federal and provincial levels of government. This shared jurisdiction often requires federal and provincial governments to cooperate closely in order to fully implement Canada's international obligations. To foster jurisdictional cooperation and shared decision making on environmental protection in environment related sectors such as forest, energy and mines, parks and fisheries Council of Ministers have been established.¹²

¹²Skogstad, Grace and Kopas, Paul's "*Environmental Policy in a Federal System: Ottawa and the Province*" in Robert Boardman (ed), *Canadian Environmental Policy: Ecosystems, Politics, and Process*; Oxford University Press; (Toronto, Oxford, New York; July, 1991)

In Canada, key National sustainable development coordination mechanisms include the Federal Interdepartmental Committee; the National Round Table on Environment and the Economy; the Canadian Council of Ministers for the Environment; and the Commissioner of Environment and Sustainable Development. These mechanisms coordinate Canadian activities related to the implementation of Agenda 21. Many ministries and agencies are involved including Foreign Affairs; Environment Canada; the Canadian International Development Agency; Finance Canada; Agriculture Canada; Industry Canada; Canada Mortgage & Housing Corporation; Natural Resources Canada; the Auditor General; Heritage Canada; and the International Development Research Centre.

3.CANADA'S ENVIRONMENTAL LEGISLATION

Canada's Green Plan of 1990 constitutes the country's first environmental bill of rights. On December 11, 1990 when the government of Canada launched Canada's Green Plan for a healthy environment. It not only marked the country's first environmental bill of rights but also is an important milestone in Canada's transition to Sustainable Development. The Green Plan was based on an extensive national consultation process, included initiatives and programs regarding the protection of the Ozone layer, and research on global warming, sustainable forest management, the protection of Arctic ecosystems, the creation of additional parks and protected spaces, the clean-up of toxic sites and bodies of water, and help for developing countries in their sustainable development efforts. Across the country communities received funding for projects such as water conservation, wildlife habitat restoration, and waste reduction and recycling.¹³

The Green Plan represented a new way of thinking, which is not just a "react and cure" environmental agenda. It incorporated the existing environmental agenda into a framework for sustainable development. The plan was made with a budget of \$3 billion for five years. The then Minister of Environment, Robert de Cotret praised the Plan as 'the most important environmental action plan ever produced in Canada'

¹³ IVanderzwaag, David and Duncan, Linda in "*Canada and Environmental protection :Confident Political Faces, Uncertain Legal Hands*"; Ibid

The Prime Minister and his Cabinet endorsed a Guide to Green Government, released in 1995. It emphasizes that sustainable development is an essential goal of public policy and that our economic health depends on our environmental health. A Guide to Green Government highlights that responsibility for sustainable development is shared across government and provides the framework for departments to prepare their sustainable development strategies.

The government of Canada has charted a new way of recognizing to integrate sustainable development into the government and had therefore created a Commissioner of the Sustainable Development to hold government accountable for greening its policies, operations and programs. The independent Canadian Environmental Assessment Agency was set up to integrate environmental considerations into project planning, and place guidelines to help government green its day-to-day operations. Moreover, sustainable development integrates the economic as well as the environmental goals; which fits the Liberal tradition of social investment as a sound economic policy. Preventive environmental care is the foundation of such Liberal approach to sustainable development and this is sought to achieved by integrating all the federal departments; to adopt and act on the economic and environmental agendas that converge.

The Federal Sustainable Development Strategies launched in 1995, was passed after amending the Auditor General Act and had established the position of Commissioner of the Environment and Sustainable Development who was appointed and assumed his duties in 1996. This came into force in December 1995, whereby the federal departments and certain agencies are required to prepare sustainable development strategies and action plan which required the Auditor General to receive petitions from the public on sustainable development matters and to forward them to the appropriate minister for response. On behalf of the Auditor General, the Commissioner monitors and report annually to Parliament in a “Green” report on the extent to which departments have met the objectives of the sustainable development

strategies and implemented their action plans, and on the status of petitions received. The strategies are updated once every three years.¹⁴

The main objectives of the Federal Sustainable Development Strategies

It is to translate the core concept of sustainable development to concrete terms. It is also an important point in its implementation. These objectives are said that they are not intended to limit the scope of departments' sustainable development strategies, but rather serve as a common starting point in their preparation. Each department uses the lens of its own mandate when examining the concept of sustainable development and in developing the objectives and action plans that will underpin their strategies. Through this process, the objectives will be broadened to include a fuller range of economic, environmental and social considerations.

Ensuring renewable resources development is sustainable:

Renewable resources development is sustainable if it remains within the capacity of the resource base to regenerate itself, and respects the integrity of ecosystems on which the resource depends. A strong natural resources sector can only be supported within the framework of sound ecological and environmental practices. In recognition of the full range of the use and value, renewable resources should be managed on an integrated basis including commodities production, habitat for wildlife, parks and wilderness. The National Forest Strategy, the update of the Agriculture-Environment Strategy, and the Ocean Management Strategy should provide important foundations for the sustainable management of renewable resources.

Ensuring efficient use of non-renewable resources.

The other resources — minerals, oil, gas, and coal — are not renewable; but the role of these resources in a sustainable development strategy can be assured by sound policies which encourage efficient extraction and manufacturing processes and uses as well as by policies and programs which stimulate, where appropriate, recycling or the development of substitutes. Through the implementation of its Program Review, such as, reorienting energy

¹⁴ www.oag-bvc.gc.ca

policy from a traditional focus on supply to an increased emphasis on efficiency alternative and renewable energy sources, the environment and sustainable development. by Natural Resources Canada. The Whitehorse Mining Leadership Council Accord also sets a course towards sustainable development in the mining sector.

Sustaining Our Natural Resources — Sustainable Jobs, Communities and Industries.

Much of Canada's wealth is based on its rich endowment of natural resources. For the many Canadians dependent on the natural resource sector, sustainable development of the resource base is linked not only to job security but also to a way of life that has supported their communities for decades. Thousands of Canadian communities and one in thirteen Canadians depend on a productive resource base and healthy ecosystems for their employment in the resource industries, tourism or recreation. More than one-quarter of Canada's trade is dependent on the resource sector.¹⁵

The main aims and objectives of the strategy is to ensure that the-

Health of Canadians and of Ecosystems are Protected.

Ecosystems receive the wastes produced by individuals' and communities' industrial, agricultural and other activities. Although the environment can absorb some waste, certain chemical residues can remain in ecosystems for years and can be found in the tissues of animals and plants — some of which are the food we eat. The challenge posed by sustainable development is to alter waste discharge characteristics and reduce quantities of waste to protect the environment and human health. This is best accomplished through application of pollution prevention methodology and recycling of products. Preservation of unique and representative areas and species maintains the options and the flexibility for the future to respond to unforeseen and changing environmental conditions as well as social and economic demands. Further, where there are dangers to human and ecosystem health, due to both natural and human causes, it is critical that the individuals, communities, and industries affected be warned about the nature of the dangers so that mitigative actions can be taken.

¹⁵ www.acdi-cida.gc.ca/sustainable_development

Adopting a pollution prevention approach

. Preventing pollution and waste rather than dealing with their consequences after-the-fact, can make a significant contribution to environmental protection. Pollution prevention involves the use of processes, practices, materials or energy that avoid or minimize the creation of pollutants and waste and reduce overall risk to human health or the environment. The draft "Pollution Prevention: A Federal Strategy for Action" sets priorities for the federal government to internalize pollution prevention within Canadian society.

Protecting representative areas.

Protected spaces are home to many forms of plant and animal life, are the setting for many significant events in Canada's history, and are often a focal point for recreation and tourism activities. Representative areas are also important indicators of overall ecosystem health. Canada's objective is to protect a representative sample of each of the country's natural regions by the year 2000, to accelerate the protection of marine natural regions, and to accelerate the identification and protection of critical wildlife habitat. The federal government has also established the goal to protect and promote Canada's historical heritage.

Warning and responding.

Canada is vulnerable to natural disasters as severe as those experienced around the world. Landslides, tornadoes, forest fires, severe wind and hailstorms, floods and avalanches are examples of these significant geophysical and meteorological events. Also, despite developments in processes and approaches to prevent and to minimize the hazards associated with some human activities, accidents and unforeseen events do occur. Therefore, for both natural and human-caused disasters, an effective warning and adaptive response capability is critical for reducing their social and economic costs.¹⁶

¹⁶ www.hc-sc.gc.ca/sustainable-development/overview/straegies

Greening of Government Operations

The Federal Departments differ in terms of their policy mandates, but all departments require operational support to deliver them. In operational terms, the federal government is Canada's largest single enterprise. It has some 224,000 employees, 21.4 million hectares of land under direct management, 59,000 buildings and facilities, more than \$8 billion in annual purchases of goods and services, and 25,000 motor vehicles not including Crown corporations.

