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Sustainable Tourism and the Law: Coping with Climate Change

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SUSTAINABLE TOURISM AND THE LAW: COPING WITH CLIMATE CHANGE

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ABSTRACT

This dissertation addresses the critical relationship between the tourism sector and sustainable development, examining global trends and the problems they raise, exploring the current set of solutions being implemented, and offering some new ideas for better managing the relationship. Among these, the most important and comprehensive is the "Climate and Sustainable Tourism Model" a framework developed to encapsulate many of the issues explored in this dissertation and offering insights for policy makers seeking to develop better solutions. Moreover, this dissertation acknowledges the continuing importance of market-based solutions for harmonizing the development of the tourism sector with the demands of sustainability. Likewise, it offers the "Development Cycle Model for Sustainable Ecotourism" and the "Environmental Impact Assessment Model for Community-Based Ecotourism Development," each of which diagrams complex dynamics that can offer better outcomes if understood and managed correctly. For a variety of reasons, this dissertation concludes by offering suggestions for how the Kingdom of Thailand and the Association of Southeast Asian Nations, which rely heavily on tourism, can adopt these innovative ideas and reap considerable rewards.

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POLICIES AND ACTION PLANS FOR SUSTAINABLE TOURISM: THE CLIMATE AND SUSTAINABLE TOURISM MODEL

PREFACE

The tourism sector has become one of the fastest and largest growing industries around the world and can make an important contribution to sustainable development. Tourism is a crucial component of the economy for many countries, including developing countries and small island states whose economies rely on it for currency, jobs and growth. However, there current economic recession may obstruct the development of sustainable tourism.

Moreover, climate change and its consequences pose direct and indirect impediments to the development of sustainable tourism. Implementing and developing policies, plans and strategies regarding sustainable tourism and climate change is a challenge for policy makers. Plans for adaptation and mitigation of climate change must be applied to enhance sustainable tourism. New and emerging bodies of law must address how to sustain tourism in the midst of climate change.

This dissertation offers a set of new tools to apply in order to achieve sustainable tourism. However, these new tools alone are not a panacea for sustainable tourism; other related policies must mutually be developed. First, the "Climate and Sustainable Tourism Model" will serve as a guideline for the policy maker to address the impact of climate change on tourism development. It assists in the compilation of a list of necessary adaptation and mitigation programs, as well as financial resources for tourism development. The "Climate and Sustainable Tourism Model" should be applied into varying types of tourism development because all forms of tourism development have an impact on climate change.

Second, this dissertation promotes the role of "ecotourism" as a good solution to bridge the gap between sustainable tourism and climate change. The ecotourism sector has a longstanding reputation for having a positive impact on sustainable development. In the meantime, ecotourism can be a good option for the mitigation of climate change by promoting the use of energy while operating ecotourism, as compared with the operation of mass tourism. Such benefits derive from the unique characteristics of ecotourism.

In order for policy makers to adapt ecotourism into a sustainable trade in tourism service, they must proceed with caution to establish policies regarding the climate and sustainable ecotourism. The "Development Cycle Model for Sustainable Ecotourism" is proposed as a key for successful ecotourism development. The distinguishing feature of the model is that it can be a tool for sustainable tourism by working as the cycle. Understanding the cycle provides insight into how ecotourism can serve as a tool for sustainable development. Governments can begin by implementing parts of the cycle. Once the cycle is complete, governments can launch multiple cycles simultaneously. Once one cycle runs successfully, ecotourism will be on the path to achieving sustainable development. The development cycle model for sustainable ecotourism will transform the definition of sustainable tourism making it at once concrete and workable.

Third, ecotourism's policies and practices show that ecotourism destinations are usually located in attractive natural areas or remote locations, and are connected closely with local communities. The role of the local and indigenous community in ecotourism development was recognized in the discussion on ecotourism development. However, in the practice of ecotourism development, the socio-economic and cultural needs of local and indigenous people is often neglected, thereby undermining sustainability. Therefore, the dissertation offers the "Environment Impact Assessment Model for Community-Based Ecotourism Development" in order to implement the environmental impact assessment principle and provide public participation in ecotourism development. It is a "bottom-up" idea, to let the community control its own development by using an EIA process, while being monitored by national and local authorities. Therefore, it could provide the basis for a win-win situation of ecotourism development, taking into account considering economic and sociocultural issues.

Finally, another main focus of the dissertation is the proposal of a market-based solution to address methods to mitigate Green House Gases (GHG) emission from tourism and other sectors. Among other measures, a market-based solution is an efficient tool to mitigate climate change, in addition to a cap-and-trade program, which is prevalent among many countries. Aside from leading to a reduction in GHG, a market-based solution will ensure energy efficiency and the development of technology and can

produce revenues that can be invested in the sustainable tourism services sector. Therefore, the developing countries and regional bodies which rely heavily on tourism and production for export, such as Thailand and the member of the Association of Southeast Asian Nations (ASEAN), should take leadership roles to better achieve the benefits of such market-based solutions that harmonize the demands of development and environmental sustainability.

Some areas in the world already are affected by climate change and should not delay in applying "the Climate and Sustainable Tourism Model," "the Development Cycle Model for Sustainable Ecotourism," and "the Environment Impact Assessment Model for Community-Based Ecotourism Development" for sustainable tourism. While the growth of the tourism sector might slow down in the near future due to the global economic recession, the tourism industry will always exist due to the universal human desire to travel and explore. The tourism industry will continue to create jobs for the local community and local people, especially if the government see the important relationship between tourism development and climate change, and implement plans and policies accordingly.

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CHAPTER I: ENHANCING SUSTAINABLE TOURISM: BALANCING AND HARMONIZING THE SUSTAINABLE DEVELOPMENT PILLARS AND CLIMATE CHANGE REGIME

INTRODUCTION

Tourism is one of the fastest growing sectors in the international trade in services.[1] Tourist infrastructure must expand to meet a growing world population and market demand for all aspects of tourism. However, legal systems in most nations have not created the planning and management measures necessary to ensure that growth in tourism is sustainable. New legal measures must be designed and implemented for achieving sustainable tourism. This major challenge is now complicated further by the effects of climate change.[2] Building sustainable tourism also requires new legal tools that mitigate and adapt to climate change impact. Meeting these challenges is the most important question confronting international trade negotiations in the tourist sector.

The tourism industry has tremendous potential to contribute to sustainable development.[3] In order to achieve sustainable development, states must integrate, balance or harmonize, competing economic, environmental, and social interests and resources.[4] These interests are represented as pillars on the sustainable development model. However, the impediments to achieving sustainable development arise not only from an imbalance of the economic, environment, and social sustainable development pillars but

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[1] *See* Programme for the Further Implementation of Agenda 21, U.N. GAOR, 19th Special Sess., Annex, U.N. Doc. A/RES/S-19/2 ¶ 67 (Sept. 19, 1997); *see* MEGAN EPLER WOOD, ECOTOURISM: PRINCIPLES, PRACTICES & POLICIES FOR SUSTAINABILITY 7 (2002) (describing travel and tourism among the world's fastest growing industries); *see* MARTHA HONEY, ECOTOURISM AND SUSTAINABLE DEVELOPMENT: WHO OWNS PARADISE? 8 (1999).

[2] National Academy of Sciences (NAS), *Understanding and Responding to Climate Change: Highlights of National Academies Report* 2 (2008), *available at* http://dels.nas.edu/dels/rpt_briefs/climate_change_2008_final.pdf (explaining that the phrase "climate change" is growing in usage over "global warming" because the phrase "climate change" helps convey that there are changes in addition to rising temperatures).

[3] *See* UNITED NATIONS ENVIRONMENT PROGRAMME & WORLD TOURISM ORGANIZATION, MAKING TOURISM MORE SUSTAINABLE: A GUIDE FOR POLICY MAKERS 2 (2005) [hereinafter A GUIDE FOR POLICY MAKERS] (explaining that and how "[t]ourism can play a significant role in sustainable development ….").

[4] *See id.* at iii (explaining in the foreword that "[a]wareness about sustainability issues – which referred originally to the natural environment but now also covers the social, economic and cultural spheres as well as the built environment ….''); *see also* Programme for the Further Implementation of Agenda 21, *supra* note 1, ¶ 3 (reaffirming that "the achievement of sustainable development requires the integration of its economic, environmental and social components.").

also from climate change.[5] Consequently, the development of the tourism sector must begin with the goal of achieving a balance of the three pillars of sustainable development and climate change.

Climate change is affecting all social and economic life. According to the consensus on climate change set forth by the Intergovernmental Panel on Climate Change (IPCC), the results of climate change mostly have environmental consequences, such as an increase in average temperature, the widespread melting of snow and ice, and a rising average global sea level.[6] However, climate change also has a direct and indirect economic and socio-cultural impact. Indeed, these aspects – economic, environment and social aspects - are considered to be the main components of sustainable development. Therefore, the problem of climate change is not limited to the phenomenon of change in climate, but also the obstruction of sustainable development.

While scientists work around the clock to determine the causes and identify responses to global warming, there is still debate among them regarding the causes of climate change. On one hand, some scientists believe that global warming is caused by increasing Green House Gases (GHG) in the atmosphere, which are primarily caused by anthropogenic, or human activities generated by fossil fuel use, including manufacturing industries, transportation, land-use change, and agriculture[7]. On the other hand, some scientists argue that the global warming phenomenon occurs through nature and that the change we are experiencing is natural.[8] Regardless of the outcome of these scientific debates, this dissertation does not aim to settle these debates. Rather, this dissertation focuses on how sustainable tourism anticipates and reckons with the effects of climate change.

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[5] Intergovernmental Panel on Climate Change, *Summary for Policymakers - Climate Change 2007: Mitigation, Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* 21 (2007), *available at* http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf [hereinafter Mitigation of Climate Change Summary Report] (stating "[a]ddressing climate change can be considered an integral element of sustainable development policies.").

[6] Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report – Summary for Policymakers* 2-4 (2007), *available at* http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf [hereinafter IPCC's Fourth Assessment Report].

[7] *See id.* at 5.

[8] *See* discussion *infra* p. 26 and note 107-09.

Tourism offers a good starting point for analyzing the relation between sustainable development and climate change. On one hand, tourism can be an effective tool to use in achieving sustainable development[9] because its can benefit all of the pillars of sustainable development, including the economic, environment and socio-cultural pillars.[10] At the same time, tourism can be affected by climate change since some of tourism sectors, such as nature tourism, ecotourism and sport tourism, are dependent upon using natural resources, such as forests, seas, coastal areas, and climatic conditions.[11] Climate change not only leads to a changing climate in tourist destinations, but also has a significant impact on economic and sociocultural aspects of the environment, on which tourist destinations rely. For example, some destinations where the main income is derived from the tourism industry, such as small islands and developing countries, will be greatly affected by the direct and indirect impacts of climate change, such as coastal erosion, unemployment, poverty, environmental degradation, and immigration. Smaller, fewer or less pristine rain forests are less fun to visit. Degraded coral reefs attract fewer snorkelers, and scorching hot beaches draw fewer bathers.

On the other hand, some aspects of tourism can contribute to climate change, such as transportation, accommodations, and tourist activities. Tourists frequently consume directly from service suppliers by traveling to and staying at tourist resorts, as the tourism business relies heavily on transportation – such as international and domestic travel by air, road, cruise ship and rail – to bring tourists in and out from the destination areas. If the number of tourists grows, so will the need for transportation. Transportation which uses fossil fuel can contribute GHG into the atmosphere. One major controversy is whether these forms of transportation contribute to global warming, since emissions from transportation can cumulatively contribute GHG to the atmosphere. Furthermore, emissions from aviation travel have a significant and far-reaching impact around the world. Tourism's accommodations and activities can accelerate climate change. In short,

[9] *See* A GUIDE FOR POLICY MAKERS, *supra* note 3, at 2 (describing how tourism can play a significant role in sustainable development).
[10] *See* A GUIDE FOR POLICY MAKERS and Programme for the Further Implementation of Agenda 21, *supra* note 4.
[11] U.N. World Tourism Organization, *Davos Declaration: The Response of Climate Change and Tourism to Global Challenges* (2007), *available at* http://www.unwto.org/pdf/pr071046.pdf [hereinafter Davos Declaration] (recognizing that "climate is a key resource for tourism ….").

the very enterprise of ecotourism can precipitate its own demise by contributing to climate change.

A significant challenge to achieving sustainable tourism is not only the balancing and harmonization of all the sustainable development pillars but also the impact and influence of climate change. Therefore, plans for tourism development must consider how tourism can adapt to the consequences of climate change and mitigate the potential for the emissions of Green House Gases. As long as the global community cannot find a solution to the problem of climate change, the objective of "sustainable development" is remains remote.

This chapter consists of four main parts. First, it provides an overview of the tourism industry. Second, it analyzes the relationship between tourism and the sustainable development. Third, although this dissertation does not focus on the science of climate change debate, this part provides scientific background knowledge about the earth's atmosphere and greenhouse gas emission. It also highlights the anthropogenic and natural forces surrounding the climate change debate. Then, the relationship between tourism and climate change will be presented. Finally, this chapter outlines ways of balancing and harmonizing sustainable tourism and climate change.

A. AN OVERVIEW OF THE TOURISM INDUSTRY

1. The Growth of the Tourism Business Sector

Tourism is a rapidly-growing industry around the world[12] and an essential part of trade in service and economic development. The United Nations World Tourism Organization (UNWTO), which is responsible for overseeing tourism,[13] states that "… tourism is firmly established as the number one industry in many countries and the fastest-growing economic sector in terms of foreign earnings and job creation."[14] The UNWTO also shows that the growth of the tourism industry is indeed remarkable: the

[12] *See* WOOD, *supra* note 1, at 7; *see* HONEY, *supra* note 1, at 8.
[13] *See generally*, U.N. World Tourism Organization, *About UNWTO*, http://www.unwto.org/aboutwto/index.php (last visited Jan. 20, 2009)
[14] *See id.*

number of the international arrivals shows an evolution from a mere 165 million international arrivals in 1970 to over 846 million in 2006. Moreover, a study of the UNWTO forecasts an increase in the arrival number of international tourists to 1.6 billion in 2020.[15] While the number of domestic tourists within countries is more difficult to measure,[16] the figure is often estimated to be up to ten times the number of international visitors.[17] The statistics demonstrate that tourism can create economic development, investment,[18] and income augmentation in countries. At the same time, the rapid growth of the tourists can increase the pressure on the natural, cultural and socio-economic environments of popular destinations.[19]

The rise in tourism and international arrivals can be explained by many factors, including population growth; increased tourism segmentation;[20] the development of information technology, and marketing. The internet has transformed the tourism industry, providing a medium for marketing through websites, email, and website pop-ups also, a proliferation of advice on where and how, and a means for reserving airline tickets, car rentals, and hotels. Consistent with the growth of information technology is

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[15] *See* Statement by Francesco Frangialli, Secretary-General of UNWTO, on the Occasion of the UN Conference on Climate Change in Bali, Indonesia (2007), reprinted in WORLD TOURISM ORGANIZATION AND UNITED NATIONS ENVIRONMENT PROGRAMME, CLIMATE CHANGE AND TOURISM – RESPONDING TO GLOBAL CHALLENGES 21 (2008) [hereinafter CLIMATE CHANGE AND TOURISM – RESPONDING TO GLOBAL CHALLENGES].

[16] The Secretary-General, *Report of the Secretary-General on Sustainable Development of Tourism* ¶ 3, delivered to the U.N. Econ. & Soc. Council [ECOSOC], U.N. Doc. E/CN.17/2001/PC/21 (Mar 2, 2001) [hereinafter Report of the Secretary-General on Sustainable Development of Tourism] (describing that "[d]omestic tourist movements are much higher than international tourist arrivals, though more difficult to quantify").

[17] *See Tourism: Facts and Figures*, 24 UNEP INDUSTRY AND ENVIRONMENT 5, 6 (July-December 2001) Special issue on "Ecotourism and Sustainability," describing that "[t]he number of domestic tourists within countries is more difficult to measure, but is often estimated to be up to ten times the number of international visitors."; *but see* U.N. World Tourism Organization, *Tourism & Climate Change: Confronting the Common Challenges, UNWTO Preliminary Considerations*, 4 http://www.unwto.org/climate/support/en/pdf/docu_confronting_e.pdf (last visited Jan. 16, 2009) [hereinafter Tourism & Climate Change: Confronting the Common Challenges] (according to the world average, there are five times more domestic tourists than international ones).

[18] United Nations Environmental Programme, *Resource Efficiency: Financing Sustainable Tourism*, http://www.unep.fr/scp/tourism/topics/resource/financing.htm (last visited Jan. 20, 2009) (showing the industry represents 9.5% of global total investments. More than 1.15 trillion US$.(3 years average; 2004-2006) for example, Namibia -13% of total investments, China - 9.9% of total investments, Malaysia -12% of total investments, the Caribbean- 15%-76% of total investment).

[19] *See* Report of the Secretary-General on Sustainable Development of Tourism, *supra* note 16, ¶ 17.

