6-1-2010

Environmental Sustainability and Sustainable Growth: A Global Outlook

Nkechinyere V. Attah
University of Pennsylvania, nkechiat@yahoo.com

Submitted to the Program of Organizational Dynamics in the Graduate Division of the School of Arts and Sciences in Partial Fulfillment of the Requirements for the Degree of Master of Science in Organizational Dynamics at the University of Pennsylvania
Advisor: Alan Barstow

Environmental Sustainability and Sustainable Growth: A Global Outlook

Abstract
This thesis examines the concept of environmental sustainability with a focus on global efforts to achieve this. The purpose of this capstone is to assess efforts made to curb the impact of environmental degradation on the society by some developed and developing countries such as Switzerland, United States of America and China. Excessive emphasis on environmental sustainability using some policies could hurt the economic activities of a country through loss of jobs and societal mishaps while on the other hand too much emphasis on economic growth could result into health risks, global warming and environmental degradation within the society. This thesis further discusses the need to strive towards a balance between environmental sustainability and economic growth. Sustainable environment and growth can only be achieved through the integration of policies that connect the environment, the economy and the society. Also, the paper analyzes a number of strategic initiatives adopted by some developed countries that other countries can adopt to achieve the balance between environmental sustainability and growth through the integration of policies that connect the environment, society and economy. And from the analyses, I conclude by outlining efforts that should be explored at the global level in order to achieve this desired balance.

Disciplines
Environmental Health and Protection

Comments
Submitted to the Program of Organizational Dynamics in the Graduate Division of the School of Arts and Sciences in Partial Fulfillment of the Requirements for the Degree of Master of Science in Organizational Dynamics at the University of Pennsylvania
Advisor: Alan Barstow

ENVIRONMENTAL SUSTAINABILITY AND SUSTAINABLE GROWTH: A GLOBAL OUTLOOK

BY

Nkechinyere Vanessa Attah

Submitted to the Program of Organizational Dynamics
in the Graduate Division of the School of Arts and Sciences
in Partial Fulfillment of the Requirements for the Degree of
Master of Science in Organizational Dynamics at the
University of Pennsylvania

Philadelphia, Pennsylvania

2010

ENVIRONMENTAL SUSTAINABILITY AND SUSTAINABLE GROWTH:

A GLOBAL OUTLOOK

Approved by:

_____

Alan Barstow, Ph.D., Advisor

_____

Syd Havely, Ph.D., Reader

_____

Frank Nuessle, MBA, Reader

ABSTRACT

This thesis examines the concept of environmental sustainability with a focus on global efforts to achieve this. The purpose of this capstone is to assess efforts made to curb the impact of environmental degradation on the society by some developed and developing countries such as Switzerland, United States of America and China.

Excessive emphasis on environmental sustainability using some policies could hurt the economic activities of a country through loss of jobs and societal mishaps while on the other hand too much emphasis on economic growth could result into health risks, global warming and environmental degradation within the society. This thesis further discusses the need to strive towards a balance between environmental sustainability and economic growth. Sustainable environment and growth can only be achieved through the integration of policies that connect the environment, the economy and the society.

Also, the paper analyzes a number of strategic initiatives adopted by some developed countries that other countries can adopt to achieve the balance between environmental sustainability and growth through the integration of policies that connect the environment, society and economy. And from the analyses, I conclude by outlining efforts that should be explored at the global level in order to achieve this desired balance.

ACKNOWLEDGEMENTS

I would like to extend my appreciation to Dr. Alan Barstow for constantly encouraging and challenging me as my capstone advisor. To my wonderful readers, Dr. Syd Havely and Frank Nuessle, I wish to thank you for your interest and stimulating feedbacks. Thank you to my husband and sons (okibe, Attah, Otse and Ot) for your patience and support. Finally, I would like to thank my parents, friends and classmates for their support, advice and encouragement.

LIST OF TABLES

LIST OF FIGURES

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

Environmental sustainability has become increasingly important as we witness more extreme weather changes, global warming and environmental degradation. As the world population grew, the need for more resources also increased. In order to meet the increasing demand for these resources, more industrial activities also grew around the world.

These increased industrial activities over the years did not consider the resulting environmental degradation such as water, air and land pollution. The degradation was not considered along with the intended industrial growth, thus, the value proposition of much economic activity ignored these “costs”. Typically, the enterprises that produced these negative effects on the environment were not held accountable for them. They externalized these costs and the society suffered. Many ecosystems have been adversely affected to the point where they can no longer withstand or recover from natural disasters resulting from human activities and such disasters include global warming, flooding and extreme weather conditions.

These negative consequences on our environment have drawn a lot of attention on a global scale. Several nations have gathered over the years to deliberate on immediate solutions around the world. One of such conventions is

the recent December 2009 summit that was held in Copenhagen, Denmark. The United Nations Framework Convention on Climate Change (UNFCCC) is the international environmental treaty produced at the United Nations Conference on Environment and Development (UNCED), informally known as the “Earth Summit”, held in Rio de Janeiro from 3rd to 14th June 1992. The objective of the treaty is to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate. Subsequently, other conventions followed such as the Kyoto, Japan in 1997 and then the Copenhagen, Denmark in 2009. The issue of climate change was extensively discussed which has become a growing concern around the world due to carbon emissions from fossil fuels.

Several countries such as Finland, Sweden and Norway to mention a few, have adopted some environmental policies to help reduce environmental degradation. Some of these policies have been challenged as detrimental to economic growth while others argued for more stringent environmental protection policies. Considering every country’s need to strive towards economic growth while sustaining the environment, there is the growing concern to adopt policies that give the right balance on both.

The purpose of my thesis is to analyze the various environmental policies adopted by a number of developed and developing countries and the implication of these policies on the society. Also, I would explore the importance of balancing

the scale between environmental and economic sustainability by bringing out successful policies adopted by some practicing countries.

The format of this thesis is outlined in five chapters, each covering distinct areas as I work towards the conclusion of my analysis. Chapter 1 serves as the introduction to my paper. It gives an insight on what the thesis hopes to achieve and what each chapter will be discussing.

Chapter 2 explores the literature review of environmental sustainability and sustainable growth. It brings out interesting contributions and criticisms in the cause of solving the environmental degradation problems.

Chapter 3 discusses efforts made by some developed and developing countries towards environmental sustainability and provides details of some policies adopted by some countries with the resultant effects on the society.

Chapter 4 analyzes the strategies countries are adopting or should adopt for the future. This also takes into account global strategies that countries should consider as a collective effort to fight environmental degradation.

Chapter 5 reflects my concluding thoughts on environmental degradation and using integrated policies to achieve the balance in the society.

CHAPTER 2

LITERATURE REVIEW OF ENVIRONMENTAL SUSTAINABILITY AND SUSTAINABLE GROWTH

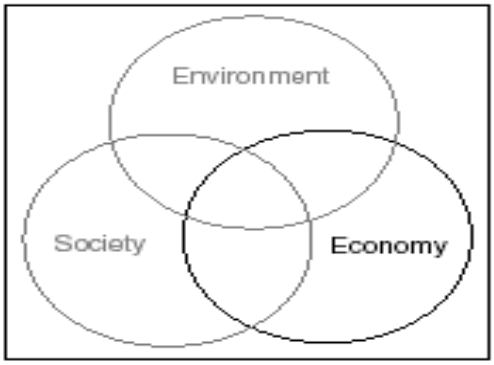
Several works and writings have been done on environmental sustainability and sustainable growth over the years. This chapter takes a look at the term “Sustainability” and how the drive for sustainability has been fuelled by countries, private organizations and United Nations over the years.

Definition of Sustainability

There are several definitions of the term “sustainability”. While some have defined sustainability in relation to the ability of man to preserve the available natural resources and not overuse the resources in a way that it will be deficient in the future; others have defined it in relation to policy making. But the definition given by the UN Commission on Economic Development in its 1987 Brundtland report seems to be generally acceptable. In its report titled *Our Common Future,* sustainability is defined as that which “meets the needs of the present without compromising the ability of the future generations to meet their own goals” (United Nations, 1987). Although, some writers have found this definition to be problematic (Taylor 2002; Jabareen 2008; Lélé 1991), yet, most believe that it meets most aspects of sustainability in its wide applications (Dale, 2001, Adams, 2001).

Taylor (2002), in his critic of the UN definition; argued that it is often difficult to determine the future needs of people in the next generation which may be different from the needs of people today. He further added that the way the developed countries view the concept of needs, is completely different from the views of that of the developing countries. However, even though the UN definition of sustainability may have raised some controversies, it still covers the two fundamental issues; the pressing problem of environmental degradation that results from economic growth, and the need for such growth to lighten poverty in the society. Barton (2000) and Du Plessis (2000) present this as three interconnected sectors in a conceptual model to describe the term “sustainable development”. These interconnected sectors represent the Society, the Economy and the Environment (see Figure 1). Barton (2000) and Du Plessis (2000) maintain that, there must be a reasonable level of balance of interactions amongst these sectors for the world to achieve sustainable development.