Government operations have a considerable impact on Canada's sustainable development prospects. And the environmental performance of federal government buildings, facilities and operations is subject to increasing scrutiny. Measures that conserve energy and water, reduce solid waste, improve fleet management, and encourage the purchase of environmentally sensitive products make good economic and environmental sense.

Sustainable Development in Government Operations (SDGO) is a government wide initiative whose goal is to achieve coordination of the federal effort to green government operations. To facilitate the integration of the principle of sustainable development into all Federal Government operational decision making, the SDGO coordinate role is to involve direction setting, enablement of action, and government-wide reporting of concrete results.

Departments are encouraged to adopt best practices and targets in seven priority areas of operations:

- Energy efficiency
- Human resource management
- Land use management
- Procurement
- Vehicle fleet management
- Waste management
- Water conservation and wastewater management

Through its Greening of Government Operations initiative, the Federal Government has established guidelines for all federal departments to follow to integrate environmental considerations into their operations. The main elements of the initiative are:

- A commitment to meet or exceed federal environmental statutes and regulations, and the emulation of best practices from the public and private sector;
- Inclusion in departmental sustainable development strategies, of plans that incorporate principles for environmental management systems and best practices to improve environmental performance in procurement, construction and operation of buildings, fleet management and land utilization.; and
- Implementation of environmental management systems

The aim is for each department is to integrate sustainable development into its business, and into how it does its business through the strategies of sustainable development.

4.CANADA'S ENVIRONMENTAL LEGISLATION

The amicable working relationship between federal and provincial governments in setting environmental standards and overall policies owes much to the existence of long standing mechanisms of intergovernmental consultation and co-operation among first ministers (of the environment), as well as among bureaucratic officials in federal and provincial departments of the environment.

These federal-provincial links are buttressed by advisory committees and multi-sectoral inputs. It is these Multisectoral inputs to government decisions has been provided by "Round Tables" that bring stakeholders together such as:

- Canadian Council of Ministers of the Environment
- Council of Energy Ministers
- National Round Tables on Environment and Economy
- Municipalities and First Nations

Canadian Council of Ministers of the Environment (CCME)

The CCME has its origins from the Resources for Tomorrow Conference of 1961 when it was recommended that a permanent body should be created in the field of renewable resources for consultation, cooperation and coordination. Originally, CCME was known as the Canadian Council of Resource Ministers, which was established formally in 1962. In 1971, the Council was expanded to include Ministers of the Environment in recognition of the close relationship between resource development and environmental protection. During 1970s attempts were made to have a balanced agenda of sectoral issues including wildlife, forestry and the environment.

As environmental issues became more prominent in the late 70s, the Council's agenda became increasingly focused on environmental issues. In 1985, the Forestry Ministers decided to separate from the Council and were soon followed by the Wildlife Ministers. As a result of this change, the Council became known as the Canadian Council of Ministers of the Environment in 1989. This evolution clearly illustrates the growing recognition of the importance of environmental concerns over the last 30 years.¹⁷

In its current form, the CCME Council is comprised of 13 representatives who are the Environment Ministers from the federal, provincial and territorial governments. The Council usually meets twice yearly to discuss national environmental priorities and determine the work to be carried out under the direction of the CCME.

In 1990 a permanent secretariat was set up in Winnipeg in order to assist in the work of the CCME. A Management Committee also exists for this purpose. The Deputy Ministers of each environment department also have a committee within the structure of the CCME where the majority of negotiation occurs before a decision is sent to the Ministers for approval.

¹⁷ www.ccme.gc.ca

Two steering committees (the Environmental Protection Committee and the Strategic Planning Committee) made up of senior staff from each jurisdiction, were originally created to provide on going advice to the Council and coordinate specific CCME projects assigned to intergovernmental task groups.

A third steering committee, the Lead Representative Committee on Harmonization has been recently added to address the issues of harmonization. Each steering committee oversees the activities of several task groups.

CCME members work cooperatively to achieve specific goals, and to reach consensus on proposed national policies, programs, standards and guidelines. Completed work includes:

- Developing policies and programs to reduce the amount of solid waste going to landfills;
- Developing and adopting guidelines and codes of practice in areas such as water quality or the storage of underground gasoline tanks;
- Developing national plans, which support international agreements such as the Organization for Economic Cooperation and Development (OECD) Accord, which limits nitrous oxides and volatile organic compounds.

The CCME has also been responsible for the publication of many scientific, technical and informational documents each year, as a result of the task groups' work. These reports are distributed on request to interested parties nationally and internationally, contributing to shared knowledge and environmental issues on both the national and international scene. This "scan" of environmental issues provides early advice to ministers and steering committees, helping to determine CCME priorities for action.

Council of Energy Ministers

In most respects the annual Energy and Mines Ministers Conference parallels the CCME, though it does not have a permanent secretariat. The main difference however, is that the EMMC involves its stakeholders in its annual conference. As a result, the

the Conference, which can have over 200 in attendance, works on a cost recovery basis with delegates being required to pay a registration fee in order to attend. The conference is serviced by two permanent advisory groups: the Advisory Committee on Energy (ACE), co- chaired by the federal deputy minister and the deputy minister of the acting chair province; and the Intergovernmental Working Group on Minerals (IGWG), co chaired at the assistant deputy minister level. In 1992 the Whitehorse Mining Initiative was created which carried a large environmental component and identified an approach for dealing with interconnectedness.¹

National Round Table on the Environment and the Economy

The National Round Table on the Environment and the Economy is an independent agency mandated by the Parliament of Canada and reports directly to the Prime Minister. Created in 1988, it acts as a catalyst in identifying, explaining, and promoting in all sectors of Canadian society and in all regions of Canada the principles and practices of sustainable development. Its members (comprising individuals from government, business, science, environmental groups, academia, labour unions, and indigenous peoples) are appointed by the federal government and meet as a group four times a year to determine priorities for action, review current work, initiate new programs, and promote a better understanding of the concept of sustainable development. Decisions are reached by consensus. There are also provincial and local round tables across Canada.

Round Tables on the Environment and the Economy have been Canada's principal institutional response to the challenge of sustainable development. While diverse in both form and function, round tables on environment and economy share three common features.

They are:

- Multi-stakeholder processes;

¹ Papers for Workshop held "*Green Budget Reform in Canada and India*"; International Institute for Sustainable Development (IISD), Tata Energy Research Institute (TERI), Pembina Institute for Appropriate Development, Manitoba (March 9-15, 1998) p17

- For the promotion of sustainable development;
- Through consensus-based decision-making.

The National Round Table and most provincial Round Tables include cabinet ministers as members and report to the Prime Minister or Premier. Round table membership ranges from 15 to 28 members and all have time secretariats headed by an executive director reporting to a part time chair.

Round tables are intended to be a forum in which senior decision-makers can meet to candidly discuss environment-economy issues and make recommendations directly to the First Ministers of their respective jurisdictions. Membership is generally drawn from government, large and small industry, environmental organisations, labour, academia and aboriginal peoples, bringing together traditional adversaries and diverse perspectives, rather than people of like minds. The Round tables usually meet 4-5 times per year plus they often organize and participate in a variety of public consultations on specific topics.

The development and recommendation of strategies for sustainable development is their primary purpose and focus. These strategies have included: comprehensive integrated strategies for sustainable development; cross-sectoral strategies on information, science, or economic instruments; or sectoral strategies on forests, minerals, land and water. These innovative multi-stakeholder organizations were established in every province and territory as well as at the national and some municipal levels. Some Round Tables were established for a specific purpose and period of time and no longer exist, while many are on-going and the National Round Table has now been established through an Act of Parliament.

The National Round Table on Environment and Economy (NRTEE) holds an annual Greening of the Budget workshop a few months before the budget. The chair of the NRTEE forwards recommendation to the Minister of Finance.

Municipalities and First Nations

In additional to the federal, provincial and territorial levels of government, inter-jurisdictional cooperation for environmental protection has been further complicated by the emergence of municipal governments and aboriginal “First Nations” governments.

The increased complexity can be illustrated by an example concerning land use planning in the Winnipeg capital region, which includes the city of Winnipeg, two towns and thirteen municipalities. This so-called urban sprawl has resulted in agricultural land being taken out of production and converted to residential use and increased pressure for the provision of infrastructure support including roads, transportation, water supply, sewage treatment and health services. For instance; the Fraser Basin Management Program in British Columbia was established in May 1992 and brings together four orders of government – federal, provincial, local and First Nations. It was one of the first inter-jurisdictional structures to recognize the “first Nations” as an order of government. The Fraser Basin covers 25% of British Columbia, an area the size of Great Britain and generates 80% of the gross provincial product and is home to 2 million people.²

Cabinet and Ministers

Cabinet is a committee of the minister of the departments of governments, and other elected officials (government house leaders, etc.) It is chaired by the Prime minister, and it is the central body for all decision making in the government. It is here that the balance is struck between political issues, the views of powerful pressure groups, budgetary realities, and all other relevant issues. Once the policy discussions are made, much of the detailed implementation is left to a series of cabinet committees, such as the Treasury Board, which makes final expenditure decisions.