[20] *See id.* ¶ 6 (describing that new forms of tourism related to nature, wildlife, rural areas and culture. Also, tourists' choice of destinations focus mainly on quality, and a greater sensitivity to the environment, traditional culture and local people at the destinations).

the increase in the use of digital cameras, which allow tourists and marketers around the world share images of exotic places in other parts of the world via email and websites. Such exchanges are increasingly influencing travel decisions. Furthermore, increasing efficiency in the transportation sector, such as aviation, increases the range,[21] and capacity of travel.[22] Despite discouraging factors, such as terrorism, the war in Iraq, Severe Acute Respiratory Syndrome (SARS),[23] and natural disasters,[24] which sometimes slow the growing rate of tourism, the overall long-term growth rate of tourism continues to increase.[25]

2. The Impact of Tourism Development

Tourism development, which is considered to be a trade in service, differs from trade in goods. Tourists travel to consume at the host or destination area,[26] and in case of

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[21] *See, e.g., Thai Airways non stop from Bangkok to New York service*, Asia Pacific Aviation News, http://www.aviationnews.com.au/News_Stories/Archived_Stories/0409660-ThaiNewYork.htm (last visited Jan. 16, 2009) (showing that Thai airways operates long range non-stop flights from New York to Bangkok, covering the 14,000 – Km distance in 16 to 17 hours of flying time).

[22] *See* AIRBUS, *Aircraft Families/A380 Family: A new way of flying*, http://www.airbus.com/en/aircraftfamilies/a380/index2.html (last visited Jan. 16, 2009) (the Airbus introduced the A380 Family, which 525-seat aircraft).

[23] Severe Acute Respiratory Syndrome (SARS) is an atypical form of pneumonia. It first appeared in November 2002 in Guangdong Province, China. SARS is now believed to be caused by the SARS virus. Around 10% of infected people die from it. For information on SARS, *see* http://www.who.int/csr/sars/en/; *see* United Nations World Tourism Organization, *UNWTO World Tourism Barometer rising, Iraq and SARS influences not yet overcome*, Newsroom: News Releases, October 29, 2003, http://www.world-tourism.org/newsroom/Releases/2003/october/barometer.htm (last visited Jan. 16, 2009) (reporting the impact of SARS in Asia and the Pacific).

[24] For example, the enormous 2004 Tsunami hit twelve South - East, South - Asian and East – African countries on December 26, 2004; Hurricane Katrina hit the southern coast of the United States on August 28, 2005.

[25] See United Nations World Tourism Organization, *WTO World Tourism Barometer: International Tourism on Track for Another Strong Year*, Newsroom: News Releases, October 3, 2005, http://unwto.org/facts/menu.html (last visited Jan. 16, 2009) (showing even though, many external threats have combined to potentially undermine tourist confidence such as terrorism, airline accidents and natural disasters. These may led to temporary shifts in travel flow, but they have not stopped people traveling).

[26] *See* GUIDE FOR POLICY MAKERS, *supra* note 3, at 9 (describing the characteristics of " the consumer of tourism [the tourist] travels to the producer and the product."); *see also* UN Dep't of Economic and Social Affairs, Commission on Sustainable Development, *Tourism and Sustainable Development: A Local Authority Perspective* ¶ 10 (Apr. 19-30, 1999), available at http://www.un.org/esa/sustdev/csd/iclei.pdf [hereinafter A Local Authority Perspective] (describing "tourist destination" as the place "…where the tourist product is consumed. No other global industry structures itself in such a way that the consumer is brought to the product, rather than the product being delivered to the consumer in his or her own community.").

international travel this is called cross-border consumption.[27] Therefore, the development of tourism will have a direct environmental, economic and socio-cultural impact on the consumption patterns in destination and the host countries.[28]

In terms of economic development, tourism can create jobs[29] and business opportunities.[30] Its also generates foreign exchange earning[31] for countries and injects capital and new money into the development of local economies. Tourism contributes to government revenue generation[32] through taxes and levies both directly and indirectly. It can also stimulate regional development and the development of infrastructure such as

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[27] General Agreement on Trade in Services, in Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, Annex 1B, art. I(2)(b), Apr. 15, 1994, 33 I.L.M. 1167, 1169 (1994).

[28] *See* Programme for the Further Implementation of Agenda 21, *supra* note 1, ¶ 24 (developments in the economic sector, such as tourism, "must take responsibility for the impact of their activities on human well-being and the physical environment."); *see* A Local Authority Perspective, *supra* note 26, ¶. 10-11 (describing "[t]his structural difference produces unique social impacts upon the local tourist community, including the interruption of local customs and lifestyles, the spread of infections diseases, changes in local demographics, and changes in local housing and labor markets…. If these [tourism] business activities degrade the community's heritage and wealth, then the community suffers more directly than the consumer, who, can return to his or her own community without responsibility for or awareness of the impacts of his tourist activities.").

[29] *See* UN Dep't of Economic and Social Affairs, Commission on Sustainable Development, *Tourism and Sustainable Development: The Global Importance of Tourism* ¶ 1 (Apr. 19-30, 1999), available at http://www.un.org/esa/sustdev/csd/wttc.pdf [hereinafter The Global Importance of Tourism] (comparing between the rate of the GDP and job growth, 11.7% of GDP and nearly 200 million jobs in the world-wide economy; and forecasted to total 11.7% and 255 million in year 2000 and 2010, respectively); *but see* United Nations Environment Programme, *Socio-cultural Impacts of Tourism: Negative Socio – Cultural Impacts from Tourism*, http://www.unep.fr/scp/tourism/sustain/impacts/sociocultural/negative.htm (last visited Jan. 16, 2009) (describing "[i]n developing countries especially, many jobs occupied by local people in the tourist industry are at a low level jobs, such as housemaids, waiters, gardeners and other practical work, while higher-paying and more prestigious managerial jobs go to foreigners or "urbanized" nationals. Due to a lack of professional training, as well as to the influence of hotel or restaurant chains at the destination, people with the know-how needed to perform higher level jobs are often attracted from other countries. This may cause friction and irritation and increases the gap between the cultures.").

[30] United Nation Environment Programme, *Economic Impacts of Tourism: How Tourism can Contribute to Economic Conservation*, http://www.unep.fr/scp/tourism/sustain/impacts/economic/development.htm (last visited Jan. 16, 2009).

[31] *See id.* (describing "[t]ourism expenditures and the export and import of related goods and services generate income to the host economy and can stimulate the investment necessary to finance growth in other economic sectors. Some countries seek to accelerate this growth by requiring visitors to bring in a certain amount of foreign currency for each day of their stay and do not allow them to take it out of the country again at the end of the trip.").

[32] *See id.* (descrbing "[g]overnment revenues from the tourism sector can be categorized as direct and indirect contributions. Direct contributions are generated by taxes on incomes from tourism employment and tourism businesses, and by direct levies on tourists such as departure taxes. Indirect contributions are those originated from taxes and duties levied on goods and services supplied to tourists.").

roads, airports, sewers and telecommunications links.[33] Therefore, the quality of life of a community can be enhanced by economic diversification through tourism. Tourism development can have a positive or a negative impact or both on the destination area. Tourism has also been considered to be a powerful tool for the elimination of poverty,[34] which may be good for the environment as well as for the individuals who are helped. Poverty is one factor that can lead to environmental degradation because the poor may deplete the resources of the land. Reducing poverty is a means to solve a wide variety of other problems – including health issues, social disparities and conflict, inequality, and even terrorism.[35] Where conservation can lead increase economic opportunities through the development of tourism, there is an incentive for local people to protect natural resources rather than to allow environmental degradation.

Tourism can create financial resources which can be used for overall conservation programs and activities, such as park ranger salaries, park maintenance, and the establishment of national parks and protected areas by charging entry fees[36] from visitors.

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[33] *See* United Nation Environment Programme, *Socio-cultural Impacts of Tourism: How Tourism can Contribute to Socio-cultural Conservation,* available at http://www.unep.fr/scp/tourism/sustain/impacts/sociocultural/conservation.htm (last visited Jan. 16, 2009) (describing "[a]s tourism supports the creation of community facilities and services that otherwise might not have been developed, it can bring higher living standards to a destination. Benefits can include an upgraded infrastructure, health and transport improvements, new sport and recreational facilities, restaurants, and public spaces as well as an influx of better-quality commodities and food."); *but see* HONEY, *supra* note 1, at 88-9 (discussing leakage with various sample from case study); *see* A Local Authority Perspective, *supra* note 26, ¶ 37 (describing "...in a global market such as tourism, the problem of "leakage", whereby the economic benefits of local tourism activity flow out of the local community and country back to a foreign corporate headquarters, is another indication of the inadequacy of simple market-driven approaches.").

[34] There are some joint programs between the World Tourism Organization and the United Nations Conference on Trade and Development (UNCTAD) called "Sustainable Tourism – Eliminating Poverty" (STEP), which was launched at the World Summit On Sustainable Development (WSSD) in Johannesburg in August 2002, to focus on the two main subjects of sustainable tourism and the alleviation of poverty. For more detail see http://www.world-tourism.org/step/ (last visited Jan. 16, 2009).

[35] World Tourism Organization, *WTO and UNCTAD to join efforts in poverty alleviation,* http://www.world-tourism.org/newsroom/Releases/more_releases/july2002/unctad.htm (last visited Jan.16, 2009).

[36] *See* WOOD, *supra* note 1, at 24 (showing "…the Galapagos Islands of Ecuador, have directly benefited from entry fee paid by nature and ecotourism companies on behalf of their clients and also from license fees from boats. In 1998, nearly 65,000 travelers visited the Galapagos Islands, with Ecuadorian nationals paying $6 to enter and foreigners paying $80. Visitor entrance fees totaled $4.3 million in that year, averaging $66 per visitor.").

Some governments collect money in more far-reaching and indirect ways that are not linked to specific parks or conservation areas.[37]

Tourism can significantly contribute to environmental protection, conservation[38] and the restoration of biological diversity and the sustainable use of natural resources. Because of their attractiveness, pristine sites and natural areas are identified as valuable and the need to keep the attraction alive can lead to the creation of national parks and wildlife parks. There protected areas may contribute to long-terms sustainability in ways that have not yet been fully explored, such as by providing new medical treatments or new industries or just by serving as carbon sinks.

On the other hand, negative consequences from tourism arise when the level and type of visitor use is greater than the environment's ability to cope with this use within the acceptable limits of change. Beach goers trammel sand dunes. Snorkelers pull off parts of coral reefs. Campers sometimes set forest fires. Everyone drinks water and generates waste. Uncontrolled conventional tourism poses potential threats to many natural areas around the world. It can put enormous pressure on an area and lead to soil erosion, land degradation, increased pollution, discharge into the sea, solid waste and littering, natural habitat loss, increased pressure on endangered species and heightened vulnerability to forest fires. It often puts a strain on water resources, and it can force local populations to compete for the use of critical resources. The negative physical impacts of tourism development include construction activities, infrastructure development, deforestation, intense or unsustainable use of the land, marina development and trampling,[39] The rapid development of tourism can create significant social disruptions

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[37] *See* United Nations Environment Programme, *supra* note 30 (User fees, income taxes, taxes on sales or rental of recreation equipment, and license fees for activities such as hunting and fishing can provide governments with the funds needed to manage natural resources).

[38] *See, e.g.,* Robert B. Powell & Sam H. Ham, *Can Ecotourism Interpretation Really Lead to Pro-Conservation Knowledge, Attitudes and Behaviour? Evidence from the Galapagos Islands,* 16 J. Sustainable Tourism 467 (2008) ("…well-designed and delivered interpretation during the ecotourism experience can increase knowledge of the host-protected area, supportive attitudes towards resource management issues facing the host-protected area, general environmental behavioural intentions and philanthropic support of conservation.").

[39] United Nations Environment Programme, *Environmental Impacts of Tourism: Tourism's Three Main Impact Areas*, http://www.unep.fr/scp/tourism/sustain/impacts/environmental/mainareas.htm (last visited Jan. 16, 2009).

and increase environmental and ecological pressures.[40] For example, a government's focus on the economic pillar might lead to a resource and time deficiency as to the environmental and social pillars.[41]

Tourism development is a sword of two edges. On the one hand, it can be a tool for sustainable development. On the other hand, if not managed sufficiently well, tourism can significantly impede sustainable development.

B. TOURISM: A TOOL FOR SUSTAINABLE DEVELOPMENT

Before discussing how tourism can be an essential tool for sustainable development, it is important to present the development and importance of sustainable development as a background for understanding the principles and elements of sustainable development.

1. The Emergence of Sustainable Development

Notions about sustainable development started to coalesce in 1983, when the United Nations General Assembly (UNGA) established the World Commission on Environment and Development (WCED) with the purpose of preparing long term planning on the environment to the year 2000 and beyond. The WCED focused on heightening cooperation among developing countries and countries at different stages of economic and social development in order to create mutually supportive objectives which take account the interrelationships between people, resources, the environment, and development.[42] Following that path, in 1987, the WCED referred to the concept of

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[40] *See* Report of the Secretary-General on Sustainable Development of Tourism, *supra* note 16, ¶ 19; *see also* A GUIDE FOR POLICY MAKERS, *supra* note 3, at 2 (describing how "[tourism] also has major impacts on natural and build environments and on the wellbeing and culture of host populations.").

[41] *See* Report of the Secretary-General on Sustainable Development of Tourism, *supra* note 16, ¶ 7 (describing that "[u]ncontrolled growth in tourism aiming at short-term benefits often results in negative impacts, harming the environment and societies, and destroying the very basic on which tourism is built and thrives.").

[42] *See* Process of Preparation of the Environmental Perspective to the Year 2000 and Beyond, G.A. Res. 161, U.N. GAOR, 38th Sess., U.N. Doc. A/RES/38/161 (Dec. 19, 1983) (establishing the Special Commission which later adopted the name World Commission on Environment and Development. The UNGA suggested in its resolution ¶ 8 that the Special Commission should:

> - propose long-term environmental strategies for achieving sustainable development to the year 2000 and beyond;

sustainable development in the report, *Our Common Future*, popularly known as the "Brundtland Report," which defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[43]

The most crucial conference event for promoting the concept of sustainable development was the Earth Summit - the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil, in June 1992. The Earth Summit focused on environmental development and helped to "elaborate strategies and measures to halt and reverse the effects of environmental degradation in the context of increased national and international efforts to promote sustainable and environmentally sound development in all countries"[44] Consequently, the UNCED contributed directly to forming the concept of sustainable development by issuing Agenda 21[45] and a political statement, the Rio Declaration on Environment and Development.[46] Agenda 21 is an action plan or framework divided into four sections,[47] consisting of 40 chapters detailing the future of sustainable development and environmental development from 1992 into the 21st century. Yet Agenda 21 contained some weakness. Specifically, Agenda 21 is generally referred to as *"soft law,"*[48] meaning that it is a nonbinding set of

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> - recommend ways in which concern for the environment may be translated into greater co-operation among developing countries and between countries at different stages of economic and social development and lead to the achievement of common and mutually supportive objectives which take account of the interrelationships between people, resources, environment and development;
> - consider ways and means by which the international community can deal more effectively with environmental concerns, in the light of the other recommendations in its report;
> - help to define shared perceptions of long-term environmental issues and of the appropriate efforts needed to deal successfully with the problems of protecting and enhancing the environment, a long-term agenda for action during the coming decades, and aspirational goals for the world community).

[43] World Commission on Environment and Development, *Our Common Future* 43 (1987).

[44] *See generally*, G.A. Res. 228, U.N. GAOR, 44th Sess., ¶ 3, U.N. Doc. A/RES/44/228 (Dec. 22, 1989) (describing in detail the objectives of the conference).

[45] United Nations Conference on Environment and Development, June 3-14, 1992, *Agenda 21,* U.N. Doc. A/CONF.151/26 (vol. I-III) (Aug. 13, 1992) [hereinafter Agenda 21].

[46] United Nations Conference on Environment and Development, June 3-14, 1992, *Rio Declaration on Environment and Development,* U.N. Doc. A/CONF.151/26 (vol.1), reprinted in 31 I.L.M. 874 (1992) [hereinafter Rio Declaration].

[47] The four sections are social and economic dimensions; conservation and management of resources for development; strengthening the role of major groups; and means of implementation.

[48] *See generally* Pierre-Marie Dupuy, *Soft Law and the International Law of the Environment,* 12 MICH. J.

recommendations. Therefore, Agenda 21 does not establish a system of targets or a time frame, and does not provide effective mechanisms of control such as sanctions.

UNCED succeeded in establishing a new institution, the United Nations Commission on Sustainable Development (CSD),[49] which is responsible for monitoring and assessing the implementation of UNCED. The CSD is primarily involved in overseeing sustainable tourism. More details about sustainable tourism will be discussed in a subsequent part of this dissertation.

In 1997, at the occasion of the fifth anniversary of the Earth Summit, the UNGA evaluated progress on sustainable development and identified key priority areas for further attention by the international community under the Program for the Further Implementation of Agenda 21.[50] The UNGA did not redraft Agenda 21, but identified the key areas or sectors where progress had been slow or where no institutions existed to address those issues. The last part of the Program for the Further Implementation of Agenda 21 established the year 2002 as the next comprehensive review of progress in the implementation of Agenda 21 by the General Assembly.[51] This review later became the United Nations World Conference on Sustainable Development (WSSD). In 2002, ten years after the Earth Summit, efforts to ensure sustainable development were continued by the WSSD. The Johannesburg Declaration on Sustainable Development[52] and Johannesburg Plan of Implementation[53] (JPOI) arose out of the WSSD. The WSSD reconfirmed the importance of sustainable development with the "interdependent and

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INT'L L. 420 (1991) (introducing the background of soft law, the form and content of soft environmental law, as well as the legal effect of environmental soft law).