Figure 1. Interactions between the main sectors of Sustainable Development



But despite all these critiques, there is a general consensus that the rate of environmental degradation is increasing very fast. The rate of transformation of the earth is very rapid especially in the developing countries that are currently undergoing industrialization. The significance and scale of the global human footprint is not in doubt. Consumption of living resources as raw material and sinks for waste materials is high and growing (Wackernagel & Rees, 1996). The realization of sustainable development and the need to maintain a balance between the environment, economy and man has become the pressing goal that is facing the communities, enterprise organizations, government and the world at large. Developing and developed nations are interacting in a bid to work towards a sustainable environment.

Definition of Environmental Sustainability

According to BusinessDictionary.com, Environmental sustainability is defined as maintaining the factors and practices that contribute to the quality of environment on a long-term basis.

Another definition of environmental sustainability has been given by Daly (1973, 1974, 1992, &1999) and Daly & Cobb (1989):

1. Output rule: Waste emissions from a project or action being considered should be kept within the assimilative capacity of the local environment, without

unacceptable degradation of its future waste absorptive capacity or other important services.

2. Input rule:

- Renewable resources: (e.g., Forest, fish) harvest rates of renewable resources inputs must be kept within regenerative capacities of the natural system that generates them
- Non-renewables: depletion rates of non-renewable resource inputs should be set below the historical rate at which renewable substitutes were developed by human invention and investment according to the Serafian quasi-sustainability rule. An easily calculable portion of the proceeds from liquidating non-renewables should be allocated to the attainment of sustainable substitutes

Definition of Sustainable Growth

Financial Times Lexicon defined *sustainable growth* as growth that is possible to continue without causing economic problems and economic growth that is possible to sustain without causing environmental problems.

Historical Review of Sustainability

The term “sustainable” was first introduced into political language by the club of Rome, an international association of scientists, business executives, public

officials and scholars. This was in a report called “The limits to growth” published in 1972. The report disputes the idea of growth that contrasts the present with the past, and looks at the future as a continuous possibility for further growth and improvement since the idea failed to recognize that resources are finite, thus growth based on resources cannot be infinite.

The writers of the report “Limits of growth” described “sustainable”: We are searching for a model output that represents a world system that is: 1. Sustainable without sudden and uncontrollable collapse; and 2. Capable of satisfying the basic material requirements of its entire people” (Meadows et al, 1972, p.158).

In 1980, the International Union for Conservation of Nature (IUCN), in collaboration with the United Nations Environment Programme, the World Wildlife Fund (WWF), the Food and Agriculture Organization, and the United Nations Educational, Scientific and Cultural Organization (UNESCO), published a report titled “The World Conservation Strategy”. This report was directed at policy-makers, conservationists and development practitioners.

In *The World Conservation Strategy* report, conservation was defined as “the management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations.” It further described development as “the modification of the biosphere and the application of human,

financial, living and non-living resources to satisfy human needs and improve the quality of human life…For development to be sustainable, it must take account of social and ecological factors as well as the short-term advantages of alternative actions" (IUCN, 1980).

In 1987, the Brundtland Commission, which gave rise to the Rio summit, had defined *sustainability* as a development that meets the needs of the present without compromising the ability of future generations to meet their own needs (UN, 1987).

But sustainable development eventually penetrated the global stage during the 1992 'Earth Summit' in Rio de Janeiro. The essence of the summit was to work towards a new balance between the use and the preservation of nature's potentials and resources. The message reflected the complexity of the problems facing the world which emphasized poverty as well as excessive consumption by affluent population as causing a lot of damage to the environment (www.UN.org). This message gave rise to global recognition for the need by governments to redirect international and national policies to ensure that all economic decisions fully take into account any environmental impact.

Prior to the 1987 Brundtland report and the 1992 Earth Summit report in Rio de Janeiro, there have been heated debates between activists advocating for more economic growth and those for sustainable environment. The activists have argued that if sustainability meant drastically reducing the consumption of natural

resources and industrial activities then this will subsequently slow down economic growth. Majority of the controlled growth interests are from the developed countries who argued that the earth was being depleted of its natural resources at an alarming rate and left in return with pollution and environmental degradation which if not properly checked will result into catastrophe in the future. The 1987 Brundtland report and the 1992 Earth Summit report was a measure by the UN to generate a political compromise between these two groups.

Both reports did not support any of the two arguments but rather advocated for a balance to be achieved hence its choice term ‘Sustainable Development’ which it defined as that which meets the needs of the present without compromising the ability of the future generations to meet their own goals. In this way, the UN report was able to advocate for balance in which technology and social organization can both be managed and improved to make the way for a new era of economic growth hence the coin-word ‘sustainable growth’. This gave some level of satisfaction to both groups and a consensus understanding on global efforts towards achieving healthy environment evolved. Five major agreements were put into place at that time: Rio Declaration, Forest Principles, Convention on Climate Change, Convention on Biological Diversity, and Agenda 21. The Agenda 21 which was the most important achievement of the Earth Summit provided clear guidelines on how policymakers can achieve sustainable

development in the next century. But this mutual understanding did not hold for long.

The advocates for continuous growth emphasized the obvious need for rapid growth especially in the developing countries in order to reduce poverty. And they went on to stress the importance of the developed countries freeing up the environmental space by reducing the use of natural resources and limiting pollution overload so that the growth in the developing countries could be balanced by the negative throughput growth in the developed countries. Even though most of the developed countries are campaigning for the need for sustainable development, a number of them are not willing to yield to the proposals made by the developing countries. This generated another level of debate frustrating the global efforts.

In 2002, another World Summit on Sustainable Development was held in Johannesburg, South Africa. This Summit was a follow-up on the low achievements by countries towards the agreements held at the Earth Summit in Rio. Some of the main areas agreed upon at the Johannesburg Summit were to increase access to safe drinking water to more people, to increase access to energy services, energy efficiency and the use of renewable energy, to reduce biodiversity loss and to promote the implementation of national sustainable development strategies amongst others.

Another effort to create a global collaboration towards sustainable development was made during the Kyoto Protocol in 1997. The Kyoto Protocol is an international agreement linked with the United Nations Framework Convention on Climate Change (UNFCCC) (http://unfccc.int). The main aim of the Kyoto protocol was to set a binding target for the industrialized countries and the European community to reduce greenhouse gas (GHG) emissions. Having recognized that the developed countries are mainly responsible for the current high levels of greenhouse emissions in the atmosphere due to their past industrial activities, the protocol placed a heavier burden on these developed nations under the principle of “common but differentiated responsibilities.” (http://unfccc.int)

The Kyoto Protocol became effective on 16 February 2005 even though it was adopted in Kyoto, Japan on 11 December 1997. All member countries were classified into three; Annex I countries which include the industrialized countries, Annex II countries which include the developed countries and lastly the developing countries. It requires 55 industrialized countries to reduce their greenhouse gas to an average of 5.2% against 1990 levels over the five-year period 2008-2012. The developed countries are to pay for the technological costs of the developing countries while the developing countries have no obligatory requirement under the Protocol. The developing countries may receive funds and

technology from or sell carbon emission credits to the developed for related projects.

The Kyoto Protocol was largely flawed (Shaw, 2002) and had some loopholes from the beginning reflecting the politics of reaching some agreement rather than equity of sharing the burden of the gas emission. Some countries are yet to meet the Kyoto Protocol emission targets of which USA is an example. The USA emits about a quarter of the world's greenhouse gases while China and India remain reluctant on further reductions even though they are huge emitters. As at 3rd December 2009, only 189 countries and 1 regional economic integration organization (the EEC) have deposited instruments of ratification, accession, approval or acceptance (http:unfccc.int). Emissions of greenhouse gases have continued to rise resulting into major floods, wildfires, cyclones and extreme climate conditions. Even though there is still a general consensus on the need to curb the emission of greenhouse gases, there is yet a general agreement on how to distribute the burden amongst nations.

The most recent follow-up on the Kyoto Protocol is the Copenhagen conference held in Denmark in December 2009. The objective was to ensure a stronger commitment from the countries on the reduction of the greenhouse emissions since the Kyoto agreement was going to expire by 2012. But according to Taylor (2010), the meeting failed to bind the promises made by the

countries into an international agreement. This was supposed to be the bedrock for the vision of an international carbon trading market.

Critics had argued that the Kyoto summit was a threshold for disaster because it did not consider some developing countries such as China and India who are currently emitting most of the greenhouse gases. The Copenhagen conference was supposed to be a step towards tightening the loopholes in which China and some other countries such as Brazil, South Africa and India had refused to commit to further reduction of emissions. This only ended up with an agreement to limit global warming to two degrees Celsius (3.6 Fahrenheit), but without spelling out the important stepping stone on how global emission targets for 2020 or 2050 will be fully achieved (France24, 2009).