Federal Departments and Central Agencies

² Ibid p18

Following the key departments of the federal governments that are relevant to the policy of the implementation of sustainable development strategies. The first two are considered as “Central Agencies”.

- Department of Finance- in charge of macro economic issues, including overall expenditure and taxation levels, and also responsible for taxation policy
- Treasury Boards- responsible for expenditure decisions.
- Natural Resource Canada- responsible for policy regarding oil and gas, mining for coal and other minerals, and federal energy policy. The provinces have an important degree over natural issues within their own boundaries.
- Transport Canada- responsible for federal policy affecting railroads, air travel, and highways (where the provinces are paramount)

Department of Indian and Northern Affairs (INAC)- Responsible for all federal issues affecting the Yukon and North West Territories and also for issues relating to Canada’s First Nations. The existence of major fossil fuels deposits in the north, and the existence of many unresolved land claims, INAC has a stake in Green House Gs emissions.

- Industry Canada- responsible for industrial development and technology policy, with a key involvement in Green House Gas policy.
- Agriculture-responsible for agricultural policy.

Sustainable Development Strategies and the Commissioner

The Commissioner of the Environment and Sustainable Development is a position within the Office of the Auditor General, created and staffed in 1997. The Commissioner like the Auditor General, reports directly to Parliament rather than to the Minister, and is not part of government policy making. The position is one of the changes resulting from a recent package of amendments to the Auditor General Act. These amendments were enacted to encourage stronger performance by the federal government in the areas of environment and sustainable development.

The role of the Commissioner is to assist parliamentarians in their oversight of the federal government’s effort to protect the environment and foster sustainable development. By providing objective, independent analysis and

recommendations to members of Parliament, the Commissioner helps them to examine the federal government's performance and hold it to account for that performance.

Making the government accountable for greening its policies, operations and programs is a key part of the Commissioner's mandate. It is towards this end that the Commissioner is monitoring and reports to the House of Commons on progress towards sustainable development. The Commissioner also assists the Auditor General in the performance of his duties related to environment and sustainable development issues. More specifically, the Commissioner has responsibilities in four main areas:

-Monitoring Sustainable Development Strategies:

Twenty-four federal departments and selected agencies are required to prepare sustainable development strategies. They need to be tabled in the House of Commons. The Commissioner is responsible for monitoring the extent to which departments have implemented the action plans and met the objectives outlined in their strategies.

-Audits and Special Studies with an Environmental or Sustainable Development dimension:

The Office of the Auditor General has performed over 40 audits during the past decade, with a significant environmental or sustainable development component. Auditing in these areas will increase further under the Commissioner and key issues have been earmarked for special, comprehensive studies.

-Public Petitions:

The Auditor General may now receive Petitions from the public on federal environmental matters related to sustainable development. The Commissioner forwards these petitions to the appropriate minister and tracks responses.

-An Annual "Green" Report to the House of Commons:

The Commissioner reports on a yearly basis on these and other matters related to the environment and sustainable development that the Commissioner believes should be brought to the attention of the House of Commons.

On a yearly basis, the Commissioner reports on environmental and sustainable development matters that she believes should be brought to the attention of the House of

Commons. The reports include chapters on sustainable development strategies, audits, and special studies.

- **1998 Report** dealt with the federal government's efforts in key areas like climate change, ozone depletion, and environmental assessment.
- **1999 Report** examined management of toxic substances and federal-provincial environmental agreements.
- **2000 Report** focused on smog and government support for investments in non-renewable and renewable energy. It also includes follow-ups on ozone-layer protection and biodiversity
- **2001 Report** features a chapter on the state of the Great Lakes and St. Lawrence River basin.

On a yearly basis, Annual report to the House of Commons are made by the Commissioner who reports on environmental and sustainable development matters that she believes should be brought to the attention of the House of Commons. The reports include chapters on sustainable development strategies, audits, and special studies. The Commissioner's staff conducts studies on cutting edge environmental and sustainable development issues. Studies included:

- Canada's international environmental commitments and the extent to which they are being met;
- Environmental issues in the Arctic;
- Managing for sustainable development in both the public and private sectors; and
- Partnerships of federal departments with the provinces, the private sector, or other federal departments.

The first rounds of strategies were tabled in the House of Commons in December 1997, the second round in February 2001. Twenty-five federal departments and agencies are required to prepare sustainable development strategies. The Commissioner monitors the extent to which departments have implemented the action plans and met the objectives outlined in their strategies.

Almost all provincial and territorial governments have, (or are in the process of developing) sustainable development or conservation strategies. Each pursues its own approach to environment-economy integration. Over the last two decades, all provinces and one territory also established environmental assessment legislation. Most require public involvement and provide for an independent body to examine complex or high profile environmental assessments. Jurisdictions often provide for mediation and conflict resolution throughout the assessment process.

The Provincial and territorial governments have also undertaken a number of other initiatives toward integrated decision making. The Commission on Resources and Environment in British Columbia, for example, uses regional land use plans and public participation in decision-making to resolve conflicts and to advance a comprehensive, sustainable approach to natural resources development in the province. Also, in 1992, Alberta consolidated eight environment-related statutes into the Alberta Environmental Protection and Enhancement Act that provides an integrated approach to the protection of air, water and land. Quebec's Ministry of Natural Resources and Ministry of Environment and Wildlife have developed recommendations on integrated resource management, and its application for forestry, wildlife, water and landscapes.

All major groups and governments pursue consensus-based approaches to resolving issues and to address specific sustainable development priorities. For example, in the Action Plans for the Great Lakes, Fraser River, St. Lawrence River, and Atlantic Canada, communities are partners with provincial governments and the federal government to address such issues as environmental protection and conservation.

5. CANADA'S ENVIRONMENTAL INSTRUMENTS

Management of environmental legislation has also evolved; where laws once focused primarily on cleanup and abatement, more recent legislation has emphasized pollution prevention. The exploration of economic tools and regulatory reform as ways to achieve Canada's environmental goals at reduced cost. While fiscal restraint has reduced

funding for environmental programs and services, it has also accelerated the review and abolition of government subsidies that have negative environmental impacts.

Canada has seen new and more open processes as all sectors of society take much greater responsibility for their actions. Many businesses have improved management practices as well as technical processes through the implementation of corporate environmental management systems. They have also taken part in voluntary efforts to address various environmental priorities.

Environmental Assessment

Environmental assessment (EA) is a systematic process to identify, analyze and evaluate the environmental impacts of an initiative. EA is a powerful tool for sustainable development by assisting decision-makers to integrate environmental considerations and public concerns into decision-making.

DFAIT engages in two main types of EA - project environmental assessment and strategic environmental assessment. Project environmental assessment is a requirement under the Canadian Environmental Assessment Act (CEAA) and pertains mainly to initiatives with physical attributes, such as the construction of a building or bridge. Strategic environmental assessment, on the other hand, is a non-statutory requirement under the 1999 Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals and pertains to policy-type initiatives such as foreign policy, trade negotiations, or funding for various programs. While there are similarities between project environmental assessments and strategic environmental assessments, the two are very different and should not be confused.³

Strategic Environmental Assessment

Strategic environmental assessment (SEA) is a systematic process for evaluating the environmental consequences of policies, plans, programs or proposals to ensure that they are addressed on par with economic and social considerations and early in the decision making process. SEA is an important tool in the progress towards sustainable

³ [www.ec.gc.ca/Canadian Environmental Assesment Act](http://www.ec.gc.ca/Canadian%20Environmental%20Assesment%20Act)

development because it provides decision-makers with information that allows them to make better informed decisions.⁴

In June 1999, Cabinet renewed its commitment that policy, plan and program proposals should consider potential environmental effects. More specifically, Ministers expect a strategic environmental assessment of a policy, plan or program proposal to be conducted when the following two conditions are met:

- i. The proposal is submitted to an individual Minister or Cabinet for approval; and
- ii. Implementation of the proposal may result in important environmental impacts, either positive or negative.

To ensure that this requirement is being met, the Department put in place in the attached Guidelines for Conducting Strategic Environmental Assessments of Policy, Plan and Program Proposals.

Policy officers should use the guidelines when preparing Memoranda to Cabinet (MCs) and for other policy, plan and program initiatives as appropriate. The Guidelines use a staged approach to considering the environmental implications of proposals. Policy officers are to use the Guidelines to determine if a proposed initiative is likely to have environmental implications and the appropriate level of assessment required. It is anticipated that most policies are unlikely to have environmental implications and will require only a cursory examination. However, some initiatives will require more detailed examination.

By addressing potential environmental considerations of policy, plan and program proposals, policy officers will be better able to optimize positive environmental impacts and minimize or mitigate negative environmental impacts from a proposal. Undertaking strategic environmental assessments can also contribute to the Department's sustainable development goals, promote accountability and credibility among the general public and stakeholders, and lead to broader policy coherence within government.