[49] *See* Report of the United Nations Conference on Environment and Development: Section IV – Means of Implementation, U.N. GAOR, 47th Sess., ¶¶ 38.11-38.14, U.N. Doc. A/CONF. 151/26 (vol. III) (Aug. 13, 1992); *see also* G.A. Res. 191, U.N. GAOR, 47th Sess., U.N. Doc. A/RES/47/191 (Jan. 29, 1993) (the United Nations Commission on Sustainable Development (CSD) is resulted in the establishment of a new institution, to monitor and promote the implementation of Agenda 21).

[50] *See generally* Programme for the Further Implementation of Agenda 21, *supra* note 1, ¶ 24.

[51] *See id.* ¶ 137.

[52] World Summit on Sustainable Development, Aug. 26 – Sep. 4, 2002, *The Johannesburg Declaration on Sustainable Development*, UN Doc. A/CONF.199/L.6, rev. 2 (Sept. 4, 2002), reprinted in Report of the World Summit on Sustainable Development, UN Doc. A/CONF. 199/20 (2002) [hereinafter Johannesburg Declaration].

[53] World Summit on Sustainable Development, Aug. 26 – Sep. 4, 2002, *Plan of Implementation of the World Summit on Sustainable Development*, reprinted in Report of the World Summit on Sustainable Development, UN Doc. A/CONF. 199/20 (2002) [hereinafter Johannesburg Plan of Implementation].

mutually reinforcing pillars of economic development, social development and environmental protection – at local, national, regional and international levels."[54] The global community was providing same leadership.

2. The World Response to the Principle of Sustainable Development

Today, sustainable development is a core issue implicating every step of development. Sustainable development aims to allocate the limited natural resources not only for our generation but also for future generations, to balance development and the environment, and to maintain the appropriate balance between development and environmental development.

To ensure that development is going to the right direction, the global village promotes number of legal and political actions. Sustainable development has become a principle practice in public international law, and is increasingly adhered to in state practice. Many of the recommendations of Agenda 21 and the JPOI have guided the new paths of international law issues. For instance, the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters[55] has prompted the concept of public participation, and the Convention on Environmental Impact Assessment in a Transboundary Context[56] has set guidelines for international environmental impact assessment. Furthermore, at the national level, sustainable development influences national legislation, as occurred when New Zealand enacted the Resource Management Act of 1991.[57] In addition to international law and national legislation, many policies build on the recommendations from Agenda 21 and the JPOI, including the International Year of Ecotourism,[58] the Second International

[54] *See id.* ¶ 2; *see* Johannesburg Declaration, *supra* note 52, ¶ 5.
[55] *See Generally* Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, June 25, 1998, reprinted in 38 I.L.M. 517 (1999), *available at* http://www.unece.org/env/pp/documents/cep43e.pdf.
[56] *See Generally* Convention on Environmental Impact Assessment in a Transboundary Context, Feb. 25, 1991, reprinted in 30 I.L.M. 800 (1991) *available at* http://www.unece.org/env/eia/eia.htm.
[57] *See e.g.* New Zealand, Ministry for the Environment, *Laws and Treaties: Legislation,* http://www.mfe.govt.nz/laws/ (last visited Jan. 16, 2009) (stating New Zealand's environmental laws contains the principle of sustainability).
[58] *See Generally* Declaring the year 2002 as the International Year of Ecotourism, U.N. Econ. & Soc. Council Res. 1998/40, 67, Substantive Sess., Supp. No. 1, U.N.Doc.E/1998/98 (July 30, 1998) (discussing the possibility of achieving the aims of Agenda 21 in promoting development and the protection of the

Decade of the World's Indigenous People,[59] and the UN Millennium Development Goals.[60]

Furthermore, environmental impact assessment was confirmed to ensure that the decision making in the development aspect will not unduly harm the environment. It is a tool foreseen to reduce or mitigate the impact of development. The voice of people is louder in the development stage, or the public participation process of the decision making process in which the people may choose their own future. Therefore, laws and regulations must be developed to support the people's right in decision making, planning, and policy-making. In the meantime, capacity building such as education must be developed to enhance the capacity of public participation in each stage of planning and policy-making.

International institutions such as the World Bank, the Global Environment Facility (GEF), the Asian Development Bank (ADB), and the International Monetary Fund (IMF) play a big role in developing the fundamentals of sustainable development. They incorporate the sustainable development principle into their loan procedures to ensure that the borrower's projects will not harm the environment and will promote sustainable development. Moreover, some programs are designed to make sustainable development issue a main condition, such as the clean development mechanism of the

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environment, as well as fostering better understanding among people everywhere, leading to a greater awareness of the rich heritage of various civilizations and in bringing about a better appreciation of the inherent values of different cultures, thereby contributing to the strengthening of world peace); *see also* Proclamation of 2002 as the International Year of Ecotourism, G.A. Res., 53 U.N. Doc. A/RES/53/200 (Feb.22, 1999); *see generally* United Nations Environmental Programme, *About The International Year of Ecotourism (IYE) 2002*, http://www.uneptie.org/shared/publications/cdrom/webx0139xpa/about/iye.htm (last visited Jan. 16, 2009); World Tourism Organization, *International Year of Ecotourism 2002*, http://www.world-tourism.org/sustainable/IYE-Main-Menu.htm (last visited Jan. 16, 2009).

[59] *See generally* Second International Decade of the World's Indigenous People, G.A. Res. 59/174, U.N. A/RES/59/174 (Dec. 20, 2004), available at http://www.un.org/esa/socdev/unpfii/en/second.html.

[60] *See generally* United Nations Millennium Declaration, G.A. Res. 55/2, U.N. Doc. A/RES/55/2 (Sept. 18, 2000); *see also* United Nations, *A Gateway to the UN System's Work on the MDGs,* available at http://www.un.org/millenniumgoals/ (last visited Jan. 16, 2009).

Kyoto Protocol[61] by requiring that any investment project in a developing country contribute to sustainable development in the host country.

Some people argue that the concept of sustainable development as soft law is too weak because it creates no obligation between parties. They argue that in order to ensure a successful process of sustainable development, there must be a system that effectively requires cooperation among all stakeholders such as states, international organizations, NGOs, local authorities, as well as people. Sustainable development also requires the integration and harmonization with other sectors, for example, the development of sciences which reveal many environmental problems such as climate change issues.

Timing is one of the keys to evaluating the impact of development and the environment. The impact of development can suddenly appear in our generation, such as via the effect of leakage of nuclear plant. However, some consequences will occur many years after the impetus happened, and may take a hundred years to manifest themselves. For example, many of the seeds of climate change were planted during the Industrial Revolution period but the consequences recently appeared and became evident through scientific development. However, this leads the question of whether we can blame our ancestors for the Industrial Revolution. Did our ancestors intend to harm the climate today? Did they foresee the negative impact of the Industrial Revolution? More importantly, what is our generation doing that will seriously affect future generations health, safely, and general well-being?

Although we cannot predict the precise future consequences of actions we take today, we must do our best to reflect on the impact of our actions on the next generation. The decision-making process must harmonize with the sustainable development principle and the best available knowledge. Therefore, if there are some unpredictable effects of our actions, the next generation will at least have evidence that we made the decision under what we believe to be sustainable. All development decisions must consider how to protect and efficiently husband the natural resources, as well as conserving and

[61] Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 10, 1997, 37 I.L.M. 22 (1998) [hereinafter Kyoto Protocol], *available at* http://unfccc.int/kyoto_protocol/items/2830.php.

maintaining cultures for the future generations. Hopefully the following generations will develop and update sustainable development principles, plus employ the best knowledge to develop better decisions, which are advantageous for their generation and the following generations in order to achieve an eternity of sustainable development.

3. The Development of Sustainable Tourism

a. Background

As we know, the tourism industry is important to countries across the world because it is a source of economic development in many countries, and also can contribute to the other pillars of sustainable development. This part will present the development of sustainable tourism, and its intersection with sustainable development.

Sustainable tourism was not a concept recognized in UNCED; there were no direct recommendations referring to "sustainable tourism" contained in Agenda 21 or the Rio Declaration. Sustainable tourism was first considered in 1997, when the nineteenth special session of the UNGA was held in order to review the first five years of the implementation of Agenda 21.[62] The UNGA focused on the issue of sustainable tourism as one of its sectoral themes and the need to consider further the importance of tourism as "one of the world's largest industrial and one of its fastest growing economic sectors,"[63] in many developing countries, including small island developing states. Tourism can constitute "a major employer and contributor to local, national, subregional and regional economies … [hence] the need to pay special attention to the relationship between environmental conservation and protection and sustainable tourism."[64] Therefore, tourism should apply to the context of Agenda 21 because "[t]ourism, like other sectors, uses resources, generates wastes and creates environmental, cultural and social costs and

[62] *See* Programme for the Further Implementation of Agenda 21, *supra* note 1, ¶ 1 (the purpose of the nineteenth special session of the United Nations General Assembly was " to review progress achieved over the five years that have passed since the United Nations Conference on Environment and Development and to re-energize our commitment to further action on goals and objectives set out by the Earth Summit."); *see also* Programme for the Further Implementation of Agenda 21, supra note 1, ¶ 22 ("[A] major new effort will be required to achieve the goals established at the United Nations Conference on Environment and Development, particularly in areas of cross-sectoral matters where implementation has yet to be achieved.").
[63] *See id.* ¶ 67.
[64] *See id.* ¶ 67.

benefits in the process."[65] Since tourism is complex and interdependent, the UNGA placed sustainable tourism on the agenda of the UN Commission on Sustainable Development (CSD) seventh session in 1999. The UNGA viewed the main issues for integration under Agenda 21 in the area of social and economic dimension: sustainable mountain development; the conservation of biological diversity; the protection of oceans, seas, and coastal areas; increasing the role of major groups such as women, children, youth, non-governmental organizations, local authorities; and promoting education, public awareness and training.[66]

In 1999, by following the outcome adopted by the General Assembly at the Nineteenth Special Session, the CSD reported during its seventh session (CSD-7)[67] that the CSD had decided to adopt an international work program on sustainable tourism development. Through the program, the CSD urged the government to advance the development of tourism by concentrating on the development of policies, strategies and master plans for sustainable tourism based on Agenda 21. It required cooperation and consultation among all stakeholders, including private sector stakeholders, indigenous and local communities, and relevant organizations. It also called for capacity building work and public participation with indigenous and local communities. The program developed tools and instruments to cover appropriate institutional, legal, economic, social and environmental framework, including voluntary initiatives and agreements. Policies included support for small and medium sized enterprises to play a continued role in the tourism sector and appropriate information for tourists to better understand local cultures and traditions.

The CSD most recently reviewed the issue of sustainable tourism in 2001, when it was acting as the Preparatory Committee for the WSSD in 2002.[68] The result that WSSD shows that sustainable tourism became a concrete recommendation in paragraph 43 of

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[65] *See id.* ¶ 68.
[66] *See id.* Appendix: Multi-Year Programme of Work for the Commission on Sustainable Development, 1998-2002 (UNGA recommended the CSD consider tourism issue by discussing the main issues for an integrated under Agenda 21, chapters 2-7, 13, 15, 17, 23-33 and 36).
[67] *See* U.N. Econ. & Soc. Council (ECOSOC), Commission on Sustainable Development, Report of the Seventh Session, 7th Sess., Supp No. 9, U.N. Doc. E/CN.17/1999/20 (1999).
[68] *See generally* Report of the Secretary-General on Sustainable Development of Touirsm, *supra* note 16.

Johannesburg Plan of Implementation (JPOI).[69] The JPOI cites the purpose of sustainable tourism as providing economic incentives to local populations, while maintaining their cultural and environmental integrity, protecting ecologically sensitive areas and natural heritage, and strengthening rural and local communities.[70] Actions shall be taken to: improve international cooperation, direct foreign investment and partnerships;[71] develop programs, including education and training that encourages people to participate in ecotourism,[72] provide technical assistance to support sustainable tourism business development, and investment and tourism awareness programs.[73] Other initiatives include assisting host communities in managing visits to maximize the benefits while ensuring the least impact on, or risk to, traditions, culture and the environment;[74] promoting the diversification of economic activities, including access to markets and commercial

[69] *See* Johannesburg Plan of Implementation, *supra* note 53, ¶ 43 ("Promote sustainable tourism development, including non-consumptive and ecotourism, taking into account the spirit of the International Year of Ecotourism 2002, the United Nations Year for Cultural Heritage in 2002, the World Ecotourism Summit 2002 and its Quebec Declaration, and the Global Code of Ethics for Tourism as adopted by the World Tourism Organization in order to increase the benefits from tourism resources for the population in host communities while maintaining the cultural and environmental integrity of the host communities and enhancing the protection of ecologically sensitive areas and natural heritages. Promote sustainable tourism development and capacity-building in order to contribute to the strengthening of rural and local communities. This would include actions at all levels to:

> (a) Enhance international cooperation, foreign direct investment and partnerships with both private and public sectors, at all levels;
>
> (b) Develop programs, including education and training programs, that encourage people to participate in ecotourism, enable indigenous and local communities to develop and benefit from ecotourism, and enhance stakeholder cooperation in tourism development and heritage preservation in order to improve the protection of the environment, natural resources and cultural heritage;
>
> (c) Provide technical assistance to developing countries and countries with economies in transition to support sustainable tourism business development and investment and tourism awareness programs, to improve domestic tourism and to stimulate entrepreneurial development;
>
> (d) Assist host communities in managing visits to their tourism attractions for their maximum benefit, while ensuring the least negative impacts on and risks for their traditions, culture and environment, with the support of the World Tourism Organization and other relevant organizations;
>
> (e) Promote the diversification of economic activities, including through the facilitation of access to markets and commercial information, and participation of emerging local enterprises, especially small – and medium-sized enterprises."

[70] *Id.*¶ 43.
[71] *Id.*¶ 43(a).
[72] *Id.*¶ 43(b).
[73] *Id.* ¶ 43(c).
[74] *Id.* ¶ 43(d).

information, and the participation of emerging local enterprises, especially small – and medium- sized enterprises (SMEs).[75]

b. The Evolution of Sustainable Tourism

Following the WSSD in 2002, and pursuant to paragraph 43 of the JPOI pertaining to sustainable, many nations developed projects incorporating the principles of sustainable tourism. Through these projects, many nations focused on increasing the benefits from tourism resources for the local populations while maintaining the cultural and environmental integrity of the host communities and enhancing the protection of ecologically sensitive areas and natural heritages. Goals included promoting sustainable tourism development and capacity-building in order to contribute to the strengthening of rural and local communities. These projects include the International Year of Ecotourism in 2002,[76] the World Ecotourism Summit in 2002[77] and the Quebec Declaration,[78] and the Global Code of Ethics for Tourism[79] as adopted by the World Tourism Organization.

Countries also focused on the significant effects of climate change on physical and biological systems in many parts of the world.[80] The recognition of the impact of climate change became an important concern among many sectors, including the tourism industry. The UNWTO held two international conferences on climate change and tourism to analyze the relationship between tourism and climate change in 2003 and 2007 in Djerba, Tunisia and Davos, Switzerland, respectively.

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[75] *Id.* ¶ 43(e).
[76] *See supra* note 58 (The background of International Year of Ecotourism).
[77] *See generally* WORLD TOURISM ORGANIZATION, THE WORLD ECOTOURISM SUMMIT: FINAL REPORT (2002), *available at* http://www.world-tourism.org/sustainable/IYE/quebec/anglais/Final-Report-QuebecSummit-web.pdf.
[78] *See* World Tourism Organization, *the Quebec Declaration on Ecotourism*, reprinted in THE WORLD ECOTOURISM SUMMIT: FINAL REPORT 65 – 73 (2002), *available at* http://www.world-tourism.org/sustainable/IYE/quebec/anglais/Final-Report-QuebecSummit-web.pdf. [hereinafter Quebec Declaration] (The Quebec Declaration on Ecotourism is the result of a multistakeholder dialogue, although it is not a negotiated document. Its main purpose is the setting of a preliminary agenda and a set of recommendations for the development of ecotourism activities in the context of sustainable development).
[79] *See generally* UN World Tourism Organization, *Global Code of Ethics for Tourism, available at* http://www.world-tourism.org/code_ethics/eng/brochure.htm.
[80] *See generally* MURRAY C. SIMPSON ET AL., CLIMATE CHANGE ADAPTATION AND MITIGATION IN THE TOUIRSM SECTOR: FRAMEWORKS, TOOLS AND PRACTICES, 12-13 (2008) (Dividing the consequences of climate change on tourism into four broad categories: (1) Direct climatic impact; (2) Indirect environmental change impact; (3) Impact of mitigation policies on tourist mobility; (4) Indirect societal change impact).

While the declarations emerging from Djerba and Davos are not legally-binding and consist largely of non-contentious principles, they do offer an important framework within which global, national, and regional organizations can address the relationship between tourism and climate change, and implement appropriate structures for the adaptation and mitigation of the tourism industry.