However, even with the controversies surrounding the agreement to curb emissions by countries, a lot of private organizations and NGOs are already taking strategic steps towards the drive for sustainable development. More attention have been given to the social and environmental dimensions of business activities in organizations which are constantly linked to firms' economic impact in the notion of sustainability or triple bottom line (triple P) (Elkington, 1997). Managers are directing their attention simultaneously on the triple bottom line; People (social), Planet (environmental) and Profit (economic). Organizations are increasing their accountability to stakeholders on environmental and social

issues. They are publishing their efforts and future strategies towards sustainable development in their reports (Baskin, 2006, ACCA, 2004).

Recently, a group of 29 companies from all over the globe drew up a project called *Vision 2050*. The participating companies include Volkswagen, Accenture, Alcoa, The Boeing Company, The Procter & Gamble Company and Toyota Motor Corporation just to mention a few. The goal of the project is to provide a framework of a vision of the world well on the way to sustainability by 2050 which will entail fundamental changes in business and human behavior, changes in governance structures and economic frameworks.

Some of the critical pathways the companies would change in order to achieve the 2050 vision include; halving carbon emissions worldwide (based on 2005 levels) by 2050, with greenhouse gas emissions peaking around 2020 through a shift to low-carbon energy systems and highly improved demand-side energy efficiency; halting deforestation and increasing yields from planted forests; delivering four-to-tenfold improvement in the use of resources and materials; and doubling of agricultural output without increasing the amount of land or water used.

But in order to achieve these desired outcomes, more companies would have to join in the pursuit of the *Vision 2050*. Business will lead market change by creating efficiencies, competitive advantage and meeting customer needs. This shift towards sustainability will create zero-waste cities, better ecosystems and

livelihoods and proffer opportunities for finance, information technology and partnership around the globe (WBCSD, 2010)

All these efforts made by countries, private organizations, non-governmental organizations and United Nations have contributed significantly towards the public's awareness of the world's environmental issues and this has generated a consciousness at all levels to minimize the impact of economic activities on the environment. Some levels of success have been achieved towards sustainable development through these awareness and strategies, yet there is still the need to intensify efforts. And these efforts can only be successful on a large scale if environmental sustainability is not viewed singly but with the integration of social and economic impact on the society.

CHAPTER 3

A LOOK AT ENVIRONMENTAL SUSTAINABILITY EFFORTS BY SOME DEVELOPED AND DEVELOPING COUNTRIES

The United Nations Framework Convention on Climate Change (UNFCC), a body of the United Nations, classified countries into developed (Annex I and Annex II) and developing countries based on the reduction of carbon emission purpose. This is because the environmental restrictions on greenhouse gas have to be treated differently for developed countries than for developing countries.

The developed countries such as Finland, Sweden and Switzerland have had more than fifty years of industrialized activities and cutting down the rain forests which have caused the high accumulation of the greenhouse gases currently being faced. However, the developing countries such as Brazil, India and China are just emerging in the industrialized world and are viewed as not having contributed much to the accumulated greenhouse gases and most of the greenhouse gases generated in the developing countries result from the production of consumer goods. The UNFCC therefore placed a restriction on the emission of greenhouse gases of the developed countries while the developing countries were not placed under any mandatory obligation but were encouraged to access better technology in order to curb their greenhouse gases.

The environmental sustainability efforts of some of these developed and developing countries towards achieving the set target by UNFCC will be assessed and the focus will be on the environment, the society and the economy.

Annex I parties, from UNFCC classification, include industrialized countries that were members of the OECD (Organization for Economic Co-operation and Development) in 1992, and countries with economies in transition (the EIT parties), including the Russian Federation, the Baltic States, and several Central and Eastern European States (www.unfccc.com). The Kyoto Protocol set binding targets for these industrialized countries and the European community for reducing greenhouse gas (GHG) emissions. These reductions amount to an average of 5.2% against 1990 levels over the five-year period of 2008-2012. The list of countries classified under Annex I group (see Table 1) includes Switzerland, a prominent industrialized country, which will be discussed further in my paper in order analyze its environmental sustainability efforts.

Table 1. Annex I Countries based on UNFCC Classification

Australia	Finland	Lithuania	Slovenia
Austria	France	Luxembourg	Spain
Belarus	Germany	Monaco	Sweden
Belgium	Greece	Netherlands	**Switzerland**
Bulgaria	Hungary	New Zealand	Turkey
Canada	Iceland	Norway	Ukraine
Croatia	Ireland	Poland	United Kingdom
Czech Republic	Italy	Portugal	United States of America

Denmark	Japan	Romania	
European Economic Community	Latvia	Russian Federation	
Estonia	Liechtenstein	Slovakia	

Annex II parties consist of the OECD (Organization for Economic Co-operation and Development) members of Annex I, but none of the EIT (Economies in transition) parties is included. Members of Annex II group are required to provide financial resources to enable developing countries undertake emissions reduction activities under the Convention and to help them adapt to the adverse effects of climate change. In addition, they have to “take all practicable steps” to promote the development and transfer of environmentally friendly technologies to EIT parties and developing countries. Funding by Annex II Parties will be channelled mostly through the Convention’s financial mechanism (unfccc.int). The list of countries classified under Annex II by UNFCC (see Figure 2) includes United States of America which will be discussed further to highlight their environmental sustainability efforts.

Table 2. Annex II Countries based on UNFCC Classification

Australia	Germany	New Zealand
Austria	Greece	Norway
Belgium	Iceland	Portugal
Canada	Ireland	Spain
Denmark	Italy	Sweden

European Economic Community	Japan	Switzerland
Finland	Luxembourg	United Kingdom
France	Netherlands	**United States of America**

Developing countries have no international obligations in the first commitment under the Kyoto Protocol. The members under this party may receive funds, technology and sell emission credits from members of Annex II Parties for climate-related studies and projects. The list of such countries (see Table 3) classified under this category by UNFCC includes China which will be the main point of discussion within this group.

Table 3. Developing Countries based on UNFCC Classification

Afghanistan	Bangladesh	Burkina Faso	Comoros	Dominica
Albania	Barbados	Burundi	Congo	Dominican Republic
Algeria	Belize	Cambodia	Cook Islands	Ecuador
Angola	Benin	Cameroon	Costa Rica	Egypt
Antigua & Barbuda	Bhutan	Cape Verde	Cuba	El Salvador
Argentina	Bolivia	Central Africa Republic	Cyprus	Equatorial Guinea
Armenia	Bosnia & Herzegovina	Chad	Cote d'Ivoire	Entrea
Azerbaijan	Botswana	Chile	Democratic People's Republic of Korea	Ethiopia

Bahamas	Brazil	**China**	Democratic Republic of the Congo	Fiji
Bahrain	Brunei Darussalam	Colombia	Djibouti	The former Yugoslav Republic of Macedonia
Gabon	Kyrgyzstan	Myanmar	Saint Lucia	Togo
Gambia	Lao	Namibia	Saint Vincent and the Grenadines	Tonga
Georgia	Lebanon	Nauru	Samoa	Trinidad and Tobago
Ghana	Lesotho	Nepal	San Marino	Tunisia
Grenada	Liberia	Nicaragua	Sao Tome and Principe	Turkmenistan
Guatemala	Libyan	Niger	Saudi Arabia	Tuvalu
Guinea	Madagascar	Nigeria	Senegal	Uganda
Guinea-Bissau	Malawi	Niue	Serbia	United Arab Emirates
Guyana	Malaysia	Oman	Seychelles	United Republic of Tanzania
Haiti	Maldives	Pakistan	Sierra Leone	Uruguay
Honduras	Mali	Palau	Singapore	Uzbekistan
India	Malta	Panama	Solomon Islands	Vanuatu
Indonesia	Marshall Islands	Papua New Guinea	South Africa	Venezuela
Iran	Mauritania	Paraguay	Sri Lanka	Viet Nam
Israel	Mauritius	Peru	Sudan	Yemen
Jamaica	Mexico	Philippines	Suriname	Zambia
Jordan	Micronesia	Qatar	Swaziland	Zimbabwe
Kazakhstan	Mongolia	Republic of Korea	Syrian	
Kenya	Montenegro	Republic of Moldova	Tajikistan	

Kiribati	Morocco	Rwanda	Thailand	
Kuwait	Mozambique	Saint Kitts and Nevis	Timor-Leste	

Switzerland

Switzerland is of great interest in the category of industrialized countries because Switzerland has achieved significant success towards sustainable development.

Brief Introduction

Switzerland is a country in Western Europe with a population of 7.78 million people. Switzerland is well known for its neutrality and independence. The country officially became a UN member in 2002 and has remained active in UN and other international organizations but with a strong commitment to neutrality. Switzerland is yet to be a member of the European Union as there are doubts whether its neutrality would be compatible with EU membership.

Society

Switzerland is a federal republic with three different political levels; the Confederation, the Cantons and the Communes. Sustainable Development is seen as a joint responsibility, whereby “The Confederation and the Cantons shall

strive to establish a durable equilibrium between nature, in particular its capacity to renew itself, and its use to man" (Swiss Federal Government 1999, Article 73).