Canadian Environmental Assessment Act

Under the Canadian Environmental Assessment Act, the federal departments and agencies must undertake an environmental assessment before:

⁴ [www.dfait-maeci.gc.ca /environmental assessment](http://www.dfait-maeci.gc.ca/environmental%20assessment)

- They carry out a project;
- Provide financial assistance to enable a project to be carried out;
- Sell, lease or otherwise transfer control or administration of land to enable a project to go forward

The nature of the project, and the significance of possible environmental effects, the type of assessment required will vary. Most projects are assessed relatively quickly under what is known as a Screening Type Assessment. Larger projects that have potential for greater environmental impacts require a comprehensive study in which the environmental effects are determined by an independent Environmental Assessment Review Panel or Mediator. On an average, the Federal Departments undertake 6,000-7,000 assessments annually and till now 40,000 projects has been assessed. ⁵

Project Environmental Assessment

The Canadian Environmental Assessment Act (CEA Act), which came into force in 1995, sets out the procedure for conducting Environmental Assessments of projects for which a federal department or agency (called as the responsible authority) holds decision making authority, whether as a proponent, land administrator, source of funding, or regulator. To ensure that the requirements of the Canadian Environmental Assessment Act (CEA Act) are met, the Department of Foreign Affairs and International Trade issued the attached policy and guidelines for conducting environmental assessments of projects outside Canada for which it is responsible.

The attached guidelines help to determine whether, under the CEA Act and the Projects Outside Canada (POC) Regulations, an environmental assessment is required for a project for which DFAIT is the responsible authority, and how to conduct one when required. A mandatory Five-Year Review of the CEA Act was recently concluded, and amendments to the CEA Act have been drafted. The attached DFAIT guidelines will be amended accordingly when an amended CEA Act is approved by Parliament. This is the extent to which Canada has sought to meet the international obligations even in the projects where Canada are involved outside their national jurisdiction.

⁵ www.ec.gc.ca/environmental_assessment

In 1994, the federal government emphasized the need for an integrated approach to social, economic, environmental, and foreign policy in the Speech from the Throne that opened the federal Parliament. A series of recent legislative and policy initiatives have given practical meaning to this commitment. All governments have developed plans that take into account the shift to sustainable development.

Sustainable development was incorporated into the new mandates of the federal **ministers of Industry, Agriculture and Agri-Food, and Natural Resources** in 1994. Sustainable development has also been built into key statutes such as the *Canadian Environmental Assessment Act*, the *North American Free Trade Agreement Implementation Act*, and the *Canadian Environmental Protection Act*. In 1995, the Canadian Environmental Assessment Act came into force to integrate environmental considerations into all federal project planning. The Act requires that an environment assessment be completed prior to substantive action on any federal project.

Legislation establishing a Commissioner of the Environment and Sustainable Development received Royal Assent in December 1995 with the first Commissioner appointed on July 2, 1996. The first "Green Report" to the House of Commons is expected to be tabled by a federal department in February 1997. Within two years, all federal ministers will be required to present *sustainable development strategies* for their departments to Parliament. To assist departments in the preparation of these strategies, the federal government has released "A Guide to Green Government". It includes objectives, as well as policy and management tools, to aid the transition to sustainable development. It also notes that departmental sustainable development strategies must be comprehensive, results-oriented, and prepared in consultation with partners. Preparation and implementation of these departmental strategies will require innovation both in policy and management terms, and a commitment to continuous improvement.

6. THE STAKEHOLDERS HOLD IN GREEN LOBBY

The stakeholders include Non governmental organisation (NGOs) which make up civil society who are very crucial in engaging broad segments of society and in forming

international alliances. NGOs have invaluable, practical experience in how communities can deal with social, economic and environmental problems. It is these pressure groups such as the Associational as well as the Communal interest groups; such as the Canadian Council of Churches, WWF, Greenpeace, Sierra Club, Friend of the Earth Artic Council etc; who work for change in the environmental policy reflecting in different aspects of Sustainability for Sustainable Development and thereby altering the government approaches. The Canadian government has facilities in which the inputs of these NGOs has an interface with the decision-making bodies and make an influence as well as an impact in the overall Sustainable Development Policy.

The Non-Governmental Organization (NGO) Project Facility - a partnership fund for Canadian NGOs working in developing countries. Through this Facility, CIDA supports a diverse group of more than 125 Canadian NGO partners that carry out either overseas development activities or public-engagement initiatives in Canada. CIDA created the NGO Project Facility in 1995 to support small- and medium-sized Canadian NGOs that conduct overseas development projects. CIDA's contribution to these organizations ranges from a minimum of \$50,000 to a maximum of \$350,000 per year. The NGO Project Facility is unique within CIDA because the NGOs it supports are located in towns, cities, and rural areas across Canada. While many maintain offices with paid staff, others are run entirely by volunteers. All NGOs that receives funding work in partnership with civil-society organizations in developing countries - usually NGOs - to carry out projects that strengthen the capacity of local groups and provide lasting benefits for communities. CIDA's NGO Project Facility also supports Canadian NGO initiatives designed to promote Canadian public awareness of, support for, and engagement in international-development activities.

CONCLUSIONS

Sustainable Development is therefore a cornerstone of Canadian foreign policy. It has been sought to meet the international agreements through the various mechanism within the federal set up of governance such as through the legislation enacted for environmental protection such as Canadian Environmental Assessment Act, Canadian Environmental Protection Act etc, and through the various machineries such as the

Commissioner of Sustainable Development and setting up of sustainable development strategies like the Environment Assessment of the projects. These are the mechanism with which Canada has sought to realized the vision for sustainable development; to ensure the “development that meets the needs of the present without compromising the ability of the future generation to meet their own needs”; as the World Commission on Environment and Development has called for.

Environmental issues have demonstrated remarkable stamina on the agendas of international politics especially with the report of Brundtland Commission, which emphasized Sustainable Development. Moreover, they has become a major focus of international concern and activity with many environmental problems being intrinsically international or global, stimulating international political activities in response. What with environmental questions having had a special resonance with the traditional approaches to international question in Canada; they fit snugly into thinking about institution building at the international level and about new ways to exploit the repertoire of mediatory and problem solving skills in Canada’s middle power arsenal.

The Canadian legislation in realizing towards sustainable development is to realize the three 'pillars' of sustainable development – economic prosperity, social development and environmental protection. The Canadian environmental bill of rights such as the Canadian Environment Protection Act (CEPA) is based on peace, order, and good government (POGG) power through which emphasizes the peace building measures, economic arrangements and agreements, development assistance programs, and global environmental partnerships which Canada uses as a mechanism for the means towards the end of a world that is more secure, more prosperous, *and* more sustainable both in the domestic constituents as well as in abroad. To what extent Canada has been successful only the future can tell when they are equipped with the environment resources to meet their own needs.

CONCLUSIONS

Environmental issues has emerged as a major focus of international concern as it calls for an understanding the causes and impacts of global environmental change. The approach and concepts developed within International Relations can contribute substantially to such understanding as well as pose important challenges; in mapping the causes and the response that it evokes. The global environmental problem is more interdependent than the global economy; which therefore cannot leave Canada insulated from the environmental concern of the world. In the wake of these environmental issues, the Brundtland Commission's concept of Sustainable Development has focused attention on finding strategies to promote economic and social development in ways that avoided environmental degradation, over-exploitation or pollution, and sidelined less productive debates about whether to prioritize development or the environment.¹

Canada's middle power status has placed her in a less threatening position than that of the superpower in bilateral and international negotiation over environmental issues and it is through this middle power status that Canada has paid host to a number of major environmental meetings to a global meeting and taking a lead in sustainable developments.

The Rio Summit has set Agenda 21 on the international agenda, which has led to the establishment of environmental and industrial NGOs, and international organisations as key actors in international environmental politics alongside states. It is these whole process of transitions that have made the study of green movements an integral part of international relation. Such movements have been called as the New Social Movements (NSM) as they do not follow the class lines postulated by Marxists. Instead, students, the middle class and the marginalised section such as women and the poor in rural and urban areas mobilized against the elite process on issues ranging from gender equality and freedom, civil liberties, peace, environmental and human rights movement.

Canada's participation in the international initiatives taken in addressing the problems of environment and development has witnessed Canadian Leadership in international environmental policy. The Canadian approach on environmental-issues has been

¹ Johan Holmberg,, and Richard Sandbrook ;"Sustainable Development:What is to be done' in Holmberg, Johan (ed) ; Policies for a Small Planet; IIED; Eartscan PublicationsLtd; (London,1992)

linked to the evolution of a coherent domestic strategy on sustainable development through the development of Green Plan as a Federal Policies of Sustainable Development. Canadian environmental and industrial NGOs has broadened the environmental agenda and shaped the environmental policy in Canada and has also led to the changing dynamic of international environmental politics.

Such theories answer each of my research questions at the structural and cognitive level in the study of the policy process for the federal sustainable development policy in Canada.

Q.1. Does the Canadian Federal Policies of sustainable Development addressed the conceptual understanding of sustainable development?