The First International Conference on Climate Change and Tourism,[81] in Djerba, offered a unique opportunity for tourism officials and scientists to exchange views on the consequences, opportunities and risks presented to the tourism sector as a result of changes in the world's climate. The main outcome of the Conference was the Djerba Declaration on Climate Change and Tourism,[82] which recognizes the complex two-way relationship between climate change and tourism. On the one hand, climate change has an impact on tourism, especially when considering tourism destinations in coastal, mountain, drought, and flood-prone areas. On the other hand, tourism also contributes to the causes of climate change, especially through emissions resulting from transportation and the use of energy.

Additionally, countries throughout the world need to carefully consider the consequences of climate change mitigation policies on tourism and "adjust their activities, using more energy-efficient and cleaner technologies and logistics, in order to minimize as much as possible their contribution to climate change."[83] as well as the responsibility of the tourism sector to be a part of the solution by reducing its GHG emissions through subscribing to all relevant intergovernmental and multilateral

[81] *See generally* World Tourism Organization, *Proceedings of the First International Conference on Climate Change and Tourism*, Djerba, Tunisia, April 9-11, 2003, Climate Change and Tourism, available at http://www.world-tourism.org/sustainable/climate/final-report.pdf (The Conference brought together over 140 delegates from some 45 countries, drawing from representatives of the scientific community, various United Nations agencies, the tourism industry, NGOs, national tourism offices, and national and local governments).
[82] *See generally* World Tourism Organization, *Djerba Declaration on Tourism and Climate Change, available at* http://www.world-tourism.org/sustainable/climate/decdjerba-eng.pdf [hereinafter Djerba Declaration].
[83] *See id.* ¶ 5.

agreements, especially the Kyoto Protocol in order to prevent this phenomenon from spreading further or accelerating.[84]

The Second International Conference on Climate Change and Tourism resulted in the Davos Declaration: Climate Change and Tourism – Responding to Global Challenges.[85] The significant result of the conclusion of the conference was the adoption of a range of policies which encourage truly sustainable tourism that reflects a "quadruple bottom line" approach of incorporating environmental, social, economic and climate responsiveness.[86]

The Davos Declaration demands the simultaneous implementation of actions to: (1) mitigate GHG emissions, especially those derived from transport and accommodation activities (2) adapt tourism businesses and destinations to changing climatic conditions (3) apply existing and new technology to improve energy efficiency and (4) secure financial resources to help poor regions and countries. Therefore, the Davos Declaration calls for varying actions from the different stakeholders which include: Governments and International Organizations; the Tourism Industry and Destinations; Consumers; and Research and Communication Networks. All stakeholders must work together to achieve sustainable tourism. Solving the climate change and tourism requires action by all stakeholders.[87]

Following the Second International Conference on Climate Change and Tourism, tourism and climate change issues were discussed in international forums including: the 2007 Ministers' Summit on Tourism and Climate Change meeting in London;[88] and the 2007 UNWTO General Assembly in Colombia. The main conclusions from the meetings were to address the issue of climate change without losing sight of other priorities,

[84] *See id.* ¶ 1.
[85] *See* Davos Declaration, *supra* note 11.
[86] *See id.*
[87] *See id.*
[88] *See generally* Conclusion of the Ministers' Summit on Tourism and Climate Change (2007), reprinted in CLIMATE CHANGE AND TOURISM – RESPONDING TO GLOBAL CHALLENGES, *supra* note 15, at 17-18.

especially the alleviation of poverty and tourism contribution for the Millennium Development Goals.[89]

A number of studies build on the results of the Second International Conference on Climate Change and Tourism and the Davos Declaration. For example, "Climate Change Adaptation and Mitigation in the Tourism Sector"[90] is intended as a guide for governments, businesses and NGOs to the implement the adaptation process, by providing detail about a proposed framework and lessons learned from undertaking adaptation, in addition to strategies available for increasing adaptive capacity. It also focuses on the mitigation potential in the transportation and accommodation sectors, as well as mitigation strategies for tour operators, consumers and destinations.

Subsequently, the UNWTO and the UNEP cooperated in writing, "Climate Change and Tourism: Responding to Global Challenges," which discusses climate change and tourism, including mitigation and adaptation policies.[91]

The evolution of sustainable tourism is dynamic; the tourism industry is always changing and finding ways to reduce barriers to sustainable tourism. Climate change has recently come to be recognized as one of the main obstructions to the sustainable tourism. It reflects as a two-way relationship that can impact tourism and, in turn, be affected by patterns of development of tourism. According to a number of international conferences and studies concerned with climate change and tourism, progress is being made to reduce the barriers between climate change and sustainable tourism development. However, the awareness of the value of including adaptation and mitigation plans should promoted to all levels – international, national, local and especially for the tourists – to ensure the future of sustainable tourism.

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[89] *See generally* Resolution on Tourism and Climate Change adopted by UNWTO General Assembly, Seventeenth Session (2007), reprinted in CLIMATE CHANGE AND TOURISM – RESPONDING TO GLOBAL CHALLENGES, *supra* note 15, at 19-20.

[90] See SIMPSON ET AL., *supra* note 80, (Cooperating between United Nations Environment Programme, Oxford University Center for the Environment, United Nations World Tourism Organization and World Meteorological Organization).

[91] *See generally* CLIMATE CHANGE AND TOURISM – RESPONDING TO GLOBAL CHALLENGES, *supra* note 15.

C. CLIMATE CHANGE AND THE OBSTRUCTION OF SUSTAINABLE TOURISM

Before discussing the relationship between tourism, climate change and how climate change can lead to the obstruction of sustainable tourism, this part will give a summary background of climate change. It will define climate change, discuss the phenomenon of its occurrence, explain the debate surrounding climate change, and discuss its importance. Then will discuss the interrelationship between tourism and climate change.

1. The Science of Climate Change

a. The Earth's Atmosphere and Greenhouse Emissions

The Earth's atmosphere is composed of various gases, including Greenhouse Gases (GHG). GHG include carbon dioxide, methane, ozone, nitrous oxide, and water vapor in varying amounts. These gases act as a blanket around the Earth's atmosphere, trapping heat when the sun's energy enters the atmosphere in the form of light waves. Some of the energy warms the Earth and then is radiated back into space in the form of infrared radiation waves. The atmosphere traps and balance the outgoing infrared radiation to maintain a sustainable and comfortable temperature on the Earth. Without the GHG to trap the outgoing infrared, the Earth's surface would have an average temperature of approximately zero Fahrenheit or about minus eighteen Celsius.[92]

Some GHG occur through human activities, while others are produced both naturally. Colorfluoro carbons (CFCs) hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6) are among the classes of GHGs generated exclusively through human industrial processes.[93] Carbon dioxide (CO_2), methane (CF_4), and nitrous oxide (N_2O) are naturally occurring GHG, although certain human activities

[92] KIRSTIN DOW & THOMAS E. DOWNING, THE ATLAS OF CLIMATE CHANGE: MAPPING THE WORLD'S GREATEST CHALLENGE, 30 (2006).

[93] *See* U.S. Environmental Protection Agency (EPA), *Climate Change: Greenhouse Gas Emissions*, http://epa.gov/climatechange/emissions/index.html#ggo (last visited Jan. 16, 2009) (The CFCs are banned under The Montreal Protocol and the HFCs will be eliminated under decisions taken in Montreal in 2007 by the states party to the Vienna Convention for the Protection of the ozone layer).

elevate the levels of these naturally occurring gases.[94] For instance, CF_4 is created by livestock and other agricultural practices and by the decay of organic waste, as well as during the production and transport of coal, natural gas, and oil.[95] Similarly, N_2O is emitted during agricultural and individual activities, including the combustion of solid waste and fossil fuels.[96] CO_2 is released into the atmosphere through changes in land use both naturally such through wild fires, in addition to through human activities such as deforestation and through the burning of solid waste and fossil fuels-- specifically oil, natural gas and coal.[97]

The accumulation of GHG has a long-term physical impact on the atmosphere, as once GHG are emitted into the atmosphere, it circulates around the globe and remains in the atmosphere for many decades. Consequently, CO_2 emitted over Bangkok has the same effect on global warming as that emitted over New York, Paris, or Beijing.[98]

b. Global Warming: Who is Suspect?

There are two main discussions surrounding the occurrence of global warming through anthropogenic forces and natural forces. Some scientists argue that anthropogenic forces are increasing the amount of naturally occurring GHG in the atmosphere at unnatural rates, causing the Earth's atmosphere to change from a thin layer of atmosphere to a layer thickened by huge quantities of GHG that trap a significant amount of outgoing infrared radiation, which in turn, increases the temperature of the Earth's atmosphere. Others argue that global warming occurs naturally through natural occurring processes and phenomenon. Both positions have merit, but the question boils down to which source is more determinative of climate change.

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[94] *See id*.
[95] *See id*.
[96] *See id*.
[97] *See id*.
[98] *See* Michael B. Gerrard, *"Introduction and Overview,"* GLOBAL CLIMATE CHANGE AND U.S., 5-6 (MICHAEL B. GERRARD ED. 2007).

Global Warming: Anthropogenic Force

In 2001, the White House requested that the National Academy of Sciences identify the areas in the science of climate change where there are the greatest certainties and uncertainties. Specifically, one of the questions was "[i]s human activity the cause of increased concentrations of greenhouse gases and other emissions that contribute to climate change?"[99] The response from the National Academy of Sciences indicated that "[t]he changes observed over the last several decades are likely mostly due to human activities …."[100] Not only is it principally triggered by human activity but also its cumulative effect is dramatic.

Furthermore, continuous research on climate change is being conducted by the IPCC.[101] In 2007, the IPCC released its Fourth Assessment[102] which reveals that the "[w]arming of the climate system is unequivocal"[103] and points out that eleven of the previous twelve years (1995 -2006) rank among the twelve warmest years in the instrumental record of global surface temperatures. Furthermore, this time period was accompanied by increasing temperatures and a rising sea level, and decreasing amounts of snow and ice.[104] Furthermore, the IPCC's Fourth Assessment indicated with confidence that a significant cause of climate change since 1750 was human activity,[105] caused primarily by fossil fuel use, through industries and transportation in addition to land-use change and agriculture,[106] through which forests are cut down for urbanization,

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[99] *See* Committee on the Science of Climate Change, National Research Council, *Climate Change Science: An Analysis of Some Key Questions*, vii (2001), *available at* http://www.gcrio.org/OnLnDoc/pdf/ClimateChangeScience.pdf.

[100] *See id.* at 2.

[101] *See generally* Intergovernmental Panel on Climate Change, *IPCC Reports*, http://www.ipcc.ch/ipccreports/index.htm (last visited Jan. 16, 2009) (The IPCC was established in 1998 by the United Nations Environment Program and the World Meteorological Organization. The IPCC is the foremost international scientific authority on global climate change. Regularly, the members of the IPCC meet and release reports on the potential effects of global warming caused by GHG. The IPCC's First Assessment Report was published in 1990).

[102] The IPCC's Fourth Assessment Report is based on the assessment carried out by the three Working Group of the IPCC.

[103] *See* IPCC's Fourth Assessment Report, *supra* note 6, at 2.

[104] *See id.* at 2.

[105] *See id.* at 5.

[106] *See id.* at 5.

agricultural purposes, or the creation of new roads. These activities release CO_2 into the atmosphere and trigger climate change.

Skeptics of Global Warming

Notwithstanding these recondite studies, some skeptics remain. Some scientists argue that increased global warming is driven by a natural phenomenon, and not human activities. Dr. S. Fred Singer, an atmospheric physicist at George Mason University, claims that, "[c]limate change is a nature phenomenon. [The] climate keeps changing all the time. The fact that the climate changes is not in itself a threat because obviously, in the past, human beings have adapted to all kinds of climate changes."[107] Furthermore, currently over 30,000 American scientists have signed the Global Warming Petition Project,[108] to assert that the "human-caused global warming hypothesis is without scientific validity and that government action on the basis of this hypothesis would unnecessarily and counterproductively damage both human prosperity and the natural environment of the Earth."[109]

These are just some examples of scientific community's debate on climate change. The debate ensues, as scientists continue to debate whether human activities are responsible for climate change, or whether global warming is a naturally occurring phenomenon. Nonetheless, climatic skeptics do not deny the outcomes, that ice caps are melting and sea levels are rising.

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[107] Frontline, *What's Up with the Weather?,* http://www.pbs.org/wgbh/warming/debate/singer.html (last visited Jan. 17, 2009).

[108] Global Warming Petition Project, http://www.petitionproject.org/index.html (last visited Jan. 17, 2009) (Stating in the petition that [t]here is no convincing scientific evidence that human release of carbon dioxide, methane, or other greenhouse gases is causing or will, in the foreseeable future, cause catastrophic heating of the Earth's atmosphere and disruption of the Earth's climate. Moreover, there is substantial scientific evidence that increase in atmospheric carbon dioxide produce many beneficial effects upon the natural plant and animal environment of the Earth).

[109] Global Warming Petition Project, *Purpose of Petition*, http://www.petitionproject.org/gwdatabase/GWPP/Purpose_Of_Petition.html (last visited Jan. 17, 2009).

2. The Changing Climate of Tourism Destinations

Tourism can be directly affected by climate change since the tourism industry depends on attractive environmental resources such beautiful sites, fresh air, fresh water, scenic areas, land, water, and forests, as well as, cultures and societies.[110] These assets, when managed with care, can become important attractions and generate revenues. However, climate change can have significant effects on tourism resources. It can raise the sea level: "the rising sea level can cause coast and beach erosion, inundation of flood plains, rising water tables, destruction of coastal eco-systems, salinization of aquifers and, at worst, the total submersion of islands or coastal plains."[111] Climate change can also lead to increasing storm frequency and intensity, especially in conjunction with rising sea levels, causing damage to sea defenses, protective mangrove swamps and shoreline buildings, in addition to beach erosion and storm-surge damage to coral reefs.[112] Furthermore, climate change can have an impact on the basic resources of tourism, such as the availability and quality of the water supply.[113] Climate change can reduce tourist comfort levels and the range of activities available. For example, in cold areas, diminishing snow conditions directly affect mountain and winter-sport tourism.[114]

Tourism is one of many economic sectors that is a highly climate-sensitive.[115] One of the key factors for tourists is weather patterns at tourist destinations. Tourism generating countries can largely affect tourists' level of comfort, tourists' decision for trips, and eventually the flow of tourism. Changing and more erratic weather patterns make tourism planning and operation more difficult. Changing demand patterns and

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[110] *See* A GUIDE FOR POLICY MAKERS, *supra* note 3, at 10 (describing what visitors seek to experience through tourism).

[111] *See* IPCC's Fourth Assessment Report, *supra* note 6, at 2 (stating [t]he global average sea level has risen since 1961 at an average rate of 1.8 (1.3 to 2.3) mm/yr and since 1993 at 3.1 (2.4 to 3.8) mm/yr, with contributions from thermal expansion, melting glaciers and ice caps, and the polar ice sheets).

[112] *See id.* at 2 (stating "[t]here is observational evidence of an increase in intense tropical cyclone activity in the North Atlantic since about 1970, with limited evidence of increase elsewhere. There is no clear trend in the annual numbers of tropical cyclones. It is difficult to ascertain longer-term trends in cyclone activity, particularly prior to 1970.").

[113] *See* Djerba Declaration, *supra* note 82 (the conference was "[awaring] of the importance of water resources in the tourism industry and of its with climate change.").

[114] WORLD TOURISM ORGANIZATION, INDICATORS OF SUSTAINABLE DEVELOPMENT FOR TOURISM DESTINATIONS: A GUIDEBOOK 156 (2004).

[115] *See* SIMPSON ET AL. *supra* note 80, at 12 (Noting that tourism is considered to be a highly climate-sensitive economic sector similar to agriculture, insurance, energy, and transportation).

tourism flows will have impact on tourism businesses and on host communities dependent on this activity, as well as knock-on effects on related sectors, such as agriculture or construction.[116] More importantly, any significant reduction in tourist arrivals in small island states or developing countries where tourism is a major economic activity will have a serious impact on employment level and will generate further hardship. Indirect impacts are related to the use of environmental resources, the physical impacts on destinations, and the infrastructure of tourism, especially considering extreme climate events. These risk factors need to be integrated into business practices and the tourism planning processes, in order to adapt to the changing climatic conditions.[117]

Climate-induced changes in general health conditions can affect visitors and insurance practices. The effect of climate change itself can impact local people by have spreading new diseases, which lead to health problems. In the worst case scenario, countries experience immigration problems, population displacement, and the loss of livelihoods. Consequently, the cumulative factors will lead to economic hardship, since the economic success of tourism development relies on natural resources and human populations at the destination area.