The official languages in Switzerland are Italian, French, German and Romansch. The life expectancy at birth is 80 years (CIA 2009). The country's human development index is ranked 9th out of 185 countries in 2009 (Human Development Report, 2009). Human Development Index is a statistical report generated under the United Nations Development Programme. This report classifies the development of countries based on life expectancy, knowledge and education, and standard of living. The list of the top ten countries with the highest HDI includes Switzerland (See Table 4).

Table 4. Top Ranked Countries based on Human Development Index, 2009

1. Norway	6. Netherland
2. Australia	7. Sweden
3. Iceland	8. France
4. Canada	9. Switzerland
5. Ireland	10. Japan

Economy

Switzerland has maintained a stable modern market economy with low unemployment, a highly skilled labor force and a per capita GDP among the highest in the world. The GDP is estimated at US$316.1 billion (purchasing power parity) with a real growth rate of -1.8% (2009 est.) (CIA 2009). The GDP per capita in 2009 was US$41,600 (CIA, 2009). The predominant industries in Switzerland are mainly banking, machinery, chemicals, textiles, tourism, precision instruments and insurance. The industrial growth rate was 6.5% (2006 est.). The labor force by occupation were 3.9% agriculture, 22.8% industry and 73.2% services (2005 est.) while unemployment rate was 3.7 in 2009 (CIA 2009)

Environment

Switzerland has a terrain that is mostly mountainous with a central plateau of rolling plains, hills and large lakes. The country's climate varies widely with altitude and is temperate. Switzerland's natural resources comprise mainly of salt, timber and hydropower. The country has an environmental index of 89.1 (ranked 2nd out of 163) (Yale & Columbia 2010) from its initial 81.4 in 2006 (ranked 16th out of 133). As at 2006, Switzerland's greenhouse gas (million tons CO_2 eq.) emissions were 53 while its greenhouse gas per capita (tons CO_2) emissions were 7.0. As at 2006, the energy consumption (1000tons oil equivalent) in Switzerland was 19,785 (unstat.un.org). Switzerland signed the

Kyoto Protocol on 16th March, 1998, ratified the Kyoto Protocol on 9th July, 2003 and it went into force on 16th February, 2005. (http://unfccc.int)

The country's environment is subject to severe pressures (pollution, extraction of natural resources, spatial restructuring), due in particular to industry, agriculture, transport and tourism. These pressures are as the result of its high population densities and high level of economic activity, and from Switzerland's location at the heart of Europe (OECD, 2007)

Switzerland thrives towards incorporating environmental sustainability in its economic policies. Sustainable development was declared to be a national objective in Article 2 of the New Swiss Federal Constitution in 1999. The Federal office for Spatial Development (ARE), the group that coordinates sustainable development policy in Switzerland, has developed a conceptual framework for conducting sustainability assessments at the federal level. The conceptual framework can be modified to meet the needs specific to different policy areas. This open and adaptable approach focuses on the drafting phase of activities and projects at the level of policy strategy, because this is where the greatest scope for action in optimizing sustainability is found. (Wachter, 2005)

Wachter (2005) argues that sustainable development demands that political action should not be directed from one dimension alone but rather should involve the interplay between the three dimensions of the environment, the economy and society. And that the goal of sustainable development is to achieve

equal development of these three target dimensions and in the process of achieving sustainable development, there is bound to be trade-offs. This is how Switzerland views the concept of sustainable development.

According to OECD (2007), for over 30 years, the ambitious environmental policies promoted by the Confederation have been implemented by the cantons and the communes. These environmental policies have been based on prescriptive approach, sustained by government funding and active public opinion that is deeply concerned about the environment. These policies have yielded remarkable results in combating pollution and natural hazards. Some of these environmental policies have focused on partnership with economic interests and civil society as a whole, on application of the polluter pays principle and on prevention. The Polluter Pays Principle (PPP) is an environmental policy principle which entails that the costs of pollution in the environment be borne by those who cause it. It is usually implemented through two different policy approaches; that is the command-and-control approaches which include performance and technology standards; and the market-based instruments which include pollution taxes, tradable pollution permits and product labeling.

Environmental Management

Strengthening the implementation of environmental policies

Switzerland's performance in fighting pollution is among the best in the world and this reflects in its EPI of 89.1(Yale & Columbia, 2010). This is because of their legislative and institutional policy regarding the environment. There are good interactions amongst all stakeholders which include the businesses, NGOs, as well as amongst the Confederation, Cantons and Communes. The federal authorities formulate wide-ranging planning documents that incorporate environmental issues. Also, economic instruments are being used with growing effectiveness within the framework of greater internalization of external costs. A number of environmental taxes and budget-neutral fiscal measures have been explored and/or adopted (OECD, 2007). All these efforts are reflected in government and business spendings which have remained stable over the years and which have yielded economic benefits such as reduction in health care expenses.

Water

The quality of drinking water in Switzerland is among the best in the world and nearly 97% of its residents are connected to wastewater treatment. The loads of industrial pollutants have been estimated and their environmental costs internalized in the water prices charged to businesses connected to public

sewerage systems. Even though there may be pollution from agriculture and other sources, there are efforts to bring them down to the barest minimum. This way Switzerland is achieving its set objective of ensuring safe and clean water for all in the country.

Air

According to OECD (2007), the air quality in Switzerland has continued to improve as there have been further reductions in concentrations of the main air pollutants. It is amongst the countries with the lowest emission of SO_X and NO_X per unit of GDP. This is due to the strict management and significant financial support, and the highly developed public transport system. There has been a significant decrease in heavy vehicle traffic over the years and an increase in combined transport. There is continuous modernization of railway infrastructure and also the introduction of a distance-related heavy vehicle fee. SwissEnergy programme has significantly helped to reduce energy consumption and CO_2 with an increase in the share of renewable energy sources in the total energy supply.

Nature, biodiversity and landscapes

Planning documents regarding the landscape, nature and forests have been adopted and the corresponding plans implemented (OECD, 2007). Switzerland has achieved some tremendous progress towards sustainable forest management and wetland conservation. Development of natural park systems is

already in progress and there are lots of farmland which consists of semi-natural habitats that help preserves the biotope for the fauna and flora. Even though there is more to be done, the country has laid down financial support and policies to guide in ensuring this.

Integration of environmental and economic decisions

Switzerland has made significant progress in decoupling environmental pressures and economic growth amidst fears of weak economic growth and international competitiveness. This is in regards to air pollutants; the use of fertilizer and pesticides, and water extraction. The sustainable development strategies adopted in 1997 and 2007 have stimulated better collaboration among government agencies which have been followed by evaluation and monitoring procedures. The federal authorities prepare sectoral strategy or planning documents that cover environmental issues. Switzerland has made some progress in internalizing external costs in water treatment and waste management, and in integrating environmental concerns into policies for sectors such as agriculture and transport. The economic instruments implemented such as VOC tax and the heavy vehicle fee, have proven effective.

Integration of environmental and social decisions

Both environmental and social decisions are considered together in Switzerland. Environmental democracy is based primarily on the practice of

holding referenda, on the accessibility of environmental information to all interested parties and to the general public, and on appeals to the Federal Supreme Court by environmental NGOs. Environmental education is also dispensed at all levels, from elementary school to adult education, and it is characterized by innovative approaches and great thematic richness (OECD, 2007).

United States of America

United States of America is picked for discussion from the Annex II parties because United States of America has given huge financial help to a number of developing countries towards projects involving sustainable development but as a country with a lot of international reliance as an economic role model, it still needs to do more in terms of sustainable development and international cooperation by taking a forefront in ratifying the Kyoto agreement.

Brief Introduction

United States is the world's third-largest country by size. It has a population of 307 million, the third largest in the world (CIA, 2009). The country officially became a UN member on 24th October, 1945 and is one of the five permanent members of the UN Security Council. United States has remained very active in many UN and other international organizations with veto powers.

Society

United States of America is a federal constitutional republic with fifty states and a federal district. There are three levels of government; the federal, the state, and the local government. The county and municipal governments usually split the duties of the local government. The federal government is composed of the executive, the legislative and the judicial. More than 90% of the people in America speak English. The country's human development index is ranked 13th out of 185 countries in 2009 (Human Development Report, 2009). The life expectancy at birth is 78years (CIA 2009).

Economy

United States of America has the largest and most technologically powerful economy in the world. In this market-oriented economy, private individuals and business firms make most of the decisions, and the federal and state governments buy the needed goods and services predominantly in the private marketplace. US business firms enjoy greater flexibility than their counterparts in Western Europe and Japan in decisions to expand capital plant, to lay off surplus workers, and to develop new products (CIA, 2009). The GDP is estimated at US$14.26 trillion (purchasing power parity), which is the 2nd largest in the world, with a real growth rate of -2.4% (2009 est.) (CIA, 2009).The GDP per capita in 2009 was US$46,400 (CIA, 2009). The predominant industries in America are mainly petroleum, motor vehicles, steel, aerospace,

telecommunications, chemicals, electronics, food processing, lumber, mining and consumer goods. The industrial growth rate was -5.5% (2009 est.). The labor force by occupation were 0.6% agriculture, 22.6% industry, 35.5% managerial, professional, and technical services, sales and office 24.8%, and lastly 16.5% other services (2007 est.) while unemployment rate was 9.4% in 2009 (CIA 2009).