The Canadian federal Policies of sustainable development does understand the implications given in its conceptual understanding about the inherent relationship of economic development and environment as stipulated in the Brundtland commission and has therefore recognized the need of “integration of environmental and economic considerations, along with the consideration of equity, is a fundamental underpinning of the concept of sustainable development.” as Gitxsan Wet’suwet’en has contemplated it. The federal government does follow this pattern of thought in framing the federal policies of sustainable development.

Q.2. Does the policy of sustainable development addressed the key issue of the local environmental degradation in the context of Canada?

It has been the goal of the sustainable development strategy to respond to the local issue of environmental degradation in Canada. For instance the Arctic, which is otherwise, considered as pristine due to its remoteness and small population has been subjected to contaminants from local mining, oil and gas, and community activities as well as pollutants transported over long distances from industrialized regions of the world; over the last 50 years- has become a major concern and priority for the Canadian Government. Through the Arctic Environmental Strategy which has been incorporated as an integral part of the Green Plan (April 29, 1991) seeks to deal with these environmental issues and concern through an action plan. However, it remains to be seen how effectively these policies can respond to the issue of local environmental degradation as the cause are not necessarily local since the environment is highly interdependent in a complex web of the ecosystem.

Q.3. Has the Sustainable Development policies benefited and improved the life of indigenous people of Canada?

The term “Indigenous” is the common international usage, for in Canada the term “Aboriginal” flows from the Constitution of 1982, which includes North American Indians (First Nation), Inuit and Metis peoples of Canada. Aboriginal people are among the first to be affected by environmental degradation and the Canadian government have sought to integrate the indigenous people into the decision-making process especially with regard to the sustainable development policies through the various commissions such as Canadian Polar Commission, Report of the Royal Commission on Aboriginal Peoples (1996) etc by the Indian and Northern Affairs Canada. Despite the existence of the aboriginal non-governmental organisation such as the Inuit Circumpolar Conference and the Arctic Council; environmental protection and management are significant challenges facing indigenous communities, as they do not have the recognized jurisdiction to manage resources on their traditional territories and therefore it remains to be seen how much will the federal government through the various commission which has been sanctioned to study about their problems can understand and empathise with their problems faced by them.

Q.4. How far the federal government of Canada has been able to integrate the NGO's in policymaking relating to sustainable development policies?

The Non-government organisations (NGOs)- not for profit organisations such as church groups, labour unions, environmental organisations, consumer groups, development groups, and social welfare organisations and youth groups –have a significant role in the Canadian sustainable development agenda. NGOs enjoy high public credibility and play an essential role in Canadian society in raising awareness, pressing for change and holding government accountable. Moreover, the NGOs act as an Advisory Board as well work with the Canadian federal government in the NGO Project Facility engage in international development activities.

Q.5. How does the Canadian government implement the federal policies of sustainable development in their different provinces, having a different political culture, demographic composition, and diverse interest?

The Canadian government is a federal democracy and has a different political culture, demographic composition as well as diverse interest but through the Green Plan which has introduces the sustainable Development Strategy it has sought to tailor the policy of sustainable development to the needs of the different federal department which it engages in the diverse political arena such as Environment Canada, Health Canada, Department Of Foreign Affairs Canada, Indian and Northern Affairs Canada, Canadian International Development Agency to name just a few.

Q.6 What has been the record of Canada for environmental relations and international regimes?

Canada has been very prompt in responding to the challenges of the environment and has not only contributed but also supported to the to the work of the World Commission on Environment and Development (Brundtland Commission). Canada has attempted to provide constructive leadership on international environmental policy with its proven track record of keeping their international commitments such as ratifying the Kyoto Protocol recently when many of the countries hasn't done as yet.

Even in the international regime, Canada believes it is important to take part in the environmental activities of international institutions, be it, as a part of the UN family of nations, as a G8 economic power, and as a member of organizations such as the Organization for Economic Cooperation and Development (OECD), the Organization of American States (OAS), and the Asia-Pacific Economic Cooperation (APEC), and show "influence and leadership on key environmental issues" as the Honourable David Anderson P.C., M.P has said.

It is the believe of the Canadians that the world looks to Canada to play a role on the international stage, to contribute to international environmental policy dialogue and to work collaboratively to achieve global results. However, the kind of leadership that Canada has contributed depends on how it has managed to develop the sustainable development policies and what are kind of issues it has managed to generate and the domestic constraints in dealing with them.

Therefore, Sustainable Development has proved to be a catalytic idea in rethinking the relationships of environment and economy to be complimentary rather than conflicting paths of thought and action. The term "Sustainable Development" encapsulates the structural and social changes that are necessary in responding to both environment and development problematic and it is in this sense that it serves as both an idea as well as an imperative.

On a worldwide scale, existing patterns of population growth and economic activity has not only threaten but also undermine the very resource base, which supports them. This means, among other things, that conventional policies and process may be ultimately self defeating, carrying with them the seeds of their own destruction.

A new paradigm or world view of conservation is being forged: environmental protection and economic development are now envisaged as two sides of the same coin, part of the currency of total development, the common goal of which is to improve social welfare and people's well being.

The Brundtland Commission has re-examined Sustainable Development from an economic perspective drawing on the mainstream of development thinking. The driving concern was to alienate economic growth to sustain and expand the resource base, which has been promoted, although how and whether this can be achieved is questionable.

This dichotomy in Sustainable Development has been explained by Nitin Desai, a member of the Brundtland Commission who now serves as Secretary General to the Johannesburg Summit; says, "Sustainable Development is an adverb and not an adjective. It is a description of a process, not a state of affairs."

In the end it remains to be seen, to what extent, the federal strategies Sustainable Development and instrument which Canada has adopted, is effective and responsible in making 'sustainable development' relevant and can be accorded success in reality will depend on how the different mechanism in the federal government responds in real politick to the different issues and interest that has been generated; as a consequence of the process. Canada's effort towards sustainable development can be analysed in how much it has contributed to create a policy of process in ensuring development, which can be sustained over the ages and how they have been able to manage the political, cultural, ecological and institutional realities to create a sustainable society in Canada.

Hence, whether the interest of the federal government is the determining factor or it is on the basis of the merit of the issue which has been generated by the environmental groups that has led to the consequences of the policies adopted to meet their commitments towards Sustainable Development, has been scrutinised before attributing any success to Canada for sustaining the development of a sustainable society; in the chapter titled as “Environmental Issue in Canada”.

The environmental issues in Canada has not only emerge as a distinct subjects of the scientific community for the ecological groups but rather as a domain of public debate due to its very nature of being spilled over the issue of survival as the environment is not dependent on the economy or politics but rather it is the vice versa and that is the basic reason why the growing interest in the environmental issues has culminated into the adoption of the policy for ‘sustainable development’.

There has been different interest groups which has emerged as a consequence of promoting the environmental concerns as well their own patriarchal interest and how they try to accommodate with the basic tenet in the issues of sustainable development has made up the core idea in the study of the ‘politics of interest in Sustainable Development’ The interest that has been generated from various quarters of the Canadian civil society such as the Environmental NGOs and the different department of the federal government of Canada in the arena of the political domain in the Canadian Politics as discussed in the chapter titled as ‘The Politics of Interest in Sustainable Development’.

Thus, Sustainable Development has, therefore become a cornerstone of the Canadian foreign policy. The policies has sought to meet the international agreements through the various mechanism within the federal set up of governance such as through the various legislation which has been enacted for environmental protection such as: Canadian Environmental Assessment Act, Canadian Environmental Protection Act etc and also through the various machineries such as the Commissioner of Sustainable Development and setting up of sustainable development strategies like the Environment Assessment of the projects in which Canada is involved. These are the various mechanism with which Canada has sought to realized the vision for sustainable development; by ensuring the kind of development that

will “meets the needs of the present without compromising the ability of the future generation to meet their own needs”; as how the World Commission on Environment and Development has called for.

Environmental issues have demonstrated remarkable stamina on the agendas of international politics especially with the report of Brundtland Commission, which emphasized Sustainable Development. Moreover, they has become a major focus of international concern and activity with many environmental problems being intrinsically international or global, stimulating international political activities in response. What with environmental questions having had a special resonance with the traditional approaches to international question in Canada; they fit snugly into thinking about institution building at the international level and about new ways to exploit the repertoire of mediatory and problem solving skills in Canada’s middle power arsenal.

Hence, Politics is all about the management of uncertainty and the balancing of conflicting interests. For the Canadian Federal Government who are the policymakers, it is the global change, which presents the ultimate challenge. Scientific certainty may be many years, yet to delay action is to court disaster and therefore the policymakers, have no choice but to act before the answers are in; which need vision and courage.