Therefore, climate change can alter or destroy environments and discourage tourists from traveling to the destination area. In fact, climate change can have a direct impact on the tourism industry, challenging the environment, the economy, the natural habitats, the biodiversity,[118] and the life of local people of the destination area. Climate change can cause long-term damage to cultural traditions and lead to the erosion of cultural values, resulting in cultural change beyond a level acceptable to the host

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[116] *See* Tourism & Climate Change: Confronting the Common Challenges, *supra* note 17, at 7.
[117] World Tourism Organization, *Technical Note*, Second International Conference on Climate Change and Tourism, (2007) http://www.unwto.org/climate/support/en/pdf/backg_davos_e.pdf (last visited Jan. 16, 09).
[118] United Nations Framework Convention on Climate Change, *Gateway to the UN System's Work on Climate Change: The Consequences for the Future*, http://www.un.org/climatechange/background/csqfuture.shtml (last visited Jan. 16, 09) (describing "[m]any ecosystems are already responding to higher temperatures by advancing towards the poles and up mountainsides. Some species will not survive the transition, and 20-30% of species are likely to face an increased risk of extinction. The most vulnerable ecosystems include coral reefs, boreal (sub-arctic) forests, mountain habitats and those dependent on a Mediterranean climate.").

destination. Historic sites can be damaged or destroyed by tourism and local traditions can be lost.[119]

On the other hand, some critics argue that there are positive effects of climate change to tourism business. Climate change extends the summer season in northern countries like the United Kingdom, Canada or Russia, and perhaps even opens up new sights in previously inaccessible polar regions.[120] Extremely hot temperatures in the main season of seaside tourism destinations might reduce the tourists' motivation to visit, but it can increase visitations in colder seasons, or in warmer winter periods; it can also displace tourists to more in-land and higher altitude coastal areas with cooler temperatures. Summer seasons in mountain regions, could lengthen and generate increased demand, although this cold brings further negative environmental consequences."[121] Certain sports might also benefit from the effect of climate change, such as boating, fishing and golfing, while certain activities, such as camping, hunting, skiing and wildlife viewing, may be adversely affected by climate change. The Arctic provides a good example, "where a longer summer season might benefit cruise tourism and activities such as whale-watching, but shorter winters could reduce the range of Arctic fauna and flora which attracts some visitors."[122] The effects of climate change on tourism are hard to predict, variable by locations and industry – and serious.

Nonetheless, scientists still debate whether the cause of climate change came from anthropogenic or natural sources, while the tourism business, dependent on the climate is facing a notable change of climate. Although some tourism areas might benefit from climate change, it seems that it is overly optimistic to assume that the tourism industry will, in the aggregate, benefit from climate change. Therefore, in order to prosper, the tourism industry needs to set up flexible plans to handle this predictable situation. But what if the climate does not change as predicted, and conditions worsen and become

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[119] *See* WOOD, *supra* note 1, at 38.
[120] *See* Tourism & Climate Change: Confronting the Common Challenges, *supra* note 17, at 5.
[121] World Tourism Organization, *Tourism will contribute to solutions for global climate change and poverty challenges*, http://www.world-tourism.org/media/news/en/features_det.php?id=622 (last visited Jan. 16, 2009).
[122] World Tourism Organization, CLIMATE CHANGE AND TOURISM: Proceeding of the 1st International Conference on Climate Change and Tourism 8 (2003), *available at* http://www.world-tourism.org/sustainable/climate/final-report.pdf.

unpredictable? What if the hot destinations become warmer and the cold destinations become colder?

3. Climate Change: The Impact of Tourism

Tourism development is a significant contributor to the global production of GHG, which occurs through transportation, accommodations and activities in the form of energy usage such as fuel, heating and cooling. The more demand for and production of fuel, the more CO_2 will be released into the atmosphere. According to research carried out by the UNWTO in association with the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO), CO_2 emissions from international tourism including all forms of transportation accounted for just under 5% of the world total or 1,307 million tons in 2005.[123]

	CO_2 (MT)
Air Transport	517
Other Transport	468
Accommodation	274
Activities	45
TOTAL	**1,307**
World Total	26,400
Share (%)	4.95

Table 1.1: Emissions from International Tourism in 2005 including same-day visitors
Source: UNWTO and IPCC for world total[124]

Table 1.1 shows the emission from international tourism in 2005. Transportation accounts for 75% of all emissions by the tourism sector, with aviation making up approximately 40% of all tourism emissions, and other forms of transportation accounting for about 36%. Accommodations represents about 21% of total tourism sector emissions.[125] In the meantime, emissions from tourism activities are around 3.4% These figures are large and growing. The good news is that tourism is expected to increase steadily over the next decades at a rate of 4-5% a year. International tourist arrivals are expected to double over the next fifteen years to 1.6 billion by 2020.[126] The bad news is

[123] *See* Tourism & Climate Change: Confronting the Common Challenges, *supra* note 17, at 3; *see also* Davos Declaration, *supra* note 11.
[124] *See* Tourism & Climate Change: Confronting the Common Challenges, *supra* note 17, at 3.
[125] *See id.* at 3.
[126] *See id.* at 4.

that emissions from tourism are also predicted to grow rapidly, with an increase of 152% predicted between the years 2005 and 2035 in the absence of concrete action to reduce them.[127] The question is how can maintain the tourist growth rate and stabilization while reducing the generation of GHG.

a. Emissions from Transportation

The most controversial environmental issue in the tourism sector is the emission from the transportation of tourists, which throws GHG into the atmosphere. Most forms of transportation such as airplanes, cars, trains and cruise ships are still using fossil fuel.[128]

Travel by Mode of Transport 2005		
	INTL. ARRIVALS (MILLIONS)	%
Air	363.8	45.3
Land	377.8	47.1
Water	58.1	7.2
Unknown	2.7	0.3
TOTAL	**802.4**	

Table 1.2: Travel by Model of Transport 2005
Source: UNWTO[129]

According to Table 1.2, the number of international tourist arrivals in 2005 reached about 802.4 million. About 45% of those international tourists, or 363.8 million, travelled to their destination by air.[130] Air transportation has been estimated to be between two and four times more polluting per passenger carried than road transport.[131] According to Friends of the Earth, a flight from the United Kingdom to Florida produces as much greenhouse gas per passenger as the average car does in a year.[132] Among modes of

[127] *See id.* at 4.
[128] Intergovernmental Panel on Climate Change, *IPCC Special Report: Aviation and the Global Atmosphere - Summary for Policymakers*, A Special Report of IPCC Working Groups I and II in collaboration with the Scientific Assessment Panel to the Montreal Protocol on Substances that Deplete the Ozone Layer 3 (1999) [hereinafter Aviation and the Global Atmosphere report] (The principal emissions of aircraft include the greenhouse gases carbon dioxide and water vapor (H2O). Other major emissions are nitric oxide (NO) and nitrogen dioxide (NO2) (which together are termed NOx), sulfur oxides (SOx), and soot).
[129] *See* Tourism & Climate Change: Confronting the Common Challenges, *supra* note 17, at 4.
[130] *See id.* at 4.
[131] *See* World Tourism Organization, *supra* note 122, at 36.
[132] *Pollution Warning on Holiday Flights*, BBC News. May 1, 2000, *available at*

transportation, air travel deserves special attention. It is not only one of the fastest growing contributions to global greenhouse gas emission,[133] but also most of emissions are released at a height of 9-13 kilometers in the upper troposphere and lower stratosphere for subsonic air craft and a height about 17- 20 kilometers in the stratosphere for supersonic aircraft hardly a significant form of tourist travel, where they have greater impact on ozone, cloudiness and radiative forces than at the earth's surface.[134] As tourism is increasing across the globe, so are the needs for transportation, especially for international tourists who travel by airplane. Because air travel produce so many GHG and has an outsized impact on climate change, the tourism sector should take more responsibility to reduce the emissions from transportation.

b. The Release of GHG from Tourist Destinations

Tourism can generate GHG in every stage. Before the tourists even arrive at a destination, construction of the hotels, restaurants and tacky souvenir shops releases GHG into the atmosphere. This occurs via changing land use by cutting trees and also by the construction of travel infrastructure, such as airports, roads, and parking lots.

Tourism destinations also contribute GHG when the tourist arrive and when the destination operates tourism facilities. Large hotels emit more emissions than guesthouses, self-catering apartments or campgrounds because they use more energy to operate extra facilities such as restaurants, bars, swimming pools and spas.[135] Furthermore, inefficient building designs lead to the need to consume more energy, such as the need more air conditioning, heat, and lighting. Consider what it takes to cool or heat a palm court or a 15-story atrium. Therefore, in hotels and other types of accommodations, emissions can be reduced by constructing more energy efficient buildings and by using energy efficient appliances. Existing businesses can take actions

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http://news.bbc.co.uk/1/hi/uk/732004.stm (reporting that "a return flight from London to Miami (14,207 km) produces 2,415 kg of CO_2 per passenger, more than the 2,255 kg produced annually by the average British motorist's 16,108 km.").

[133] *See, e.g.*, Susanne Becken, *Tourism and Transport: The Sustainability Dilemma,* 14 J. Sustainable Tourism 113 (2006) (stating that increasing greenhouse gas emissions by the aviation industry is a result of the tourist industry demand on airline travel).

[134] *See* Aviation and the Global Atmosphere report, *supra* note 128, at 3.

[135] *See* SUSANNE BECKEN & JOHN E. HAY, TOURISM AND CLIMATE CHANGE: RISK AND OPPORTUNITIES, 203 - 06 (2007) (suggesting energy use and emissions of tourist accommodation).

such as limiting the use of air conditioning, improving insulation, and using energy saving light bulbs.[136]

Emissions through tourist activities is directly related to how much fossil fuel energy is consumed. For example, water skiing results in more emissions than hiking; and amusement parks throw off more emissions than river rafting.[137] Tourist operators should plan for new climate-friendly and low-carbon tourism activities such as ecotourism, which can implement the concept of sustainable development into tourism and reduce GHGs at the same time.

D. THE FUTURE OF SUSTAINABLE TOURISM: QUADRUPLE BOTTOM LINE

The climate change issue is attracts global attention, and for good reason. The IPCC concluded with very high confidence[138] that climate change would impede the ability of many nations to achieve sustainable development by mid-century. In order to achieve sustainable tourism, nations must not only to control and manage the sustainability principles, which refer to the environmental, economic and socio-cultural pillars of development,[139] but also must establish suitable balance and harmonization between these three sustainable pillars with climate change called the "quadruple bottom line"[140] to guarantee long-term sustainability. Indirectly, the quadruple bottom line can guarantee a reduced impact from other related tourism industries such as agriculture supplying tourism demand, handicraft industries, local small business networks, and financial services.

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[136] *See* Tourism & Climate Change: Confronting the Common Challenges, *supra* note 17, at 9.
[137] *See id.* at 3; *see* BECKEN AND HAY, *supra* note 135, at 208 (showing the table of comparative energy intensities for different leisure activities).
[138] Intergovernmental Panel on Climate Change, *Summary for Policymakers, Climate Change 2007: Impacts, Adaptation and Vulnerability, Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* 20 (2007), available at http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-spm.pdf [hereinafter Impacts, Adaptation and Vulnerability Summary Report].
[139] *See* Programme for the Further Implementation of Agenda 21, *supra* note 1, ¶ 23 (stating that "[e]conomic development, social development and environmental protection are interdependent and mutually reinforcing component of sustainable development.").
[140] *See* Davos Declaration, *supra* note 11.

To achieve the quadruple bottom line, tourism industry needs to balance and harmonize both sustainable tourism pillars with the issue of climate change. A cost-benefit analysis must take into account when both the benefits from tourism development and the increased GHG emissions arising from the development of a new tourism enterprise. Therefore, the reduction of GHG emissions should be considered in the context of development and the reduction of poverty. Many developing countries and small island developing states depend on international tourism for their tourism revenues and economies in general.[141] In order to mitigate the effects of climate change on tourism, nations must develop and manage a plan for adaptation and mitigation. There is now a wider recognition of the urgent need for the tourism sector to adapt regulations resulting from knowledge of climate change and to take preventive actions for future effects. In 2007, the IPCC indicated that all societies and economic sectors will inevitability need to adapt to climate change in the decades ahead, and that adaptation is already occurring in many economic sectors, including tourism.[142]

Nations must also mitigate the environmental impact of tourism that contribute to climate change in order to achieve substantial emission reductions.[143] If no mitigation measures are taken, the contribution of tourism to CO_2 emissions could grow by 150% in the next 30 years, based on the UNWTO tourism market forecasts.[144] Mitigation in the tourism sector can be achieved in part through transportation and accommodation activities[145] by reducing energy use. Energy use can be reduced through changing travel behavior, improving energy efficiency, increasing the use of renewable energy, carbon offsetting strategies, sustainable destination planning and management, tour operators' choice of destinations, the packaging of travel products, as well as other changes in business practices.[146]

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[141] *See* SIMPSON ET AL., *supra* note 80, at 66.
[142] *See* IPCC's Fourth Assessment Report, *supra* note 6, at 14-18.
[143] World Tourism Organization, *Davos Conference on Climate Change and Tourism – Tough Challenges and Major Opportunities*, http://www.unwto.org/media/news/en/press_det.php?id=1381 (last visited Jan. 20, 2009).
[144] *See id.*
[145] *See* Davos Declaration, *supra* note 11.
[146] *See* SIMPSON ET AL., *supra* note 80, at 66-106 (promoting effectiveness of mitigation activities in relation to tourism and climate change in the transportation and accommodation sectors, as well as mitigation

The quadruple bottom line offers a paradigm for harmonizing the demands of a society for economic growth with that of an ecosystem that is already strained.

strategies for tour operators, consumers and destinations); *see* BECKEN AND HAY, *supra* note 135, at 175-76 (suggesting that "[r]educing the human impact on the global climate is commonly referred to as climate change mitigation." The authors also stated: broadly, there are four mitigation strategies for address GHG emissions from fossil fuel consumption:

> - Reducing the need for energy: for example by changing management practices or behaviours, such as walking instead of using motorized forms of transport.
> - Improving energy efficiency: the ratio between the energy input (e.g. electricity consumed by a light bulb) and the useful energy output (light energy provided by the bulb).
> - Increasing the use of renewable energy sources: replacing the consumption of fossil fuels with energy sources that are not finite, such as hydro, wind and solar energy.
> - Sequestering CO_2 through carbon sinks: CO_2 can be stored in biomass (e.g. as forest), in aquifers and in geological sinks (e.g. depleted gas fields).

CHAPTER II: POLICIES AND ACTION PLANS FOR SUSTAINABLE TOURISM: THE CLIMATE AND SUSTAINABLE TOURISM MODEL

INTRODUCTION

The discussion in Chapter I clearly show that the tourism industry can make an important contribution to sustainable development. Tourism can constitute one of the main resources for economic development, especially in developing and small island countries. The problems that arise with the development of tourism parallel climate change issues. Concerns surrounding climate change are not solely environmental concerns, but directly affect all of the sustainable development pillars. Therefore, in order to achieve sustainable tourism development, climatic change must be minimized and mitigated. Furthermore, to achieve sustainable tourism, nations must not only control and manage the sustainability principles, or the environmental, economic and socio-cultural pillars of development, but also must establish sufficient balance and harmonization between these three sustainable pillars and climate change to guarantee long-term sustainability. The goals of sustainable tourism are helpful to use in managing the dynamic growth of the tourism industry and controlling the impact of climate change on tourism, while reducing or mitigating the effect of Green House Gases (GHG) on the development of tourism. Sustainable tourism can assist in alleviating poverty as the new resources and revenue flow into the developing areas.[147] In the meantime, the revenue from tourism development can support conservation and contribute to the development of nations. Consequently, policy makers around the world are facing ever greater increasing challenges to harmonize and balance sustainable tourism and climate change.

Governments have a significant role in developing efficiency policies and action plans to achieve sustainable tourism. Therefore, in order to narrow the gap between tourism development and climate change, the government must focus on planning and management, and specifically, financial management.

[147] *See* A GUIDE FOR POLICY MAKERS, *supra* note 3, at 13.

This chapter is divided into two main parts. Part I illustrates the relationship between sustainable tourism and climate change. This part will explain the relationship between human beings, nature, sustainable tourism, and climate change. Part I will also discuss the scope of balancing the pillars of sustainable tourism.

Part II will introduce the "Climate and Sustainable Tourism Model," (the "Model") which is a new analytical method for policy maker to employ in planning and establishing policies for climate and sustainable tourism. The climate and sustainable tourism model applies and expands the quadruple bottom line principle, which is the result of the Davos Declaration. The Model seeks to ensure that tourism development will achieve sustainable development by addressing the issue of climate change. The Model includes a variety of strategies that establish a framework for policy makers that includes policy making and planning for combating climate change through adaptation and mitigation, sustainable tourism, and financial resource and management. It can assist governments in predicting, managing, and solving potential problems arising from climate change and the impact of the development of the tourism industry. Understanding the model can create awareness and lead to better decision making. It can also assist in addressing climate change problems and create seeds for balancing social, economic and environmental factors that lead to achieving sustainable development.

PART I – SUSTAINABLE TOURISM

Sustainability principles encompass the environmental, economic and socio-cultural aspects of development.[148] One of the emerging factors that impedes sustainable tourism is climate change.[149] A suitable harmonization and balance must be established

[148] *See* Programme for the Further Implementation of Agenda 21, *supra* note 1, ¶ 23 (stating that "[e]conomic development, social development and environmental protection are interdependent and mutually reinforcing components of sustainable development").