Environment

United States has a terrain that is of vast central plain, mountains in west, hills and low mountains in east, rugged mountains and broad river valleys in Alaska; and rugged with volcanic topography in Hawaii. The climate is mostly temperate, but tropical in Hawaii and Florida, arctic in Alaska, semi-arid in the Great Plains west of Mississippi River, arid in the great Basin of southwest and low winter temperatures in the Northwest. America's natural resources comprise mainly of coal, copper, lead, petroleum and timber. The country has an environmental index of 63.5 (ranked 61st out of 163) (Yale & Columbia 2010), a drop from its initial 78.5 in 2006 (ranked 28th out of 133). This is obviously a significant decline. As at 2006, America's greenhouse gas (million tons CO_2 equivalent) emissions were 7,017 while its greenhouse gas per capita (tons CO_2) were 23.0 (unstat.un.org). America signed the Kyoto Protocol on 12th November, 1998, but is yet to ratify the Kyoto Protocol (http://unfccc.int). The argument the government gave was that accepting such mandatory emission reductions would

affect the economy of the country. This was under the administration of President George Bush.

There was an early public awareness of the problems associated with environmental degradation from pollution in the America and the government went ahead to create specific environmental responsibilities for companies generating such pollutions. But there have been significant challenges due to its size and varying institutional arrangements among the 50 states when it comes to achieving the same environmental regulations across the country.

United States focuses on incorporating environmental sustainability in its economic policies but its greatest hurdle is achieving this across national level due to political conflicts. Its weakness is in some of the implementation of its strategies as there are no established timelines and no domestic policy framework. The Environmental Protection Agency (EPA) is the independent federal agency established to coordinate programs aimed at reducing pollution and protecting the environment.

In America, sustainable development is directed more as political and economic action rather than involving the interplay between the three dimensions of the environment, the economy and society. There is more concern for political and economic benefits than achieving sustainable development from the three target dimensions and in this process the society is bound to suffer on the long run. According to the Kyoto Protocol, USA is expected to reduce emissions by

7% but United States has refused to ratify the Kyoto Protocol even though it is currently the greatest emitter of carbon dioxide in the world. Instead of handling the reduction of gas emission as a national problem, the US government proposed plan for incentives for US businesses to voluntarily reduce their greenhouse gas emissions 4.5% by 2010 but critics had argued that the plan would only result in an increase in US greenhouse gas emissions over the 1990 levels.

Still, urban, industrial and agricultural activities continue to exert pressure on the environment. Some areas of the population are still exposed to unsatisfactory quality of the environment; the decline in the area of wetlands has not yet stopped and the number of threatened and endangered species is still growing. A change to more environmentally and economically cost-effective and integrative sectoral policies will be essential to moderate the increase in environmental expenditure (OECD, 2007). Otherwise, this may have a long term economic implication in resolving the negative impact on the society.

Environmental Management

Strengthening the implementation of environmental policies

The compliance of environmental policies has improved greatly and the enforcement is strong since the formation of EPA on December 2, 1970. There is enough public participation with good access to environmental information and

the environmental program has profited from environmental science and research.

But environmental policies are still at crossroads in the United States, not because there is less or more environmental concern than ten years ago, but because new and alternative approaches to policy development and implementation appear desirable. There was a considerable decline in its Environmental Performance Index from 78.5 in 2006 to 63.5 in 2010 which requires more strategies and efforts to improve. This decline is due to lower ecosystem vitality scores and high emissions of greenhouse gases.

America should streamline the environmental regulatory system and promote a performance-based approach towards its environmental policies while maintaining health and environmental standards. Also, the country should examine pricing policies or tariff structures for key natural resources such as water, grazing land and fossil-fuel energy to ensure that they take environmental considerations into full account. These tariff structures and pricing policies should be reviewed upwards to strengthen the application of polluters pay principle.

Water

According to OECD (2007), the 1972 Clean Water Act in America has been used very effectively in reducing point discharges. A comprehensive range of nationwide programmes by all federal water agencies support and bring

consistency to state and local activities which has made access to safe and clean drinking water very successful in America.

Despite the progress in improving water quality, about 40% of assessed rivers, 45% of assessed lakes and 33% of assessed estuaries are not supporting their assigned uses and the strategy to make all waters fishable and swimmable is yet to be met. There are still concerns on pollution of waters from agricultural activities and overflows from sewages. The availability of water is still a constraint in some regions like Georgia and Nevada due to drought.

Air

United States has made some considerable progress in reducing emissions over the years. According to OECD (2006), lead emissions have dropped by 88% since 1984, SO_2 decreased by 18% between 1980 and 1993, VOC emissions also decreased while NO_X emissions have stabilized. The country has adopted national ambient quality standards under the Clean Air Act and has implemented regulatory measures on stationary and mobile sources that have proved effective. The regional (multistate) NO_X trading and the Acid Rain Program's SO_2 allowance trading system are some examples of initiatives being done in United States on practical implementation of emission trading which may prove helpful for other countries to emulate.

Even though United States has developed some strategic initiatives towards the reduction of gas emission, it is still the highest emitter of greenhouse gas for CO_2, SO_2, and NO_X, and is still one of the most energy-intensive economies. As at 2006, the energy consumption (1000tons oil equivalent) in United States was 1,994,876 which is very high when compared to that of Switzerland which was 19,785 (1000tons oil equivalent). The energy per capita in United States (kg oil equivalent) was 6,684(unstats.un.org) most of which is derived from fossil fuels. There are still problems with ground-level ozone with deposition of airborne pollution such as acid precipitation and fine particulates, and also, related health and welfare damage. Because of the complexity of federal-state-local government relationships, and of procedures regulating pollutant emissions, the process of implementing regulatory policies has involved high transaction costs to both regulatory agencies and regulated industries (OECD, 2007).

Nature, biodiversity and landscapes

The government and non-governmental organizations have achieved positive results in their efforts to conserve both natural habitats and species. United States manages a widespread system of national parks. Some measures have been adopted for threatened and endangered species, as well as other wildlife species. The farm policies initiated have slowed soil erosion and habitat loss caused by conversion to agricultural uses.

Even with all these efforts, the pressure from economic development is still high on the natural environment. Habitats are still being reduced or degraded in many parts of the country and in coastal areas. There is no reliable system of providing information on many categories of protected areas, particularly for areas outside federal management (OECD, 2006).

Integration of environmental and economic decisions

United States should combine the interplay between environmental and economic issues during policy making processes. This is the only way the country can strive towards better sustainable development. The country places too much emphasis on the economic implications of environmental policies disregarding the long term effect on the society. The country's environmental policies are mostly regarded separately from the other two dimensions (economy and society) instead of taking an integral view of the three.

Even though the United States has achieved some considerable success in reducing the emissions of individual vehicles, the country is yet to succeed in controlling the growth of vehicle traffic. This is due to the low cost of cars, low fuel prices and thus poor patronage of public transportation. The reduction of pollution and traffic congestion can only be achieved if the government pursues long term environmental and transport strategies.

China

China is picked for discussion from the developing parties because China is the second largest emitter of greenhouse gases outside America. Even though China is amongst the developing countries with no binding gas emission restrictions, it is important to assess what China's efforts are towards sustainable development with its high emission of greenhouse gases.

Brief Introduction

China is a country in East Asia. It is the world's fourth-largest country by land size. It has a population of 1.3 billion, the largest in the world (CIA, 2009). The country officially became a UN member on 24th October, 1945 and is one of the five permanent members of the UN Security Council. China has remained very active in UN activities.

Society

China is a communist country with 23 provinces, 5 autonomous regions and 4 municipalities. The system of government is composed of the executive, the legislative and the judicial. The country's languages include standard Chinese or Mandarin, Yue (Cantonese), Wu, Minbei and Minnan amongst other minor languages. The country's human development index is ranked 92nd out of 185 countries in 2009 (Human Development Report, 2009). The life expectancy at birth is 73years (CIA 2009).

Economy

China's economy during the past 30 years has changed from a centrally planned system that was largely closed to international trade to a more market-oriented economy that has a rapidly growing private sector and is a major player in the global economy (CIA, 2009). The restructuring of the economy and the resulting efficiency gains have contributed to a significant increase in Gross Domestic Product since 1978. As at 2009, based on a purchasing power parity basis, China was rated the second-largest economy in the world after the US, although in per capita basis, China is still considered a lower-middle income country (CIA, 2009). The GDP is estimated at US$8.767 trillion (purchasing power parity), which is the 3rd largest in the world, with a real growth rate of 8.4% (2009 est.).The GDP per capita in 2009 was US$6,500 (CIA, 2009). China has several industries which include mining and ore processing, textiles, electronics, petroleum, automobiles, locomotives, aircrafts and telecommunication equipment. The industrial growth rate is 8.1% (2009 est.). The labor force by occupation were 39.5% agriculture, 27.2% industry, and services 33.2% (2006 est.) while unemployment rate was 4.3% in 2009 (CIA 2009).