Thus in conclusion, it is through the legislation that Canadian Federal Government has strived to realise the full potential of what sustainable development actually encapsulates; by realizing the three 'pillars' of sustainable development – economic prosperity, social development and environmental protection after the initial process of identifying the various environmental issues and the debate that arise with the kind of interest that the various Interest groups seeks to promote in Canada. The political set up of Canada is such that it is open to the diverse issues that the Interest Groups have shown an interest in from the different quarters but the bottom line is that the ground realities can only be influenced through the identification of what the Canadian Federal Government identifies and through the mechanisms which it redeem as suitable. That is why the Canadian environmental bill of rights such as the Canadian Environment Protection Act (CEPA) is based on peace, order, and good government (POGG) power through which it also seeks to emphasizes through the other

programs which the Canadian Federal Government has taken initiative in such as the peace building measures, economic arrangements and agreements, development assistance programs, and global environmental partnerships which is also Canada use as a mechanism for the means towards the end of a world that is more secure, more prosperous, and more sustainable in the domestic front for Canada as well as in the international forum.

Henceforth, the study of the '*Sustainable Development in Canadian Federal Policies: Issues, Interests and mechanism*' has only revealed the scenario of the political culture in Canada as to how it focused on the different issues and the process as to how it deal with it. It leaves behind many untold questions, which calls for further investigation and requires further research in this field.

Selected Bibliography

1. Primary Sources

Address by Holdagate, Martin (Dr); IBM Conference Sustainable Development Programme, (April 7, 1989); *Managing the Future*; IUCN NAD natural Resources.

- **Agenda 21 Organisations: A backgrounder on current activities**; Prepared by International Development Research Center, Canada (Ottawa, July 1992)
- An Assessment of Conservation and Development in Ontario; *'Towards a Conservation Strategy for Ontario'*; (Ontario, Canada; 1996)
- A Reader's Guide; *"Our Common Future: The Brundtland Report Explained"*; international Institute for Economic Development (IIED), Earthscan, (1987)
- A Report to the Balaton Group; *"Indicators for Sustainable Development: Theory, Method and Application"* By Bossel Hartmul, International Institute for Sustainable Development (IISD)(Canada, 1999)
- Arctic Council; *"Arctic Environmental Protection Strategy"*; (Rovaniemi, Finland; June 14, 1991)
- Arctic Monitoring and Assessment Programme; *"Arctic Pollution 2002"*; AMAP; (Oslo, 2002)
- Background Paper; *"Global Forum 1994: Cities and Sustainable Development"*; June 24-28, 1994;(Manchester; International Institute for Economic Development (IIED)
- Booklet on **Johannesburg Summit-World Summit on Sustainable Development**. Published by the UN Department of Public Information.
- Brown, Lester R and Jacobson, Jodi C (1987) *"The Future of urbanization: Facing the ecological and economic constraints"* Washington D.C.: World watch Institute, World watch paper no.77.
- Campbell Bruce's *"Moving in the wrong Direction: Globalization the North American Free Trade Agreement and Sustainable Development"*- prepared by the Canadian Centre for Policy Alternatives.

- Conference on Conservation and Development (May 31-June 5; 1996); **'Implementing the world Conservation Strategy'**; (Ottawa, Canada, 1996)
- Conference of NGOs working on Environmental protection – A Report; Swamy, Ratna, R. **'NGOs and Environmental Education'**; WWF;(New Delhi; March 11-13,1982)
- Davis, Shelton H. and Ebbe Katrinka (ed) Environmentally Sustainable Development Proceedings Series No.4 **"Traditional Knowledge and Sustainable Development" – Proceedings of a Conference held at the World Bank, Washington D.C (September 28-29, 1993)**
- Department of Environment on behalf of U.K. government; **"Partnerships in Practice: Partnership for change"** (February, 1994)
- Earth Council and the Inter-American Institute for Cooperation on Agriculture (IICA); **" The Earth Summit ECO '92: Different Visions"**,(Costa Rica, 1994)
- Earth Foundation; **'A Reference Manual for Sustainable Development Processes'**; International Development Research center (IDRC); (Canada; 1993)
- Environment Canada; **"Management Framework for Planning, Reporting and Accountability"**; (Canada, 1999)
- Environment Department Papers; Sterin Hansen's **"Towards a Sustainable Economy: can we survive green advice"?**; World Bank ;(June, 1996)
- European Commission, Nuclear Safety and Civil Protection; **"EU focus on clean water and Clean Air"**; European Communities (1999)
- Experience and Recommendations from National and Regional Consultations for the Rio+5 Forum; **'Implementing Sustainable Development: Rio+5'**; First Edition; compiled and published by the Earth Council for the 5th - session of the UN commission on Sustainable Development (UN-CSD); (April, 1997)

- First Draft Report on “**World Conservation Report Strategy for the 1990s**” Prepared by IUCN, UNEP, WWF (1989)
- Government of Canada’s Report “**The State of Canada’s Environment**”; (Ottawa 1991)
- Guidelines for the selection of Biosphere Reserves in Canada; ‘**Canada/Man And Biosphere (MAB)**’; prepared for the Canadian Committee for MAB; the interdepartmental Committee for MAB; First Report (1975)
- **International Environmental Agreements: Politics, Law and Economies** Vol 2 No 1 (March 2002), Kluwer Academic Publishers/ Boston/ London
- Jacobs Peter and Sadler Barry; “**Sustainable Development and Environment Assessment: Perspectives on Planning for a common Future**”; A Background Paper prepared for the Canadian Environmental Research Council; Environment Canada (Canada 1990)
- Lecture Series by the winners of the Blue Planet Prize; Maurice Strong’s “*The Rio+5 Forum: Taking the Earth Summit from Agenda to Action*” ‘**A Better Future for the Planet earth**’; Asahi Glass Foundation; (Tokyo, Japan; (1997)
- National Commission on Sustainable Development Report 1999-2000; ‘**A progress report on National Communities for Sustainable Development and similar entities**’; A Report by the Earth Council in collaboration with 21 countries; UNDP
- Our Common Future: Report of the World Commission on Environment and Development (**The Brundtland Report**) Published by Oxford University Press (1987).
- Papers for Workshop held “**Green Budget Reform in Canada and India**”; International Institute for Sustainable Development (IISD), Tata Energy Research Institute (TERI), Pembina Institute for Appropriate Development, Manitoba (March 9-15, 1998)
- Penick, John E and Stiles, John R(ed) ‘**Sustainable Development for a New World Agenda**’-proceedings of a conference in Winnipeg, Manitoba October 17-20, 1990. A Stem/Case/I Case publication.

- Pollard, D.F.W and Kahnle Mc, M.R. **“Canada - A Report on Achievements in Conservation”**; World Conservation Strategy; Environment Canada,(Ottawa 1986 , May)
- Proceedings of the Canada-Asia Seminar; Sadler, M.H (Dr) and Si, Z (Dr)’s **“Priority environmental issues in Asia: the need and importance of developing cooperative approaches”** ;Impact Assessment Center (June 21-22, 1994); Carleton University,(Ottawa, Ontario; 1995)
- Public Advisory Committee to the Environment Council of Alberta; **“Prospectus for an Alberta Conservation Strategy”** Environment Canada, (Canada; March, 1986)
- Richardson, Nigel (1989) **“Land use planning and Sustainable Development in Canada”**, Canadian Environmental Advisory Council.
- Report of The World Commission on Environment and Development (WCED); **“ Sustainable Development, Science and Policy”**; A conference organized by the Norwegian Research Council for Science and the Humanities in liaison with the European Science Foundation and in cooperation with the Regional Conference (1990, My 8-12, Bergen)
- Report by a group of Experts as Environmental Concerns and the Commonwealth; **‘Sustainable Development: An Imperative for Environmental Protection’**; Economic affairs Division; Commonwealth Secretariat, (August, 1991)
- **“Round Table-Sustainable Communities”** proposal by the British Columbia, Round Table on the Environment and the Economy, 1991.
- Sadler, Barry (ed) **“Environmental Protection and Resource Development: Convergence for today”**; Proceedings of a Conference funded by Canadian Petroleum Associations, Northern Affairs Program, Department of Indian and Northern Affairs Resource Management Programs (1984, September 6-9); Published by The Banff Centre School of Management (Canada, 1985)
- Simon, David reviews paper on Environmental Conservation **“Sustainable Development: Theoretical construct or Attainable goals”** 1989.
- Second Draft on **“Caring for the World- A Strategy for Sustainability”**; Prepared by the World Conservation Union (IUCN), United Nations Environmental Programme (UNEP), World wildlife Fund (WWF) (June 1990).

- Sustainable Development Strategy for the Office of the Auditor General; **“A Report of the Auditor General Of Canada”**; December 2000
- The Government of Canada’s **“ Interim Plan 2001 on Particulate Matter and Ozone” (April, 2001)**
- Theme Paper; Proceedings of Regional seminar, Manila (Aug 29- Sept 1, 1989); Simpson, Herbert **“ Women and Water”** held by Asian Development Bank (ADB) and United Nations Development Program (UNDP)
- **UN Papers on Indigenous People’s participation for Sustainable Development.** Prepared by UN Economic and Social Council.
- **UN Papers on Women by the Women’s Environment and Development Organization(WEDO)** for Sustainable Development in its preparatory Committee.
- Virginia, Maclaren’s **“Sustainable urban development in Canada: from concept to practice”**- A Research Report prepared for the Intergovernmental Committee on Urban and Regional Research, August, 1992.
- World Wildlife Fund Canada’s report; **“The Nature Audit: Setting Canada’s Conservation for the 21st Century”**; Report No.1-2003.