[149] UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, CLIMATE CHANGE : IMPACTS, VULNERABILITIES AND ADAPTATOIN IN DEVELOPING COUNTRIES 42 (2007), available at http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/txt/pub_07_impacts.pdf [hereinafter CLIMATE CHANGE : IMPACTS, VULNERABILITIES AND ADAPTATOIN IN DEVELOPING COUNTRIES] (stating that "[c]limate change has the potential to undermine sustainable development, increase poverty, and delay or prevent the realization of the Millennium Development Goals."); *see* Impacts, Adaptation and Vulnerability Summary Report, supra note 138, at 7-22 (stating that "… it is very likely that climate change can slow the pace of progress towards sustainable development, either directly through increased exposure to adverse impact or indirectly through erosion of the capacity to adapt.").

between these three aspects and climate change in order to guarantee its long-term sustainability. Therefore, a discussion must ensue of how to balance and harmonize all the aspects of sustainable development and climate change for sustainable tourism.

Why Balancing the Sustainable Development Pillars is Crucial

The development of tourism is complex and crucial, linking economic, environmental, socio-cultural and climatic change factors. The development of tourism has direct and indirect impacts on human beings and natural assets. The notion of balancing the sustainable development pillars in tourism development came from a document derived from the Rio Declaration on Environment and Development Principle 1, stating that *"[h]uman beings are at the center of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature."*[150] Human beings are at the center of sustainable development, as their traditions, knowledge, and culture are assets in tourism development. In the meantime, nature and its elements are considered an asset for sustainable development. Tourism and attracting tourists encourages the development and preservation of natural resources, such as fresh air, fresh water, scenic areas, land, water, and forests, as well as cultures and societies.[151] These assets, when managed with care, can become important attractions and generate revenue to residents. Hence, without the good life and health of humans at the center, combined with the assets, or natural resources, of sustainable development working together, there is no way to achieve sustainable development. Therefore, we must protect and manage the natural resource base for sustainable tourism for tourists, the local community, and future generations.

This part will examine ways to maximize balancing the economic, environmental and social benefits of tourism, while achieving equitable social, economic and environmental benefits from tourism. "Balancing" the sustainable development pillars for the purposes of this dissertation does not mean achieving exact equality between the three pillars, but rather positioning the pillars in order to ensure harmony between them. It is

[150] *See* Rio Declaration, *supra* note 46, at Principle 1 ("[h]uman beings are at the centre of concerns for sustainable development.").
[151] *See* A GUIDE FOR POLICY MAKERS, *supra* note 3, at 10 (describing what visitors seeking to experience in tourism).

not feasible to gain the maximum benefit from each of the sustainable development pillars, but the economic, environmental and social pillars must be positioned to achieve a harmonious balance, which is achieved when all three pillars work together to get the greatest possible overall benefit from sustainable development. Briefly, the meaning of balancing of sustainable tourism is:

> *Balancing the different impacts made and received between the economic, environmental, and social sustainable development pillars in undertaking tourism development, so that no single pillar or combination of pillars will have a negative impact on or endanger, the life and health of people, and nature of our and the next generation.*

In defining "life" in the paragraph above, physical impact, in addition to culture, must be taken into account. Also, nature should be interpreted to include all elements around us including the atmosphere, which may lead to climate change.

The Sustainable Tourism Model: The Relationship between Sustainable Tourism and Climate Change

An analysis of the Sustainable Tourism Model in the context of the definition of sustainable tourism is useful in understanding the relationship between sustainable tourism and climate change.

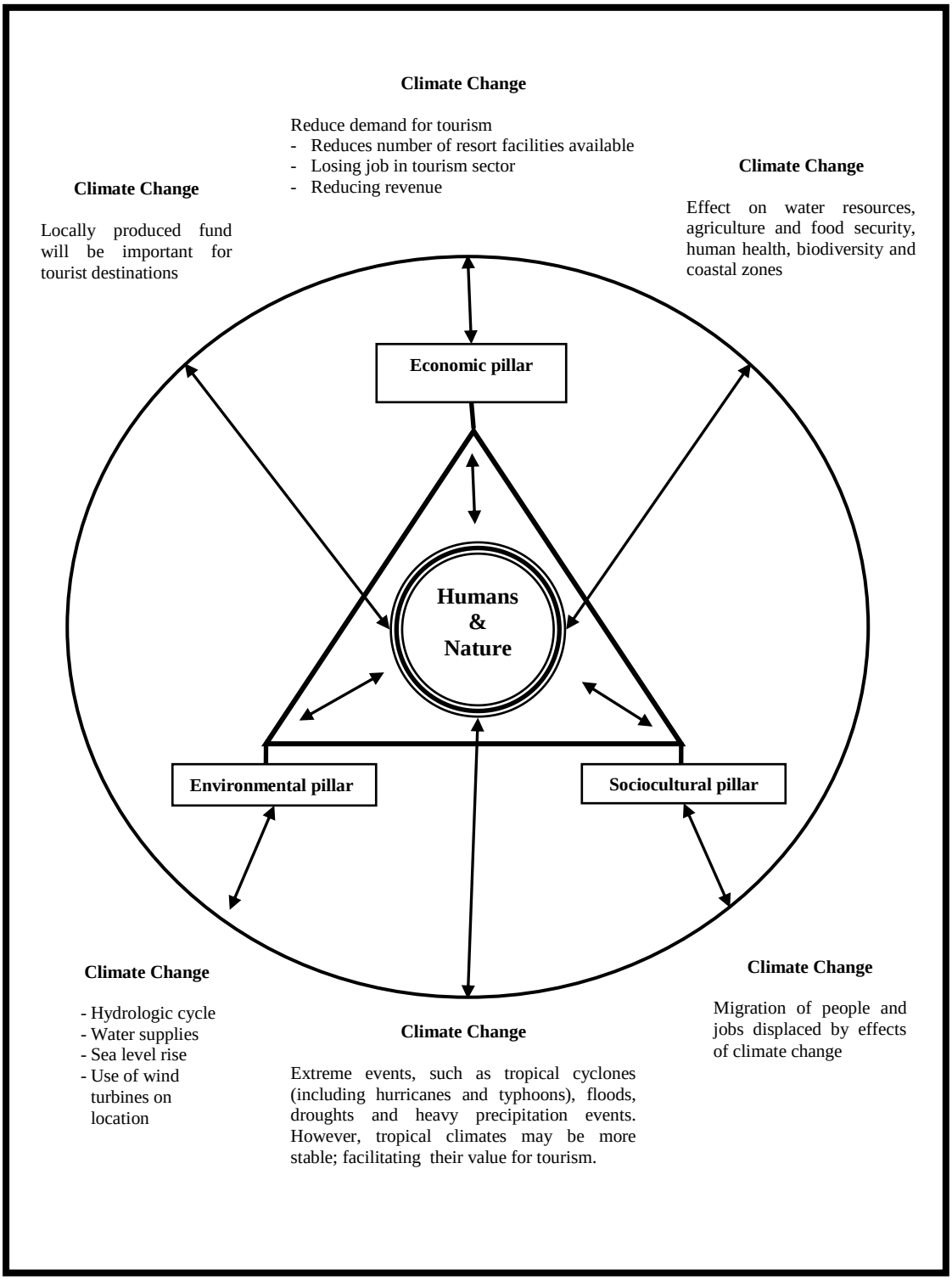

Figure 2.1: *The Sustainable Tourism Model - The relationship between sustainable tourism and climate change (impacts described in IPPC reports)*

Figure 2.1 illustrates the elements necessary to achieve sustainable tourism. The chart consists of three layers, with humans and nature at the center, or heart, of tourism development. Humans and nature are surrounded by a triangle formed by the sustainable tourism pillars, or the economic, environmental and socio-cultural pillars. Finally, the outer layer, climate change, is well-positioned to illustrate its impact on all factors in the sustainable tourism model. Therefore, all the layers of the model are interdependent, meaning that in order to achieve sustainable tourism, we must consider all the factors.

First, human beings and nature, at the center of the sustainable tourism model, are at the heart of tourism development. Consequently, any direct or indirect impact of tourism development can have a profound impact on humans and nature. On the other hand, humans and nature can be a cause of climate change by contributing GHG, such as during human activities and natural forest fires, respectively. As previously discussed under tourism development, humans and nature are fundamental assets of tourism development. Therefore, if we cannot save and promote these assets, we will lose many opportunities offered by tourism development.

Second, the next layer of the model consists of the three pillars of sustainable tourism development – the economic, environmental and socio-cultural pillars. As previously discussed, the definition of "balancing" in tourism development implies harmony between the sustainable development pillars, but does not mean that all of the pillars will achieve exact equality between themselves. The most important is that the economic, environmental and social pillars must achieve a harmonious inter-relationship, which is achieved when all three pillars work together to obtain the optimal overall benefit from sustainable development. No single pillar or combination of pillars will have a negative impact upon or endanger the life and health of people and nature. Furthermore, in defining "life," the physical impact, in addition to the cultural impact, must be taken into account. A challenge arises to obtain the right balance between all sustainable development pillars. The results of the balancing phenomenon can protect the heart of sustainable tourism, humans and nature.

The outer layer of the model, climate change, encompasses all of the sustainable tourism pillars, as well as humans and nature. Climate change can have an impact not only on tourism development, since natural resources are assets for sustainable tourism, but also on economic and socio-cultural development. As far as tourism is concerned, if natural resources are destroyed by climate change in one destination, rendering the destination less favorable, tourists will find another destination to visit.

Climate change also has an impact on the socio-cultural pillar. For example, if some local people have to migrate from their home area, the tourism business likely cannot exist anymore. Consequently, the cumulative factors will have an impact on the economic pillar, since the economics of tourism development rely on nature and human beings in the destination area. Unfortunately, one important cause of climate change is the tourism industry itself, which can contribute GHG, such as carbon dioxide, through the transportation, accommodations, and activities of tourists.

PART II – THE CLIMATE AND SUSTAINABLE TOURISM MODEL

What is the Climate and Sustainable Tourism Model?

To balance all sustainable pillars, this part will introduce a new model, "The Climate and Sustainable Tourism Model" (hereinafter "the Model") as a new analytical method and the bases for policy and planning in sustainable tourism (See Figure 2.2). The model provides tools and an institutional framework to ensure the future of sustainable tourism. The Model is designed to illustrate the relationship between tourism development and climate change. It will focus on the impact of tourism on climate change; the role of national policies on tourism and climate change; the importance of mitigation and adaptation to climate change in tourism development; and the importance of financial funding and management for tourism development, in addition to addressing the impact of climate change on tourism.

Understanding the Model can create awareness of the relationship between tourism and climate change. The Model assists in predicting and solving potential problems arising from climate change in the development of tourism. This model can

serve as a guideline for policy makers, since governments play a large role in planning and establishing policies regarding sustainable tourism development. The Model will lead governments to better decision making. Governments that have already started the process can use the Model to improve planning, management in terms of adaptation, mitigation and financial resource management aspects that should be conducted by policy makers. Moreover, even though the cycle is primarily designed for governments in the tourism planning process, the cycle can be studied by individuals or stakeholders[152] interested in sustainable tourism in the planning process, in order to set up a plan addressing mitigation, adaptation, and climate change.

[152] *See* A GUIDE FOR POLICY MAKERS, *supra* note 3, at 3 (explaining different interests group can benefit from tourism being made more sustainable: "[t]ourism enterprises, while seeking long-term profitability, should be concerned about their corporate image, the relationship with their staff, and their impact on the global environment and that immediately surrounds them. Local communities are seeking increased prosperity but without exploitation or damage to their quality of life. Environmentalists are concerned about the harmful impacts of tourism but also see it as a valuable source of income for conservation. Tourists are seeking a high quality experience in safe and attractive environments; they are becoming more aware of the impacts of their travelling.").

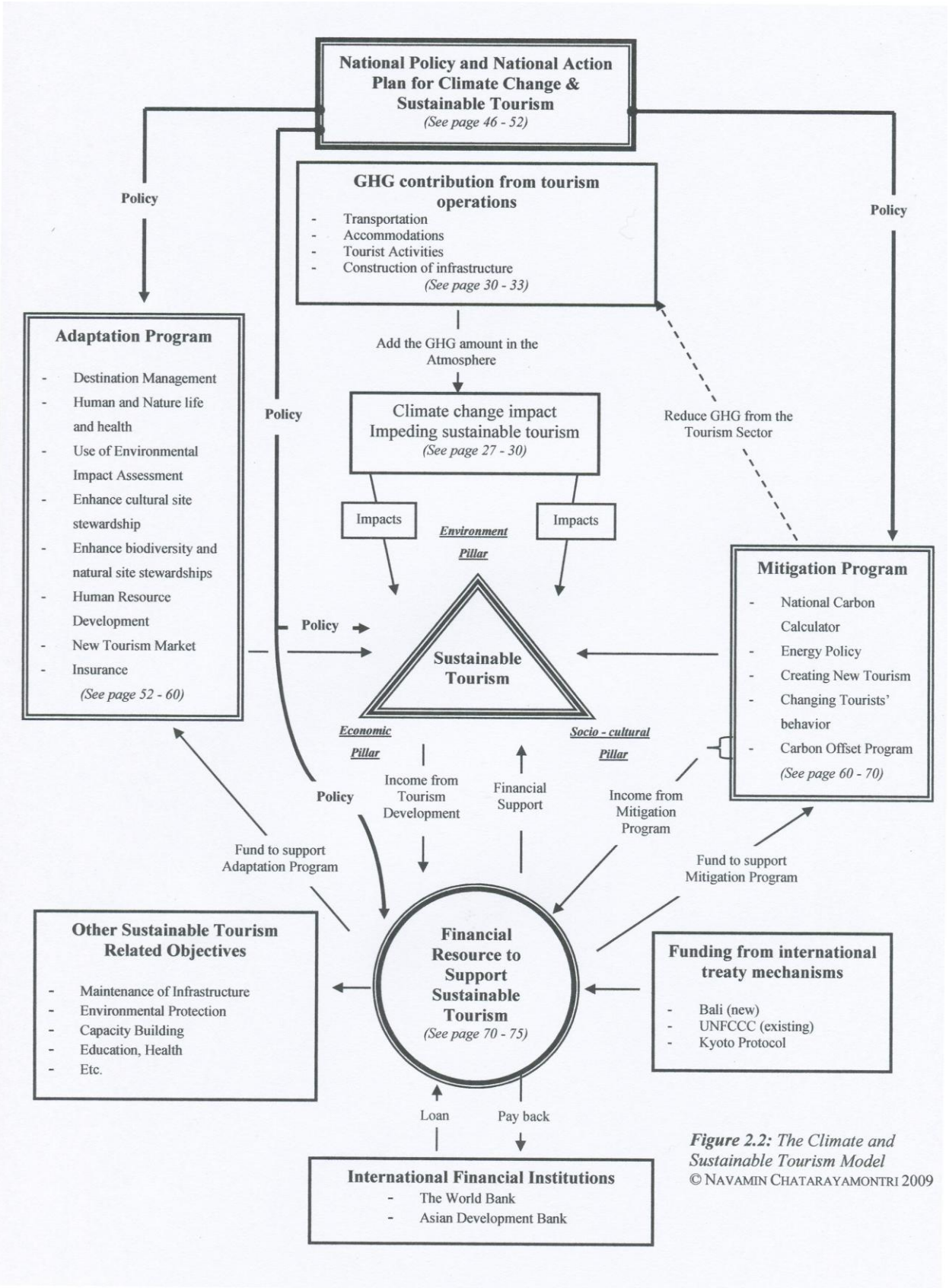

Figure 2.2: *The Climate and Sustainable Tourism Model*
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How does the Climate and Sustainable Tourism Model work?

Figure 2.2 shows the relationship between climate change and sustainable tourism with the summary tools and methods to narrow the gap between climate change and sustainable tourism.

The Model will start with the formulation of national policies and planning for climate change and sustainable tourism. The government will be the principal player in establishing a national policy regarding both the climate and tourism. As tourism is a major sector in many national economies, the government must implement and develop policies, plans and strategies regarding tourism and climate change. However, the solution to tackling climate change must not obstruct the development of tourism, instead, tourism development must mitigate its impact on climate change.

The Model also shows the impact of climate change on sustainable tourism. Climate change can have an impact on all of the sustainable tourism pillars – the economic, environmental and socio-cultural pillars. Clearly, from the tourism perspective, the impact of climate change can ruin the natural assets of tourism, creating a threat of rising seas, and inclement weather conditions, in addition to changed geography, wildlife and biological diversity. Consequently, this leads to economic problems if the local people rely on the tourism industry. Finally, local communities might relocate to other places, which can have other socio-cultural consequences. For more details, please see the discussion of "The Changing Climate of Tourism Destinations" in Chapter I.

This Model will suggest policies and planning for addressing climate change and sustainable tourism by focusing on establishing policies for adapting to the effect of climate change on tourism development, as well as mitigating the GHG emission from tourism development. The Model will also recommend the financial resources and management policies that are at the heart of tackling climate change and making sustainable tourism possible. Therefore, understanding the Model is essential for work on adaptation, mitigation and financial resource and management.

A. THE NATIONAL POLICY AND NATIONAL ACTION PLAN FOR CLIMATE CHANGE & SUSTAINABLE TOURISM

The impact of climate change on the tourism sector would optimally be considered at the beginning of a new phase of tourism development, at the policy and planning stage. This is because in order to enhance sustainable tourism, policies must address a 'quadruple bottom line' of environmental, social, economic and climate responsiveness[153] to promote responsible travel and, therefore, thoughtful development of the travel infrastructure.