Environment

China has a terrain that is mostly mountainous. It has high plateaus, deserts in west, plains, deltas, and hills in east. The climate varies widely from tropical in the south to subarctic in the north. China's natural resources comprise

mainly of coal, iron ore, petroleum, tin, natural gas, uranium and hydropower potential, which is the world's largest. The country has an environmental index of 49 (ranked 121st out of 163) (Yale & Columbia 2010) a drop from its initial 56.2 in 2006 (ranked 94th out of 133). This is obviously a poor performance. As at 2006, China's greenhouse gas (million tons CO_2 eq.) emissions were 6,103 while its greenhouse gases per capita (tons CO_2) were 5.0 (unstat.un.org). China signed the Kyoto Protocol on 29th May, 1998, ratified the Protocol on 30th August, 2002 and it came into force on 16th February, 2005. (http://unfccc.int). Even though China has ratified the Kyoto Protocol, it does not have a binding reduction target.

The fast economic growth, urbanization and industrialization have exerted a lot of pressure on the environment with a resultant damage on the ecosystem and society. The Chinese government, in an effort to combat this, is supporting more balanced patterns of development, through concepts such as harmonious society and scientific development. They have campaigned for strategies that include planning for national economic and social development, strengthening environmental institutions, planning modern environmental legislation, and prioritizing environmental and natural resource management.

Despite all these efforts by the Chinese government, the rate of air and water pollution is still the worst in the world. There are still problems with biodiversity protection, waste management and desertification. This is because China has not been able to effectively integrate environmental challenges with

both economic and social decisions. China is still more concerned about the economic impact of some of these environmental policies rather than fully supporting them. The country has challenges with the implementation of some of its environmental policies as the government's financial support towards the environmental agency is still poor. The environmental agency responsible for environmental protection in China is the State Environmental Protection Agency (SEPA).

In China, sustainable development is still analyzed more from the impact it will have on the economy rather than on the three dimensions; the environment, the economy and the society. And if the economic benefit of an environmental policy is perceived to be low, such policy will be downplayed without considering the trade-offs. This is still the major challenge with a country like China more carried away with economic growth.

Environmental Management

Strengthening the implementation of environmental policies

According to OECD (2007), China's comprehensive and modern set of environmental laws, together with its successive Five-Year Plans for National Economic and Social Development (FYPs), and Five-Year Environmental Plans (FYEPs), provide a high-quality framework for pursuing sustainable development and environmental progress. China is working on the implementation of some

new policies which include decoupling pollutant emissions from economic growth, integrating environmental protection and economic decision-making on an equal footing and applying a mix of instruments to resolve environmental problems. It also supports and award schemes to encourage implementation at the local level with NGOs.

However, these efforts by China are still insignificant compared to the rate of environmental pressures due to fast economic growth. The economic incentives and societal benefits are still not strong enough to encourage strict environmental compliance. The performance objectives of local leaders, the pressures to raise revenues locally to finance un-funded mandates, and the limited accountability to local populations have generally meant that economic priorities have over-ridden environmental concerns (OECD, 2007).

Water

China has clear mechanisms and legal framework to set water quality objectives especially through its 2002 Water policy. It also established economic instruments for the usage of water at low rates. On flooding concerns, China invested heavily in infrastructures to protect against flood damage and has achieved some success in reducing flood risks in many areas. Basic institutions for river basin management are in place and the existing physical planning laws are strengthened to prevent further development on flood plains.

Despite all these strategies and efforts, the water pollution in China is still a major challenge. The agricultural, industrial and domestic activities still result into pollution as they are discharged into the rivers and lakes. The aquatic ecosystem is threatened; human health is also a major cause of concern as the use of untreated water in some rural areas results into water-borne illnesses such as diarrhea and typhoid. A lot of financial investment needs to be made by the Chinese government in order to tackle these challenges and the enforcement of very strict environmental policies that border on water and rivers should be of priority.

Air

China recently updated and tightened its legislative and regulatory framework on emissions of gases. It also introduced total emission controls and the designation of special control zones. The country recorded some success in diversifying energy sources and its dependence on coal was reduced from 69% to 30% during 1990-2004 (OECD, 2007). To improve the air quality due to transportation challenges, the country adopted fuel-efficiency standards for light-duty passenger vehicles in 2004, Euro standards for vehicle emissions and bus rapid transit systems. These efforts have contributed to some improvements in the surrounding air quality in China.

However, the quality of air in China is still one of the worst in the world. China is the second largest global emitter of greenhouse gases by volume.

China’s car industry is the world’s third largest with many of its cities paralyzed by traffic and its inhabitants choking on the fumes of poor fuel quality. The motor vehicle accounts for more than 3% or 4% of China’s greenhouse gases, yet the industry is still blossoming without stringent environmental laws.

China promised a “green” Olympics as part of Beijing’s bid to host the 2008 summer games. In order to achieve this, China provided 50 lithium-battery-powered-buses and 1,150 low-floor buses that met the Euro-IV emission standards. The country made plans to close down backward iron foundries with a total production capacity of 100 million tons and backward steel mills with a total production capacity of 55 million tons between 2006 and 2010. It also relocated the Shougang steel industry from Beijing.

The output reduction and planned relocation of Shougang was seen as a departure from China’s earlier policies on growth while ignoring the environmental consequences. This was to help Beijing's government honor its commitments to improve air quality in time for the Olympics. The new plants adopted new technologies to minimize emissions and waste discharges.

From 1998 to 2007, Beijing spent $15.7 billion on environmental initiatives. According to the Chinese government, the city saw only 100 days of good air quality in 1998, while there were 241 such days in 2007. In order to cut down on air pollution, Beijing temporarily moved and shut down factories. It took more

than 1.5 million cars off the road and built new wastewater treatment plants, among many other things.

Even though China achieved most of its bid commitments, this exercise was not broadly applied to other cities and the momentum to achieve a “green” environment diminished after the hosting of the Olympics in 2008.

According to World Bank report (1992), epidemiological research has found consistent and coherent associations between air pollution and various health effects. These health issues in China include respiratory symptoms, chronic bronchitis, reduced lung function, cardiovascular and cerebrovascular diseases, hospitalization, outpatient visits, work and school absenteeism and premature death. And in trying to resolve these health disasters, China is bound to lose economically on the long run.

Nature, biodiversity and landscapes

China has received international recognition for its wetlands, biosphere reserves, natural and cultural heritage preservation programmes. There have been significant increases in protected areas at the national, provincial, and county levels. New forestry initiatives have been taken to further develop shelter forests in arid and coastal areas while the country is beginning to recognize the value of environmental outreach (OECD, 2007).

Despite these successes, China still needs to integrate nature development protection concerns into development plans and coordinate efforts to protect nature and biodiversity inside and outside protected areas.

Integration of environmental and economic decisions

China is making efforts to place environmental protection in a more strategic position. Different strategies are being employed to integrate environmental and economic decision-making. Some energy prices like the price of coal have been deregulated and the use of environment-related taxes has equally expanded.

However, doubling the GDP would involve strengthening of the environmental management and finance, so that economic growth is environmentally sustainable. According to OECD (2007), even though China may be heading in the right direction, its present policies may not be enough to meet the strategic environmental objectives of the government.

Integration of environmental and social decisions

China has achieved significant success in moving a large number of its populace above the poverty line over the past 30 years. The government has channelled its focus towards emphasizing economic growth with more attention to social and environmental concerns. More access to environmental information and seminars is supported by the government. This is because the government

is interested in educating its citizens on the implications of environmental degradation in the society.

While some aspects of the urban environment in China's mega and large cities have improved, there is still the growing demand for environmental services such as water supply leading to large industrial migration from western and central China to Coastal China creating more environmental pressure on coastal China. However, China needs to reduce industry relocation and environment-related distortions to competitiveness and trade within China through putting in place effective and efficient national environment standard in all the provinces. Also, the country has to guard against abuse of the environment by foreign investors and encourage investments through the use of economic incentives that are attractive.

Revealing Questions

All these efforts made by Switzerland, America and China are encouraging towards achieving the global target set by UNFCC but the issue is; are the countries doing enough? Should the countries reassess their approaches towards policies made to achieve sustainable development?

It is obvious from Switzerland's EPI of 89.1(Yale & Columbia, 2010) that the country is heading in the right direction towards achieving its sustainable development objectives. What is Switzerland doing differently from America and

China? It is simply its approach of adopting policies from an integrative view of the environment, society and economy.