2.Secondary Sources

(a) Books

Adkin, Laurie E, **‘Politics of Sustainable Development: Citizens Unions and the Corporations’** (Black Rose Books, Canada 1998).

Agyeman, Julius; Bullard, Robert D. and Evan Bobs (ed); **‘Just Sustainabilities’**;(Earthscan Publications Limited; (London, 2003)

Aplet, Gregory, H; Johnson Nels; Owen Jeffrey T and Sample V. Aline **‘Defining Sustainable Forestry’** (The Wilderness Society; Canada 1993).

Anonymous; '**Developing World Water**'; (Governors Press International; Hong Kong (1987)

Anonymous; '**Survey of the Environment 2002**'; (The Hindu; Chennai, India (2003)

Atkinson, Michael H. and Chandler, Marsha A; '**The Politics of Canadian Public Policy**'; (University of Toronto Press,(Toronto, 1983)

Atkinson, Adrian; '**Principles of Political Ecology**'; (Belhaven Press;(Great Britain; 1991)

Bapna, Ashok (Dr); '**One World or Several: Men and Women together towards Growth, Sustainability and Solidarity in the 1990s**';(SID Rajasthan Chapter, Jaipur (India, 1991)

Baylis, John and Smith, Steve; '**The Globalization of World Politics: An Introduction to International Relations**' Second Edition; Oxford University Press, (Oxford, 2002)

Bickerton James, Gagnon, Alain G (ed) '**Canadian Politics: An Introduction to the Discipline**' (Broadview Press, Ontario, Canada 1999).

Block, Walter (ed); '**Economics and the Environment: A reconciliation**'; (Fraser Institute, Canada; (Vancouver, 1990)

Bocking Stephen (ed) '**Biodiversity in Canada: Ecology, ideas and action**' (Broadview Press, 2000, Canada).

Bone, Robert M '**The Geography of the Canadian North: Issues and Challenges**' (Oxford University Press, (Toronto, 1992).

Calthorpe, Peter and Ryn, der Sim Van (ed) '**Sustainable Communities: A New Design for Cities, Suburbs and Towns**' (Sierra Club Books, San Francisco (1986).

Cardinal Phyllis and Ripley Dale; '**Canada's People, The Metis**'; (Plains Publishing Inc, (Alberta, Canada; 1987)

Carroll, John E., '**Environmental Diplomacy: An Examination and a prospective of Canadian- U.S, Transboundary Environmental Relations**',(University of Michigan Press, John Wixley & sons, Canada (Rexdale, 1986)

- Chandler, William M., and Zollner, Christian W., '**Challenges to Federalism: Policy Making in Canada**'; Institute of Intergovernmental Relations; (Queen's University Press; (Kingston, Ontario, Canada, 1986)
- Coates, Kenneth and Morrison, William R. '**The Forgotten North: A History of Canada's provincial North's**' (James Lorimar (Toronto, 1992).
- Comeau, Pauline and Bantin, Aldo: '**The First Canadians: A Profile of Canada's Native People today**' (James Lorimer (Toronto, 1990).
- Dickerson, Olivia Patricia: '**Canada's First Nations: A History of Founding Peoples from the earliest times**'(Mc Cleland and Stewart (Toronto, 1992).
- Dobell, Peter C '**Canada's Search for New Roles-Foreign Policy in the Trudeau Era**' Royal Institute of International Affairs; (Oxford University Press, (London/New York/Toronto (1972).
- Dyck, Rand; '**Provincial Politics in Canada**'; Second Edition; Prentice Hall Canada Inc; (Scarborough, Ontario, 1991)
- Eckersley Robyn, '**Environmentalism and Political Theory- Toward an Ecocentric Approach**' (University College London, (UCL) 1992.
- Fiders James S. '**Native Peoples in Canada-Contemporary Conflicts**' Third Edn, (Prentice Hall, Scarborough, Ontario, 1988).
- Fleras, Augie and Elliott, Jean Leonard, '**Multiculturalism in Canada: The Challenge of Diversity**' Scarborough,(Nelson; Ontario, Canada, 1992).
- Gabriel Solomon '**Foreign Policy of Canada**' (Uppal Publishing House, (New Delhi, 1987).
- Godish Thad; '**Air Quality**'; (Lewis Publisher Inc, (Michigan, 1985)
- Hall, June D. and Hanson Arthur, J; '**A New Kind of Sharing: Why we can't ignore Global Environmental Change**'; International Development Research Center (IDRC),(Ottawa, 1992)
- Iyer, K. Gopal; '**Sustainable Development: Ecological, SocioCultural Dimensions**'; (Vikash Publishing House Pvt Ltd, (India 1996)
- Haestis, Lynne B '**Sustainable Development in Canada: Options for law reform**' the Canadian Bar Association, (Ottawa, Ontario, September, 1990).

Hardi, Peter and Zdan Jeremeu(ed) '**Assessing Sustainable Development: Principles in Practice**'; published by the International Institute for Sustainable Development, (Winnipeg, Manitoba, 1997).

Heywood, Andrew; '**Politics**'; (Macmillan, (London, 1997)

Holmberg Johan (Ed); '**Policies for a Small Planet**'; International Institute for Environment and Development; (Earthscan Publications Limited ;(London, 1992)

Holmberg, Johan; Bass, Stephen; and Timberlake Lloyd; '**Defending the Future: A guide to Sustainable Development**'; (IIED/Earthscan (1991).

Hussain, Majid; '**Sustainable Development and Environmental Impact Assessment**'; (Rima Publishing House; (New Delhi; 1994)

Jacobs, Peter and Sadler, Barry '**Sustainable Development and Environmental Assessment: Perspective on Planning for a Common Future**'_Canadian Environmental Assessment Research Council, (Ottawa, 1990).

Keating Tom '**Canada and World Order: The Multilateralist Tradition in Canadian Foreign Policy**' (Mc Clelland and Stewart Inc.(Toronto, 1993).

Kirton, John and Richardson Sarah (ed); '**Trade Environment and Competitiveness**', National Round Table on the Environment and Economy; (Ottawa, 1992)

Khanna DD(ed) '**Sustainable Development, Environmental Security, Disarmament and Development Strategy**' (South Asia Macmillan Indian Ltd.1997).

Lasker George E. and Hiwaki Kensei '**Sustainable Development and Global Community**' Vol.1 published by the International Institute for Advanced Studies in Systems Research and Cybernetics.

Leach, Richard H. '**Contemporary Canada**' Duke University Commonwealth Studies Centre, Toronto (University of Toronto Press (1968).

Leiss William (ed) '**Ecology vs. Politics in Canada**' (University of Toronto Press, 1979).

Mackay, Robert A(ed) '**Canadian Foreign Policy 1945-54**' Mc Clelland and Stewart Institute (Toronto, Montreal, 1970).

Mercer, Geoffrey(ed) **'The USA and Canada-Regional Surveys of the World'** 2nd Edition, (Europa Publication Ltd. London).

Miller Christine and Chuchryk Patricia (ed) **Women of the First Nation: Power, Wisdom and Strength'** (University of Manitoba Press, (1995)

Mitchell, Bruce (ed); **'Resource Management and Development: Addressing Conflicts and Uncertainty'**; (Oxford University Press; (Toronto/ New York/Oxford, 1991)

Neill, Mac Jim, Cox John and Rummalls David **'CIDA and Sustainable Development'** The Institute for Research on Public Policy, (Halifax, Nova Scotia, 1989).

Nelson J.G., Butler R., Wall G.(ed) **'Tourism and Sustainable Development: Monitoring, Planning, Managing'** Heritage Resources Centre Joint Publication no.1,(University of Waterloo, Canada (1992).

Palmer, Joy; Goldstein, Wendy and Curnow, Anthony; (ed) **'Planning Education to Care for the Earth: Commission on Education and Communication'** (IUCN, 1995)

Pearce David and Barbier Edward B., **'Blueprints for a Sustainable Economy'**; (Earthscan Publications, (London, 2000)

Prasad Kamta (ed); **'Water Resources and Sustainable Development: Challenges of 21stCentury'**;Institute for Resource Management and Economic Department (Delhi, 2003)

Prasanna, Sand K (ed) **'Tribal Development Options'**_G.B. Pant Institute of Himalayan Environment and Development, (Almora, India, 1996).

Ramakrishnan P.S. Prof., **'Ecology and Sustainable Development'**, (National Book Trust (New Delhi, 2002).