Government should be the leader or at the center of climate and sustainable tourism policies because sustainability relates to areas of public concern, including the quality of air, water, life, health and natural and cultural heritage. Moreover, many of the relevant resources are owned and directly managed by governments.[154] Furthermore, governments have many of the tools that can be used to make a difference, such as the power to make laws and regulations and offer economic incentives, the authority to control zoning, and the resources and institutions to promote and disseminate good practice.[155] Therefore, the government should design climate and sustainable tourism policies and plans that are consistent in addressing sustainable development, poverty reduction, adaptation and mitigation of climate change, and financial resource management.

1. Establishing the National Climate and Sustainable Tourism Committee

Since the tourism industry is interdisciplinary, the best way to establish national policy is through the governmental establishment of a National Climate and Sustainable Tourism Committee (hereinafter "Committee"). The Committee should consist of representatives from government and non-government enterprises, as well as all stakeholders. In order to ensure diverse ideas, the Committee should be comprised of individuals from several sectors.

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[153] *See* Davos Declaration, *supra* note 11.
[154] *See* A GUIDE FOR POLICY MAKERS, *supra* note 3, at 3.
[155] *See id. at 3.*

Representatives of Government; Departmental, Regional and Local Authorities, and Quasi Government Organizations e.g.

- National tourism authorities to function as initiators and presidents of the committee

- Other ministries or government agencies: principally representing the environment, economy, trade, finance, forest department, culture and heritage, communication, agriculture, decentralization, scientific research, biodiversity, meteorology, and athletics.

- Local or regional authorities

Representatives of Private Sector and Non-Governmental Organizations e.g.

- Private sector individuals, including tour operators, travel agents, hotel owners and their trade associations

- Financial institutions

- Non-governmental organizations (NGOs) (focusing on environment, development, poverty alleviation, rights of minorities, human rights and cultural heritage)

- Local communities, as well as indigenous representatives

- Environmental associations

- Academics

- Tourism trade organizations

- Chambers of commerce

- National representatives of international conservation organizations (e.g. Nature Conservancy, Conservation International, WWF)

2. Establishing the National Policies and Plans for Climate and Sustainable Tourism

The Committee will design the National Policies and Plans for Climate and Sustainable Tourism (hereinafter "National Policy"). The National Policy serves as a comprehensive policy for climate and sustainable tourism. The National Policy should connect and integrate with other policies, such as a nation's economic development policy, tourism marketing policy, and land use policy, in order to ensure the best fit of these policies with sustainable tourism's needs. Furthermore, the National Policy must relate to a nation's local and sub-regional policies, in addition to international policies, as the issue of climate change is of international concern, requiring great financial resources. Additional details about financial resources for climate change in tourism sector will be discussed in section C – Financial Resources for Climate Change in Tourism Sector.

The National Policy will focus on harmonizing the principles of sustainable tourism, the adaptation and mitigation of the impact of climate change, and the financial program, in order to enhance sustainable tourism. Therefore, the National Policy must focus on the importance for the tourism sector to identify measures to address climate change without losing sight of development, especially as it pertains to developing countries and Small Island Developing States (SIDS) which largely depend on international tourism for tourism revenues and economies.[156] Furthermore, the Committee must understand the relationship between sustainable tourism and the impact of climate change. For example, climate change can have both a positive and a negative impact on the destination area. Climate change does not necessarily threaten destination areas, as some countries might benefit from the impact of climate change. For example, in traditional summer beach destinations like the Mediterranean, shoulder seasons might lengthen, resulting in winter seasons becoming more appealing to tourists, thereby providing opportunities to reduce seasonality and expand the tourism industry. Northern coastal areas might benefit from warmer summers, attracting more tourists and lengthening the summer season.[157]

[156] *See* SIMPSON ET AL., *supra* note 80 at 66.
[157] *See generally* CLIMATE CHANGE AND TOURISM – RESPONDING TO GLOBAL CHALLENGES, *supra* note 15, at 6.

3. The Necessary Tools to Support National Policies and Planning for Climate and Sustainable Tourism: The Climate and Sustainable Tourism Data Center

The purpose of establishing a Climate and Sustainable Tourism Data Center (hereinafter "Data Center") is to collect, analyze and support essential information surrounding tourism and climate change. The Data Center can have a variety of purposes, while using the data mainly for committee planning policies and planning for climate and sustainable tourism. Reliable, systematic climate data will help policy makers determine the right policies. Once the Data Center has a sufficient data base, the data base can be useful for the next step of tackling climate change, which is setting up an emission trading market. Additionally, the data, if available to the public, can be used by stakeholders and local authorities as a useful resource in planning their tourism business. Tourists can also use the data base for planning their trips, in which case the tourists should be encouraged to consider the climatic, economic, societal and environmental impacts of their options before making a decision and the possibility of reducing their carbon footprint, or offsetting emissions that cannot be reduced directly.[158]

The Data Center should include a variety of scientific data, through resources pertaining to climate, topography, geology, fossils, hydrology, water resources, air quality, and the fauna and flora of the selected area, in addition to the impact of climate change on the economy, environment, and society of the destination area.

Therefore, the data center should provide the following information:

Climate Change Assessment

The climate change assessment should be based on scientific observation and studies to assess the impact of climate change. It must use IPPC but then become more specific and contextualized. Data for each type of tourism or each region where ecotourism is found should be included. The assessment also needs an interdisciplinary partnership, networks, and an information exchange system. The Data Center might need to cooperate with local authorities to assist in collecting the information by scoping the

[158] *See* Davos Declaration, *supra* note 11.

area of study to the local authorities or the Data Center might create scientific teams to gather all information. The following are the highlights of a general scope of the climate change assessment. However, the scope of scientific observation can vary depending on the location. Therefore, the climate change assessment should include:

- Climatic data such as temperature, precipitation patterns, extreme weather and climate events;[159]

- The possible consequence of climate change such as coastal erosion, the change in mountain regions, flooding, rising sea-level and disease;

- The impact of climate change on natural habitats and the biodiversity of species such as fauna, flora, and forest data, including the change in the population of plant and animal species;

- The impact of climate change on local communities in economic, soico-cultural, and health conditions.

Hot Spot Map

A Hot Spot Map can be an effective data technique for policy makers to use in order to establish accurate policies. The data center should provide the National Hot Spot Map (hereinafter "Map") to show the areas of the nation's hotspots. The Map will use the climate change assessment as the data base to draw the summary of climate change across a nation. The area map will assist the committee in understanding the situation and predicting the impact of the climate change in their nation. The National Hot Spot Map will establish a clear picture from which the committee can set up priorities to promote and plan tourism. The National Hot Spot Map should establish a scientific monitoring survey report to assess ecosystem changes and take necessary protection measures. This report could focus on species and habitats most vulnerable to climate change and most important for tourism activities.[160] Based on the map, the committee can set up an annual

[159] *See, e.g.*, IPCC's Fourth Assessment Report, *supra* note 6, at 13 (showing examples of possible impacts of climate change due to to change in extreme weather and climate events in Table SPM.3.).
[160] *See generally* CLIMATE CHANGE AND TOURISM – RESPONDING TO GLOBAL CHALLENGES, *supra* note 15, at 8.

plan, including an adaptation and mitigation plan, as well as funding for tourism development and combating climate change.

Figure 2.3 shows a sample of the climate change vulnerability hotspots in tourism sectors around the world. This is on a global scale. The Data Center can use this sample to create a National Hot Spot Map on a national level scale. Maps for regional or local scales will be needed. The Map mainly must show the nation's tourism attractions, and illustrate the different conditions resulting from the impact of climate change such as land biodiversity loss, marine biodiversity loss, the increase in the outbreak of disease, the rising sea level, and the scarcity of water.

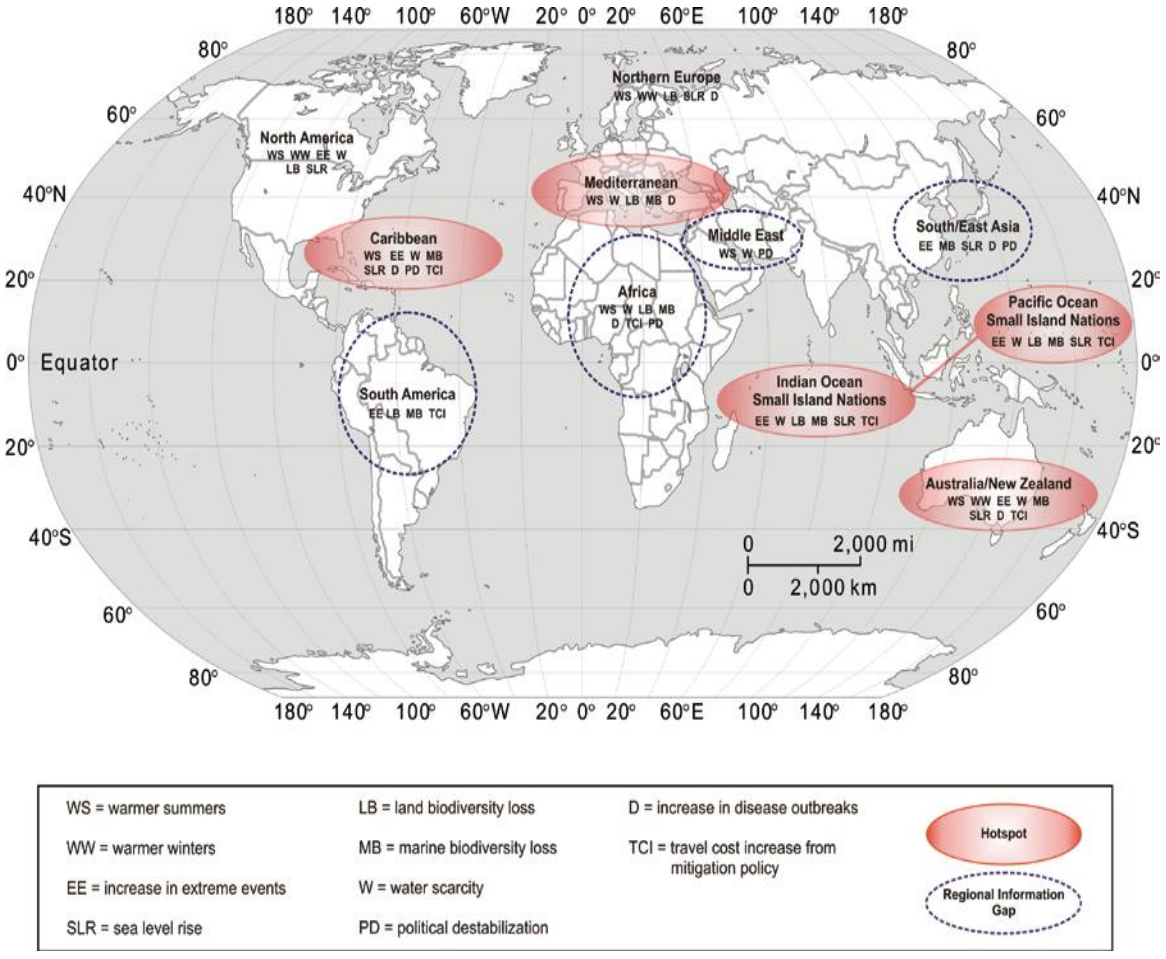

Figure 2.3 Geographic distribution of the impact of major climate changes affecting tourism distribution.[161]

[161] CLIMATE CHANGE AND TOURISM – RESPONDING TO GLOBAL CHALLENGES, *supra* note 15, at 31 (Originally, the

In the beginning, the Data Center can focus on collecting data for climate change and sustainable tourism purposes. Subsequently, the Data Center can expand its data base to include information on climate change and agriculture. For the future, the Data Center from each country can be the fundamental data resource for international community cooperation to support and further develop climate research and systematic observation systems.

B. CLIMATE CHANGE POLICY IN TOURISM SECTOR

To balance the impact of climate change to and from tourism development, policy makers must consider tourism development along with the potential change of climate and in the meantime, reduce tourism's contribution to climate change. The issues surrounding climate change, sustainable development, and tourism also implicate various human right concerns that are generally beyond the scope of this dissertation.[162] Instead, this part will focus on how to set up the policies for tackling the climate change issue. The policy for climate change will consist of two main parts which are: climate change adaptation policy in tourism; and climate change mitigation policy in tourism. These two policies are designed as a guideline for policy makers, when they set up climate and sustainable tourism plans. See figure 2.2 for a summary.

1. Climate Change Adaptation Policy in the Tourism Sector

The IPCC defines adaptation in the context of climate change as, "the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities."[163] Therefore, adaptation is necessary to address impacts resulting from the warming which is already

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purpose of this map is to provide a summary assessment of the most at-risk tourism destination for the mid to late-21st century. However, for the purpose of this dissertation the map is used as a sample for nations to create their own Hot Spot Map for planning purposes).

[162] *See* The International Covenant on Economic, Social and Cultural Rights, Dec. 16, 1969, 993 U.N.T.S. 3 (government should guarantee the human rights of health, society, education, and work); These issues have been more fully developed in the following articles: Sara C. Aminzadeh, *A Moral Imperative: The Human Rights Implications of Climate Change*, 30 HASTINGS INT'L & COMP. L. REV. 231 (2007) (discussing the impacts of climate change on human rights such as right to privacy and family life, right to property, right to life, and right to health); Edward Cameron, *The Human Dimension of Global Climate Change*, 15 HASTINGS W.-NW. J. ENVTL. L.& POL'Y 1 (2009) (surveying the human rights dimension of global climate change among the work of different organizations such as the Office of High Commissioner for Human Rights, the United Nations Development Program, and the International Council on Human Rights Policy).

[163] *See* Impacts, Adaptation and Vulnerability Summary Report, *supra* note 138 at 6.

unavoidable due to past emissions.[164] This part will introduce the guideline for adapting the impact of climate change to enhance sustainable tourism. How can we apply adaptation strategies to the sustainable tourism plans and policies?

There are adaptation techniques that apply in different situations.[165] In the meantime, some scholars suggest adaptation strategies in specific sectors such as adaptation in coastal areas and beaches,[166] adaptation in the mountain regions,[167] adaptation in ski areas.[168] However, the main purpose of adaptation strategies in this dissertation is a quick checklist for policy makers to address in a National Policy to enhance sustainable tourism.

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[164] *See id.* at 19, 7-22.

[165] *See* SIMPSON ET AL., *supra* note 80 at 123 (giving the meaning of different kinds of Adaptation that:
"**Adaptation** means Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Various types of adaptation can be distinguished, including anticipatory and reactive adaptation, private and public adaptation, and autonomous and planned adaptation:

- Anticipatory Adaptation – Adaptation that takes place before impacts of climate change are observed. Also referred to as proactive adaptation.

- Autonomous Adaptation – Adaptation that does not constitute a conscious response to climate stimuli but is triggered by ecological changes in natural systems and by market or welfare changes in human systems. Also referred to as spontaneous adaptation.

- Planned Adaptation – Adaptation that is the result of a deliberate policy decision, based on an awareness that conditions have changed or are about to change and that action is required to return to, maintain, or achieve a desired state.

- Private Adaptation – Adaptation that is initiated and implemented by individuals, households, or private companies. Private adaptation is usually in the actor's rational self-interest.

- Public Adaptation – Adaptation that is initiated and implemented by governments at all levels. Public adaptation is usually directed at collective needs.

- Reactive Adaptation – Adaptation that takes place after impacts of climate change have been observed.

Adaptive Capacity means "The ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences").

[166] *See* Sue Mather, David Viner & Graham Todd, *"Climate and Policy Changes: Their Implications for International Tourism Flows,"* TOURISM, RECREATION AND CLIMATE CHANGE 80-81 (C. MICHAEL HALL & JAMES HIGHAM eds. 2005) (suggesting adaptation methods by required to protect the hinterland from flooding, so the measures might include: building the sea wall defences and breakwaters; enhancement and preservation of natural defences; setting the building, infrastructure and resorts further back from the sea; importing sand to beaches in order to maintain their amenity value); *see generally* CLIMATE CHANGE AND TOURISM – RESPONDING TO GLOBAL CHALLENGES, *supra* note 15, at 6-7.

[167] *See id.* at 81 (giving as examples the ski region of the Alps and across the USA, so the measures might include: increase use of artificial snow; develop a tourism marketing plan for the shorter and warmer winter season).

[168] *See* Daniel Scott, *"US ski industry adaptation to climate change: Hard, soft and policy strategies,"* TOURISM & GLOBAL ENVIRONMENTAL CHANGE: ECOLOGICAL, SOCIAL, ECONOMIC AND POLITICAL INTERRELATIONSHIPS 262-83 (STEFAN GÖSSLING AND C. MICHAEL HALL eds. 2005); *see generally* CLIMATE CHANGE AND TOURISM – RESPONDING TO GLOBAL CHALLENGES, *supra* note 15, at 6-7.