CHAPTER 4

INTEGRATION OF ENVIRONMENTAL AND ECONOMIC POLICIES TOWARDS A BALANCED SOCIETY

In order to achieve sustainable development in the society, it is important to recognize that policies based solely on the environment without considering the other dimensions such as the economic and social impact will not meet any nation's long term objectives. Environmental objectives cannot be achieved for long in the presence of an unhealthy economy, nor is it likely that economic activity that is built on a degrading environment is likely to be sustainable. Although, finding the right balance may be difficult, but the right approach to sustainable development is through the integration of environmental, economic and social policies.

According to Underdal (1980), for a policy to be considered "integrated", comprehensiveness, aggregation and consistent criteria must be met. Comprehensiveness refers to issues, actors and space; aggregation refers to the evaluation of policy from an overall perspective (i.e. environment, economy and society) while consistency refers to the fact that the different components of an integrated policy are in accord with each other.

A lot of progress has been made in recent years towards better integration of economic and environmental objectives leading to environmental policies that

are more efficient. Some examples include the use of economic-based approaches to environmental policies and the application of environmental assessment procedures.

As both costs and benefits of environmental protection expand, the need for stronger integration of environmental and economic policies will evolve, as will the stakes for individual consumers and producers in the society - all of whose incomes and other framework conditions will increasingly be affected by policies aimed at protecting environmental quality (OECD, 2008)

Switzerland as previously discussed in the last chapter, may not have achieved the perfect balance for their society but the country has aligned itself towards the integration of environmental, economic and social policy-decisions which is the right step towards sustainable development. Switzerland is also making efforts beyond its borders through its international cooperation for sustainable development by ratifying the Kyoto protocol and by actively promoting environmental protection in the international flora. America and China exhibit the zeal to strive in the same direction as Switzerland, but because a lot of their policies are not properly integrated, they continue to face stronger environmental degradation compared to Switzerland.

More so, America and China are still concerned about undertaking international binding environmental policies because of the fear of negative impact on the country’s economy and its political implications. These countries

should actually focus on the long range impact on all the three dimensions (environment, economy and society) in order to attain their desired goals; otherwise, short term decisions may turn out to be a costly decision on the long run both economically and politically.

In Switzerland, all levels of government, private businesses and non-governmental organizations (NGOs) are fully interested and involved in the drive towards sustainable development at the environmental, economical and societal levels because they all understand the impact of the negative consequences on the society. There exist joint efforts and proper communication process when policies are made in Switzerland. In this way, people contribute to the final policies and therefore strive to comply.

However, in America, most of the environmental policies are not uniform around the states making it difficult to achieve a national target. Due to pressing short term economic benefits, some states give in to some policy allowances creating inconsistency in compliance. Also, in China, the agency in charge of environmental protection is not given the full financial and political support required to carry out their responsibilities effectively thereby resulting in poor compliance levels.

America and China, as the two largest emitters of greenhouse gases, need to step up and tackle the environmental challenges the world is facing and not be limited to the confines of their borders. Some of these gases or pollutions

are not regional but transcend beyond their borders resulting in global calamity. Consideration has to be given to the world at large due to the implication of one-sided policy-decision making.

A number of countries around the world are already implementing strategies that are integrated and have achieved significant successes in the benefits the society is deriving. Some of these strategies are outlined below

Imposing Environmental Taxes

This strategy involves meeting the set environmental objectives through the use of market-based instruments such as environmental taxes. As these taxes are levied on the polluters and users of the products, it gets to a point where the product becomes too costly to produce or purchase leading to a change in their behavior towards the environment. There are also incentives for the environmentally friendly innovations on the long run through this process. For instance, in Portugal, Netherlands and Finland, several differentiations in their car registration taxes were introduced to encourage car buyers to opt for the cleanest car models. This has challenged automakers to develop technology that encourage fewer emissions in cars. In Turkey, increase in tax rates on petrol and diesel has led to a significant reduction in the usage of fuel and emission of gases.

Tradable Permits

This system also provides some form of flexibility as environmental taxes do for polluters in order to achieve the set environmental goals. Trade permits are a means of establishing caps or promoting direct investment in environmentally beneficial outcomes towards achieving environmental goals. Some countries apply the cap-and trade system while others use the baseline- and –credit system. In the cap-and trade choice, the central authority sets a limit on the amount of gases that can be emitted over a certain period. Companies are then issued emission permits in form of credits which represents the right to emit a specific amount. The total amount of credit cannot exceed the cap. The companies that require more emission would buy credits from those who emit less. This process is referred to as trade. In this regard, those who can reduce emissions most cheaply will do so, achieving the pollution reduction at the lowest cost to the society.

However, in the baseline-and credit approach, there is no precise cap on aggregate emissions. Rather, each firm has the right to emit a certain baseline level of emissions. The baseline is determined by the central authority based on historical emissions or from a performance standard that specifies the permitted ratio of emissions to output. Those polluters that are not under an aggregate cap can create credits by reducing their emissions below the baseline level of emissions. These credits can be sold to polluters that exceed their baselines.

Presently, both cap-and-trade and baseline-and-credit systems are being implemented at similar rates at the international level (Hasselknippe 2003). The emission trading systems reduce abatement costs and make inventors focus more on environmental effectiveness. Examples include the tradable SO_2 permits in the US and the UK trading systems for CO_2 emissions and for landfilling of biodegradable household waste.

Encouraging Technological Development

It is not enough to roll out environmental policies without the available technology to implement it effectively; otherwise lots of industries will close down or relocate which will lead to high rate of unemployment in the society. Technological development should be well promoted in line with environmental policies. Low-emission technologies offer considerable promise for aiding the decoupling of economic growth from long-term environmental degradation. Technological development can be promoted through policies directly - through financial support like grant or preferential tax treatment; or indirectly - through various constraints placed on environmentally harmful products or through economic incentives provided by taxes.

Direct Environmental Regulation

Direct regulatory instruments, such as laws on environmental standards or limits on greenhouse gases, represent a major proportion of frameworks

currently being used by most countries. According to OECD (2008), while the environmental effectiveness of direct regulatory approach is often good, the major hurdle is to avoid undue inflexibilities in these regulations that might limit their environmental effectiveness and economic efficiency.

Environmental Policies and Cushioning the Effects on the Society

The long term effects of environmental policies on the society are usually fully considered by a number of countries before embarking on the implementation. In this way, the cost to the society is factored in and sometimes when the burden is heavier on the low-income earners, some relief measures are taken to reduce the impact.

For instance in 2008, Australian lower-income households were given huge compensations to cushion the higher energy and fuel costs under the emission trading scheme proposed by the government. The scheme involves placing a cap on carbon emission in Australia by industries through the auctioning of permits to companies that emit carbon. This mechanism will initially cause an increase in the costs of production of the companies that purchase the permit pending their finding alternative ways of reducing such costs. These costs would naturally be passed to the consumers and the lower-income earners are likely to suffer the impact the most.

All these policies reflect the picture of what the concept of integrated policies is all about. These policies are comprehensive enough to have considered all parties involved; aggregate to the point of considering the impact on the environment, economy and society; and consistent with the overall objectives of the nation. This is the type of approach countries should adopt in ensuring the objectives of sustainable development are met.

CHAPTER 5

CONCLUSIONS

Sustainable environment and growth can only be achieved through the integration of policies that connect or integrate the environment, the economy and the society. This means in assessing environmental policies, the long term impact should be viewed from all three perspectives; the environment, the society and the economy. Approaching sustainability from a single dimension may prove successful on the short run but costly on the long run.

The environmental problems have expanded towards larger complexity (Holmberg & Karlsson 1992) as the global per capita demand on energy increased (Lazarus 1993 and Johansson et al. 1993). It will therefore require collective global efforts to tackle these challenges.

The global Copenhagen conference in December, 2009 gave an insight of the challenge of tackling the task politically. At the Copenhagen conference, more time was spent shifting blame than assigning emission targets that are more binding than the Kyoto Protocol of 1987. The conference ended without getting the United States to commit to a binding emission target while some of the developing countries such as China left with the unwillingness to cut further on gas emissions. This has created more concern with the knowledge that some of the emission gases like CO_2 causing global warming are not just regional

problems. It therefore requires better options and strategies by the UN to get all involved countries to commit to reducing their emissions.

Some options that the UN may consider should include imposing higher tariffs on products of countries emitting more than their required cap. Through this means, such products would become more expensive and less competitive for the international market and this on the long run may result in compliance from such countries. UNFCC may also consider other ways of allocating the emission targets as the current options are creating a lot of controversies. The developing countries may argue that the global warming the world is experiencing is as a result of more than 50 years industrial activities by the developed countries but then the developed countries may also argue that without carrying out these industrial activities in the past, the developing countries would not be enjoying some of the amenities they have today. The arguments may never end, but the environmental issues are still imminent.

Countries such as China and America can't continue emitting gases at the current rate by downplaying sustainable development while emphasizing more on economic growth at the detriment of the world. Integrating economic and environmental policies in decision-making will create a long lasting benefit to their society and the world at large. Other countries such as Switzerland, Sweden and Finland are already adopting these integrative approaches and the impact on the

economy is even positive. Switzerland is currently rated 2nd out 163 countries with an EPI value of 89.5 and has one of the best economies in the world.