Reid, Jeremy Carew; Allen, Robert Prescott and Dlayton, Stephen Bass Bassy Walal; **"Strategies for National Sustainable Development: A Handbook for Planning and Implementation"**; (Earthscan Publications (London, 1994)

Richardson, Nigel and Whitney Joseph (ed) **'Sustainable Cities: Urbanization and the Environment in International Perspective'** (Boulder: West view Press, 1992).

Ridgeway, James; ' **The Politics of Ecology**'; (E.P Dutton and Co. Inc, (N.York, 1970)

Remie, C.H.W and Larcroix, J.M. ; '**Canada on the threshold of the 21st Century**';(Black Rose; (Toronto, 2000)

Rouber Grant L. '**Canada's Political Economy-current issues**' (Mc GrawHill Ryersen Ltd. (Toronto).

Saunders, Owen J(ed) '**The Legal Challenge of Sustainable Development**', Canadian Institute of Resources Law (Calgary, 1990).

Silver A.I. Berger Carl, Green Allen, Chambers Lori, Hamelton Dannille, Hanison Jane, Mitchell McKee Leila and Ridout Kathryn(ed) '**An Introduction to Canadian History**' (Toronto, 1991).

Silverman, Robert A. and Nickson, Marianne O '**Aboriginal Peoples and Canadian Criminal Justice**' Butterworths Canada Ltd. (Ontario, 1994).

Singh, Bolaria B and Li, Peter S '**Racial Oppression in Canada**'_(Gramond Press, Toronto, Ontario, 1998).

Singh, R.B.(ed) '**Sustainable Development of Mountain Environment in Canada and India: (CIDA-SICI Project Experience)** (Oxford Publication 1998).

Smith, Elaine(ed) '**Sustainable Development through Northern Conservation Strategies**'; The Banff Centre School of Management, Resource Management Programs, (The University of Calgary Press, Alberta, Canada, 1990).

Smith, Vaclav; '**Global Ecology: Environmental Change and Social Flexibility**'; (Routledge; (London, 1993)

Thaddeus Tyrzyna C. (Ed); '**A Sustainable World: Defining and Measuring Sustainable Development**'; (Published for World Conservation Union (IUCN) By Environment Canada (1995)

Tolbia, Mostafa Kamal; '**Sustainable Development Constraints and Opportunities**'; (Baltermoths (London 1987)

Tripathi, A.K. '**Global Environmental Problems**' Vol 3; (Ashish Publishing House; New Delhi (1991)

Tremblay, Chowdhari Rita; Dwivedi O.P., Parber Carole, Inglis Stephen, Tele Tagent, **'Interfacing Nations: Indo/Pakistani/Canadian Reflections'** (B.R. Publications, New Delhi 1998).

Weizsacker, Ernst U.Von; **'Earth Politics'**; (Zed Books Limited (London, New Jersey; 1994)

Welch, Thomas E. **'Moving Beyond Environmental Compliance: A Handbook for Integrating Pollution Prevention with ISO 14000'**; (Lewis Publishers; New York (1998)

Whalley, John; **'Canadian Resource Industries and Water Export Policy'**; (University of Toronto Press (Toronto, 1986)

Whittington, Michael S. and William Glen in **'Canadian Politics in the 1990s'**; Third Edition; (Nelson Canada (Ontario, 1990)

(b) Journals

Alternative Vol 21 No 1,(Jan-Mar;1996); Coate, Roger, A., Alger, Chadwick F., and Lipschwzt Ronnie, D. **'The UN and Civil Society: Creative Partnership for Sustainable Development'** P 96-106

Alternative 14(1), 1987, **Special issue on Sustainable Development in Northern Communities.**

Alternatives 15(1) 1985 Lerner Sally and Oster Carolyn **'Conservative Tradition and Eco Community beginnings in Kitchener-Waterloo'**.

Arctic Bulletin No1.02; **'Canadian low Tundra threatened by climate change'**; Quarterly; Published by WWF International Arctic Programme. P 15.

Asian -Pacific Perspectives (June 2003) Vol 1, No 2; Okada Shin'ichi 's **"whose water is it"?** ; Japan Publications Trading Co.Limited.

Canadian Journal of Native Studies (2001) Vol.21 No.1 **"Aboriginal People and the Federal Government"**; Society for the Advancement of Native Studies; Canada.

Chanakya Civil Service Today, Vinit Kumar Mishra's "**World Summit: On Sustainable Development**"; November 2002

Current History (May, 1994), Porter Gareth's '**Environmental Security as a National Security Issue**'; p 218-222

Environmental Impact Assessment Review 1989, Gardner Julia E '**Decision making for Sustainable Development: Selected Approaches to Environmental Assessment and Management**'.

Environmental Impact Assessment Review (1988) '**A Role for Environmental Assessment in Achieving Sustainable Development**'.

Environment and People; vol 7 no.5 (Oct 2000); Pati Jaganath's (Dr) "**Women, Environment and Sustainable Development**"

Environment, Jan/Feb (2003); Speth James Gustave's "**Perspectives on Johannesburg Summit**"

Green Business Opportunities Vol 8 Issues 3 (July-Sept 2002), Jain Shekhar's "**Introduction to Environmental Performance Evaluation**"

International Journal of Corporate Sustainability Vol 9 No2 (2002); Moody Stuart, Sir Mark's "**Corporate Environmental Strategy**" and "**Globalization in the 21st Century: An Economic Basis for Development**"

International Journal XLVII autumn (1992); Buxton G.V's "**Sustainable Development and the Summit: A Canadian perspectives on Progress**".

International and Comparative Law Quarterly Vol 48 (Jan, 1999); '**Aboriginal Rights and Sustainable Development**', British Institute of International and Comparative Law;(Glasgow, U.K.; 1999) P 176-86.

The Journal of International Colloquial About GAS marketing; Autumn (1989); "**Marketing Gas No.10**"; World Energy Conference 14th Congress Montreal, Canada (September 17-22, 1989)

The Journal of the Institute of Public Administration of Canada, Quarterly; Rabe, Barry G's "**The politics of Sustainable Development: impediments to pollution prevention and policy integration in Canada**"; Autumn 40, No.3 pp 415-435; Toronto, Ontario, Canada.

The Journal of Social Studies; Vol No.51 (Jan,1991)Sohan Rehman's "**Sustainable Development within the Third World**"; Bangladeshi Institute for Development Studies; p1-10.

Ibid., Sachs Ignacy's '**Sustainable Development:From Normative Concept to Action**'* p24-43.

The Journal of Development Studies Vol 29, No 2(Jan, 1993); **Governments, NGOs and Agricultural Development: Perspectives on changing inter-Organisational relationships**'; Published by Frank Cass, (London, 1993) p 199-219.

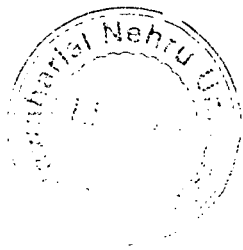
(c) Newspapers

1. September 1,2002, The Sunday Statesman, pg.1, New Delhi.
2. August 29, 2002, September 2,3,2002 Statesman (World Focus) pg.1.New Delhi.
3. September 4,2002 The Hindu, pg.14.New Delhi.
4. August 6,2002, The Times of India, New Delhi.
5. September 1, 2002, Indian Express, New Delhi.

(d)Websites and Internet

1. www.oneworld.com
2. www.Sustainabledevelopment.org
3. www.johannesburgsummit.org
4. www.sdinfo.gc.ca
5. www.wssd-smdd.gc.ca
6. www.ec.gc.ca, www.ec.gc.ca/ climate change/ water/air
7. www.dfait-maeci.gc.ca
8. www.ainc-inac.gc.ca, www.ainc-inac.gc.ca/NCP
9. www.ceaa-acee.gc.ca

10. www.acdi-cida.gc.ca
11. www.ciia.org
12. www.nrtee-trnee.ca
13. www.un.org/esa/sustdev
14. www.panda.org
15. www.pauktuutit.on.ca
16. www.arctic-council.org
17. www.worldwildlife.org
18. www.wwf.ca
19. www.greenpeace.org
20. www.greenpeacecanada.org
21. www.sierraclub.ca
22. www.carc.org
26. www.foei.org
23. www.ceeraindia.org
24. www.ccc-cce.ca
25. www.articpeoples.org
26. www.tebtebba.org
27. www.inuitcircumpolar.com
28. www.hc-sc.gc.ca
29. www.oag-bvc.gc.ca
30. www.iisd.ca
31. www.naaec.gc.ca



32. www.climatechange.gc.ca
33. www.green.ca
34. www.wcc-coe.org
35. www.cws-scf.ec.gc.ca
36. www.msc-smc.ec.gc.ca
37. www.eprc.rpec.gc.ca
38. www.ec.gc.ca/npri
39. www.pubx.dfait-maeci.gc.ca
40. www.epe.be
41. www.idrc.ca
42. www.gc.ca
43. www.socialfunds.com
44. www.sustreport.org
45. [www. tapirisat.ca](http://www.tapirisat.ca)