It may be argued that as GDP increases, the greater scale of production leads directly to more pollution, but, at a higher level of income per capita, the demand for health and environmental quality rises with income which can translate into environmental regulation, in which case there tend to be favorable shifts in the composition of output and in the techniques of production (Selden & Song (1994), Stokey (1998), and Andreoni & Levinson (2001)). This argument cannot hold for long with the rate of environmental degradation the world is currently facing. If this situation persists, then the world will be faced with a bigger catastrophe.

The way forward for a lot of countries faced with the need for sustainable growth, is to embark on industrial activities that employ the efficient use of natural resources through efficient technology, in order to reduce the impact of environmental degradation on the society. And, if the technology is not yet available, such activities should be properly coordinated to encourage future innovations. Lastly, strict monitoring of these activities is important to ensure compliance.

REFERENCES

ACCA (2004). Towards transparency: Progress on global sustainability reporting 2004, London.

Adams, W.M. (2001). *Green Development: environment and sustainability in the Third World.* London: Routledge.

Andreoni, J. and Levinson, A. (2001). The Simple Analytics of the Environmental Kuznets Curve. *Journal of Public Economics*, 80, p. 269-86

Baskin, J. (2006). Corporate responsibility in emerging markets. *Journal of Corporate Citizenship*, 24 (winter): p.29–47.

Barton, H. (2000). *Conflicting perceptions of neighborhood: In Sustainable Communities*. Barton H (ed.), London: Earthscan

BusinessDictionary.com on definition of “Environmental Sustainability” http://www.businessdictionary.com/definition/environmental-sustainability.html (Accessed February 23, 2010)

Central Intelligence Agency (CIA) (2010). The World factbook (February 4, 2010 – Date last updated) – https://www.cia.gov/library/publications/the-world-factbook/ - (Accessed February 29, 2010)

Dale, A. (2001). *At the edge*. Vancouver, BC: UBC Press.

Daly, H E, (1973). *Toward a Steady State Economy*. San Francisco, CA: Freeman,

Daly, H. E. (1974). The Economics of the Steady State. *Am. Econ. Rev*., March, 15–21.

Daly, H. E. (1992). Allocation, Distribution and Scale: Towards an Economics which is Efficient, Just and Sustainable. *Ecol. Econ.*, 6(3), 185–193.

Daly, H. E. (1999). *Ecological Economics and the Ecology of Economics*. Cheltenham: E Elgar Publications.

Daly, H. E. and Cobb, J. B. (1989). *For the Common Good*. Boston, MA: Beacon Press.

Du Plessis, C. (2000). *Cities and sustainability: sustaining our cultural heritage.* In *Cities and Sustainability: Sustaining Our Cultural Heritage*, Conference Proceedings. Brandon P, Lombardi P, Perera S (eds.). Sri Lanka: Kandalama

Elkington, J. (1997). Cannibals with forks. The triple bottom line of 21st century business, Oxford: Capstone

Financial Times Lexicon on the definition "Sustainable Growth" http://lexicon.ft.com/term.asp?t=sustainable-growth (Accessed February 23, 2010)

France24 Magazine (2009). China positive on Copenhagen summit, December, 20. http://www.france24.com/en/node/4952435 (Accessed February 8, 2010)

Hasselknippe, H. (2003). Systems for carbon trading: an overview. *Climate Policy,* 3S2, S43–S57.

Holmberg, J. and Karlsson, S. (1992). On Designing Socio-Ecological Indicators, In: Svedin, U. and Hägerhäll Aniansson, B. (eds.), *Society and Environment: A Swedish Research Perspective*, Dordrecht: Kluwer Academic Publishers.
IUCN (1980). *World conservation strategy: Living resource conservation for sustainable development.* IUCN, Gland, Switzerland.

Human Development Reports (2009). Statistics of the Human Development Report. http://hdr.undp.org/en/statistics/ (Accessed February 18, 2009)

Jabareen, Y. (2008). A new conceptual framework for sustainable development. *Environment, Development and Sustainability*, 10, p.179–192

Jerry Taylor (2002). Sustainable Development: A dubious solution in search of a problem. *Policy Analysis*, No. 449, p.1-49

Johansson, T. B., Kelly, H., Reddy, A. K. N., and Williams, R.H. (1993). Renewable fuels and electricity for a growing world economy: defining and achieving the potential. In: Johansson, T. B., Kelly, H., Reddy, A. K. N., &Williams, R.H. (Eds.) *Renewable Energy. Sources for fuels and electricity*. Washington, D.C: Island Press.

Lazarus, M. (1993). *Towards a fossil free energy future - the next energy transition*. Stockholm Environment Institute, Boston Center, Boston, Amsterdam: Greenpeace International.

Lélé, S.M. (1991). Sustainable development: a critical review', *World Development* 19: p.607-621.

Meadows, D. et. al. (1972): *The Limits to Growth*. London: Potomac Associates, p. 158.

OECD (2008). An OECD framework for effective and Efficient Environmental Policies: Overview. http://www.oecd.org/dataoecd/8/44/40501159.pdf - (Accessed March 2, 2010)

OECD (2007). Environmental Performance Review of Switzerland http://www.oecd.org/dataoecd/8/27/38195323.pdf - (Accessed February 29, 2010)

OECD (2007). Environmental Performance Review of China http://www.oecd.org/dataoecd/58/23/37657409.pdf - (Accessed February 29, 2010)

OECD (2006). Environmental Performance Review of United States of America http://browse.oecdbookshop.org/oecd/pdfs/browseit/9705111E.PDF - (Accessed February 29, 2010)

Seldon, T. and Song, D. (1994). Environmental Quality and Development: Is There a Kuznets Curve for Air Pollution Emissions? *Journal of Environmental Economics and Management*, 27, p.147-162.

Shaw, Jonathan (2002). The Great Global Experiment, *Harvard Magazine*, November – December, http://harvardmagazine.com/2002/11/the-great-global-experim.html (Accessed March 4, 2010)
Stokey, N. (1998). Are There Limits to Growth? *International Economic Review*, 39(1), p.1-31.

Swiss Federal Government (1999). Federal Constitution of the Swiss Confederation.

UN Conference on Development (1992). Earth Summit. Rio de Janeiro http://www.un.org/geninfo/bp/enviro.html (Accessed February 26th, 2010)

Underdal, Arild (1980). Integrating Marine Policy: What? Why? How? *Marine Policy*, July.

United Nations (1987). *Our common future*: The World Commission on Environment and Development. Oxford: Oxford University Press.

United Nations Framework Convention on Climate Change (1997). The Kyoto Protocol http://unfccc.int/kyoto_protocol/items/2830.php - (Accessed February 28th, 2010)

United Nations Framework Convention on Climate Change (1997). The Kyoto Protocol – Status of Ratification http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php - (Accessed February 28th, 2010)

United Nations Framework Convention on Climate Change (1997). The Kyoto Protocol – Parties and Observers http://unfccc.int/parties_and_observers/items/2704.php - (Accessed February, 28th, 2010)

United Nations Statistics (2009) Environment Statistics Snapshot - Switzerland http://unstats.un.org/unsd/ENVIRONMENT/envpdf/Country_Snapshots_Sep%202009/Switzerland.pdf - (Accessed March 1, 2010)

United Nations Statistics (2009) Environment Statistics Snapshot – United States of America http://unstats.un.org/unsd/ENVIRONMENT/envpdf/Country_Snapshots_Sep%202009/United%20States.pdf- (Accessed March 1, 2010)

United Nations Statistics (2009) Environment Statistics Snapshot – China http://unstats.un.org/unsd/ENVIRONMENT/envpdf/Country_Snapshots_Sep%202009/China.pdf- (Accessed March 1, 2010)

Wachter, David (2005). Sustainability assessment in Switzerland: From theory to practice, EASY-ECO 2005-2007, 1st Conference, Manchester (UK), 15-17 June.

Wackernagel, M. and Rees, W.E. (1996). *Our Ecological Footprint: Reducing Human Impact on the Earth*. Gabriola Island, BC: New Society Publishers.

World Bank (1992). “Development and the Environment,” *World Development Report*.

World Business Council for Sustainable Development (2010). Vision 2050 : The new agenda for business http://www.wbcsd.org/DocRoot/a0RHrurQSXJepNYBrS8I/Vision_2050_FullReport_040210.pdf - (Accessed March 27, 2010)

Yale University and Columbia University (2006). Environmental Performance Index (EPI) http://www.yale.edu/epi/2006EPI_Brochure.pdf - (Accessed February 28, 2010)

Yale University and Columbia University (2008). Environmental Performance Index (EPI) http://epi.yale.edu:2008/Home- (Accessed February 28, 2010)

Yale University and Columbia University (2010). Environmental Performance Index (EPI) http://www.epi.yale.edu/Countries - (Accessed February 28, 2010)