To set up the climate change adaptation policy in each destination efficiently, the policy maker must use data from the Data Center including the National Hot Spot Map to decide how to best respond to climate change.

a. Destination Management

The destination can prepare to adapt to the impact of climate change by integrating many options together such as town planning, erosion control, and coastal zone management - planning the distance of buildings from the shoreline, including locating new tourist facilities in low-risk areas to avoid the negative impacts of a potential disaster - as well as preparing the necessary facilities to support tourism development such as water management to improve rainwater harvesting and water storage and diversification of irrigation techniques. In constructing accommodations and facilities for the tourism sector, the government should promote the use of local materials in order to minimize the generation of GHG and the consumption of resources. Using natural resources can reduce economic leakage from the destination area. As a result, reduced import material from outside the destination can reduce CO_2 from transportation. This can be done by considering local and traditional knowledge to develop coping and adaptation strategies[169] by cooperating with the local and indigenous community to apply their traditional knowledge to destination management.[170] As they have long been exposed to many kinds of environment changes and have developed important strategies to adapt to impact of climate change, therefore they have valuable knowledge about adaptation to climate change, for example, traditional and innovative adaptation practice including shoreline reinforcement, improved building technologies, rainwater harvesting, supplementary irrigation, traditional farming techniques to protect watersheds, changing hunting and gathering periods and habits, crop and livelihood diversification, use of new materials, and community-based disaster risk reduction.[171] For example, the tour operator

[169] *See generally* CLIMATE CHANGE AND TOURISM – RESPONDING TO GLOBAL CHALLENGES, *supra* note 15, at 9.
[170] *See generally* Erika M. Zimmerman, *Valuing Traditional Ecological Knowledge: Incorporating the Experiences of Indigenous People into Global Climate Change Policies*, 13 N.Y.U. ENVTL. L. J. 803 (2005) (discussing the benefit of incorporating traditional ecological knowledge into science and policy, as well as decision making).
[171] *See generally* Mirjam Macchi, *Indigenous and Traditional Peoples and Climate Change: IUCN Issues Paper*, (2008), *available at* http://cmsdata.iucn.org/downloads/indigenous_peoples_climate_change.pdf (showing the overview and analysis of the potential impacts of climate change on livelihood and cultures of

in Thailand can apply mudhouse technology to construct tourists' accommodations using a technology developed a hundred years ago.[172] The main raw materials of mudhouse are mud and bamboo, which are readily found in Thailand. The benefit of mudhouse is "harmonized with all environments and good for being a passive air-conditioning system,"[173] which means reduced energy demand and mitigated GHG emissions.

Also the design of accommodation and other facilities should apply the climate-friendly principles consistent with the landscape, land use,[174] and use local material. For example, consider the design of Mauna Kea Beach Hotel, located on the Big Island – one of Hawaii's unique lava-based geological formations by Laurence Rockefeller, founder of RockResort, and architect Nathaniel Owings. The distinctive design of the hotel allows Polynesian art to be displayed throughout and its residential wings are elevated to permit the landscaped grounds to freely flow into its interior gardens and courtyards, further enhancing the resort experience. The hotel became the idol for the followers of the environmental resort concept. Especially, they made a noble effort to preserve the natural lava surface on the golf course; however, guests wearing cleated golf shoes eventually required grassing over the slippery surface.[175]

Furthermore, to control destination management for future climate variability and extreme events, the government can use the command and control principle by enacting the law or regulations. For example, it can use the building law to set up building standards to conduct tourism's facilities such as hotel and resort construction under the same standard, or the land use law for zoning areas for tourism zoning.

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indigenous and traditional peoples. In the meantime, presenting the evidence of adaptation strategies of indigenous and traditional people.).

[172] Kusuma Dhammadamrong, *Mudhouse*, http://www.scribd.com/doc/4612723/MUDHOUSE (last visited Mar. 2, 2009) (introducing and illustrating mudhouse technology, which good and harmless to natural enviornment).

[173] *See id.*

[174] *See generally* ARTHUR E. PALMER, TOWARD EDEN, (1981) (Giving ideas that land use management must focus on ecological inventory and environmental planning by using the Town of Medford, New Jersey, to show a vital path to environmental health and human well being).

[175] *See* WALTER A. RUTES, RICHARD H. PENNER, AND LAWRENCE ADAMS, HOTEL DESIGN, PLANNING AND DEVELOPMENT 70 (2001); *see generally* RockResorts, *About RockResorts*, http://rockresorts.com/gen.about.asp (last visited Dec. 15, 2008).

b. Human and Natural Life and Health

Human and natural life and health is the center of sustainable development. Therefore, the adaptation strategies must concern human and natural life.

Risk Management

The world is increasingly facing dramatic and deadly climate events. Many areas in the world face devastating natural disasters. A tsunami hit Asia and Africa in 2004; Hurricane Katrina hit America's Gulf coast in 2005. Typhoon Nargis hit Myanmar in 2008. It seems that the world is more risky than before. The effects of such disasters are calculated not only in the number of people killed but also the aftermath of the disaster, direct and indirect, to other parts of society, the economy and the environment. The aftermath of the disaster also impacts the tourism sector. Many disasters happen in natural resources tourism centers. For example, in Thailand, Phuket which devastated by the Tsunami and has required considerable time, effort, and money to recover. Tourists also lost confidence, and revenues fell off. The following are examples of adaptation in risk management:

Natural disasters are more frequent and more devastating.[176] Because of their effect on tourism, sustainability requires risk assessment and disaster management as essential elements of a safer world.[177] Investings the proper practices will defend against and mitigate the damage caused by natural disasters. While vulnerability, risk assessment and disaster management issues are not mentioned in the UNCED, they are an important part of the JPOI, which also encourages the use of traditional and indigenous knowledge to mitigate the damage caused by natural disasters and promote community-based disaster management planning by local authorities.[178] The JPOI also supports the voluntary contribution of NGOs, the scientific community and others to managing natural

[176] *See* Johannesburg Declaration, *supra* note 52, ¶ 13.
[177] See Johannesburg Plan of Implementation, *supra* note 53, ¶ 37.
[178] *See id.* ¶ 37(f).

disasters,[179] in addition to strengthening early warning systems and information networks[180] such as tsunami warnings and climate change assessments.

Anticipatory Adaptation

One kind of adaptation is anticipatory, proactive or preventative adaptation that takes place before impacts of climate change are observed. This part of adaptation is related to scientific development, especially to early warning systems. For example, an early warning system that relates to extreme wind events, storm surges, flooding and heat waves will reduce health risks, including mortality.[181] Furthermore, to prepare for preventing the possible risk that might happen in that area, the adaptation should also focus on design and material for building, as well as displaced people. Tourism in a coastal area should invest for preparing to adapt to the sea level rising. This might entail constructing a dam or flood gate or drafting a plan to evacuate tourists and residents.[182] However, the early warning system might be prohibitively expensive. The nation might not afford that kind of cost: building a flood gate to protect Venice might make economic sense while the same cannot be send for a less wealthy, populated or vulnerable region. Therefore the nation might consider a budget in its financial plan, which will be discussed later in part C of this chapter.

Reactive Adaptation

Another kind of adaptation which applies to risk management is reactive or restrictive adaptation that takes place after the impacts of climate change have been observed. Therefore, the National Adaptation Policy should prepare for the recovery from disaster of both for humans and nature. However, some early warning system or anticipatory adaptation can develop mutually with the reactive adaptation such as a tsunami warning system that can develop after disaster.

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[179] *See id.* ¶ 37(g).
[180] *See id.* ¶ 37(h) and 37(i).
[181] *See generally* CLIMATE CHANGE AND TOURISM – RESPONDING TO GLOBAL CHALLENGES, *supra* note 15, at 84.
[182] *See id.* at 8. (stating "improve emergency preparedness, implement and improve warning and evacuation system, and put avalanche prevention infrastructure into place.").

c. Use of Environmental Impact Assessment

The tourism sector like any other business or industrial sector, can contribute greenhouse gases via tourists' facilities, tourist's transportation, and tourists' activities, which have a cumulative impact on the environment. Therefore, Environmental Impact Assessment (EIA) can be used to anticipate adaptation and predict the impact of climate change on the tourism destination. The benefit of EIA is that it can anticipate sea-level rise and the impact on developments in coastal zones and flood plains. All this can be done without the need to revise local ordinances or bylaws or state and national statutes.[183] However, where the tourism destination does not comply with the EIA, the policy maker might plan to design the EIA regulatory frameworks for tourism development. (See Chapter III, part D: The Environmental Impact Assessment Model for Community-Based Ecotourism Development. The model shows the EIA framework for ecotourism development)

d. Enhance Cultural site Stewardship

Enhancing cultural site stewardship will increase their value. The importance of cultural sites is that they are the asset for tourism. Therefore, including historic sites is one category of the National Policy, as is monitoring the climate change impact to the historic or cultural site, especially the historic or cultural site located in or near a hot spot area. For example, in Venice, Italy, the structural integrity of many buildings is being damaged by frequent flooding.[184] In Northern Thailand, severe flooding currently threatens historical sites. Floods have damaged the 600-year-old ruin of Sukothai, the country's first capital, and the ruins of Ayutthaya, which served as the capital from the 14th to 18th centuries.[185] This adaptation program will foreshadow the impact of climate change to the historic site. Therefore, anticipatory adaptation can apply before the historic or cultural site is in danger. For example, the historic or cultural organization, might

[183] Nicholas A. Robinson, *Essay: IUCN as Catalyst for a Law of the Biosphere: Acting Globally and Locally*, 35 ENVTL. L. 249, 284 (2005).
[184] *See* DOW AND DOWNING, *supra* note 92, at 67.
[185] *See id.* at 67.

consider building a dam, levee or floodgate to protect the historic site, where the possibility of impact from the sea level rising exists.

e. Enhance Biodiversity and Natural site Stewardship

The adaptation program's Data Center will enable scientists to assess the biodiversity and natural resources which are affected by climate change for tourism conditions in each area. This data can inform decision-making across different parts of the government. For example, the Ministry of Forestry will restore trees, forests or mangrove and wetlands depending on the tourism area, as well as relating to the building code and zoning when requiring building away from the coastal area and planning to restore or sustain wildlife habitat.

f. Human Resource Development: Capacity Building, Education, and Training

The relationship between tourism development and the climate change issue should be on the national agenda. As can be seen from the National Policy and National Action Plan for Climate Change and Sustainable Tourism (Figure 2.2), it is designed for public involvement at all levels-policy, planning and program. Therefore, the role of human resource development – capacity building, education and training – is important to enhance knowledge of tourism and climate change to raise awareness and get the right response from the all stakeholders.

g. New Tourism Market

Even though, climate change can bring adverse impact to the destination area, in some areas the climate change might bring new opportunities to the destination area. So, the best way to adapt the tourism destination to climate change is to change the way tourism is conducted. The new market can create by observing the change of climate in the tourism destination area or use science's data, if any. Then planners can design alternative tourism for the destination area. For example, the ski resort might need to adapt to the short winter and less snow, and adapt their resort for the longer summer by introducing new tourism activities, such as hiking, camping or bird watching.

h. Insurance

Insurance offers one of the adaptation strategies to deal with the effect of climate change.[186] By spreading the risk of harms, insurance markets should ensure that funds are available for restoring the areas damaged by episodic events such as cyclones. However, in the tourism development aspect, the assets of the tourism sector are natural resources, historical sites and cultural sites, etc. Some assets can regenerate, such as forests but they need time; some assets cannot regenerate such as historical and cultural sites. Therefore, if climate change causes an adverse impact on tourism's asset, that means the tourism sector cannot have the same asset anymore. This can show that insurance cannot compensate for all the damage of climate change.

2. Climate change Mitigation Policy in the Tourism Sector

As discussed in chapter I, scientific studies reveal the causes of climate change come from increasing GHG in the atmosphere from anthropogenic causes. (See Chapter I - Global Warming: Who is suspect?) Among other industries, the tourism industry can contribute to GHG emission, especially from tourist transportation, accommodation and tourist activities. (See Chapter I - Climate Change: The Impact of Tourism) Even now, tourism is not yet the top of GHG emitter. However, as the number of tourists keeps rising, the GHG emission rate from the tourism industry will likely rise too. Therefore, as in many industries, the tourism industry must take responsibility and redress its business by reducing the output or creating new GHG sinks (such as forest). Furthermore, the IPCC stated that many impacts can be avoided, reduced or delayed by mitigation.[187] Much research leads to the very likely result that there are four major mitigation strategies, i.e. reducing energy use, improving energy efficiency, increasing the use of renewable energy, and sequestering carbon through sinks[188] to reduce GHG emissions from the tourism sector, i.e. tourism's transportation, accommodation and tourism

[186] *See* United Nations Framework Convention on Climate Change, art. 4.8, May 9, 1992, 31 I.L.M. 849 (1992) [hereinafter UNFCCC] *available at* http://unfccc.int/resource/docs/convkp/conveng.pdf (According to the UNFCCC article 4.8, insurance-related actions constitute one of the three main means of response to the adverse effects of climate change, alongside funding and technology transfer.); *see Generally* CLIMATE CHANGE : IMPACTS, VULNERABILITIES AND ADAPTATOIN IN DEVELOPING COUNTRIES, *supra* note 149 at 39.
[187] *See* Impacts, Adaptation and Vulnerability Summary Report, *supra* note 138, at 20, 7-22.
[188] *See* Davos Declaration, *supra* note 11; *see* BECKEN AND HAY, *supra* note 135, at 175-76.

activities. This part will suggest the strategies that policy makers should address in making mitigation policy to enhance sustainable tourism.

a. National Carbon Calculator

Under the National Policy, the committees should establish a National Carbon Calculator. A National Carbon Calculator is probably fundamental to all mitigation programs. The National Carbon Calculator will connect with the idea of showing the amount of GHG emission from tourism accommodations, transportation and activities. In other words, it is the idea of creating a standard for carbon footprint labeling on all tourism products, like transport tickets, accommodations, activities and packages. A National Carbon Calculator enables travelers to be aware of how much emission they generate during their trip. This will be useful for enabling tourists to make informed and responsible plans and when establishing a carbon offset program.

The National Carbon Calculator might work with an existing carbon calculator system, such as the carbon calculator of the International Civil Aviation Organization[189] ("ICAO") which is currently working to develop a standardized system for measuring carbon emissions according to type of aircraft, route, and class of travel – which would help determine precisely how much offsetting is needed for each flight.[190] However, later on, all the carbon calculators must harmonize and have the same standard and calculate exactly the same amount. If a tourist travels the same distance, for example travel by airplane from Bangkok to New York, under the same route and kind of airplane, different carbon calculators should give the same answer. Therefore, the benefit of the National Carbon Calculator will be the central standard and trustable measure to calculate GHG emission, furthermore, the National Carbon Calculator uses the same proposal for other business sectors and also connects to the global emission trading scheme.

[189] International Civil Aviation Organization, *ICAO Carbon Emission Calculator*, available at http://www2.icao.int/public/cfmapps/carbonoffset/carbon_calculator.cfm.
[190] *See* Tourism & Climate Change: Confronting the Common Challenges, *supra* note 17, at 10.

b. Energy Policy

Nowadays, the main source of energy in the tourism sector, still fossil fuel, which is used to power tourist's transportation, accommodations and many of their activities. The greates energy demand, the greater fossil fuel consumed; consequently, more GHG is contributed to the atmosphere. To reduce GHG from the tourism sector, the policy maker must focus on energy policy – how to reduce energy use; how to improve energy efficiency; how to increase the use of renewable energy and alternative energy? The following are suggestions for energy policy for the tourism sector:

Reducing energy use

Lowered levels of fossil fuel use contribute to decreased concentration of GHG in the atmosphere.

Improve energy efficiency

Encouraging stakeholders to be more energy-efficient in order to minimize as much as possible their contribution to climate change.[191]

Increase the use of renewable energy and alternative energy

Promoting efficient technologies and renewable resources, such as hydro, wind power, photovoltaic, solar thermal, tidal geothermal, biofuel.[192] These options depend on the geography of the tourism destination area. However, use of a biofuel source is a double-edged sword and cannot be considered a panacea, even biofuel made from renewable agricultural products such as sugar cane, corn, beets and sunflower oil. Many controversies still remain about the biofuel technology because it adds to GHG emissions generated from farming, processing and transporting biofuels. Furthermore, to produce the renewable agricultural product requiring large spaces for cultivation. The effect of biofuel cultivation can lead to a deforestation problem; it may reduce biodiversity and perhaps increase the greenhouse effect that they were intended to reverse.[193] In addition

[191] *See* Djerba Declaration, *supra* note 82, ¶ 5.
[192] *See generally* CLIMATE CHANGE AND TOURISM – RESPONDING TO GLOBAL CHALLENGES, *supra* note 15, at 11.
[193] *See* Tourism & Climate Change: Confronting the Common Challenges, *supra* note 17, at 9.

to the alternative energy tourism's transportation sector should switch to fuels with lesser greenhouse gas intensity, for example from coal to natural gas. To implement the energy policy, the government might consider enacting laws and regulations such as the energy-efficient codes and standards for buildings. The following is illustrating the possibility to apply tourism's energy policy into the tourism sector:

Tourism infrastructure and facilities

The role of engineering and the architect's design on green infrastructure and building can help fight climate change as well as introduce the new green technologies material to reduce of energy use and improve energy efficiency. For example, building design for the tourism sector such as hotels and resorts; associated with heating, air conditioning, cooling, cleaning, lighting systems, and waste management should conform to green design and technology to increase building efficiency. Energy efficiency options for new and existing buildings could considerably reduce CO_2 emission,[194] as could the use of renewable energy sources instead of fossil fuels. The design of tourism infrastructure and facilities must apply energy policy by considering the reduction of energy use; the energy-efficiency supply; using renewable power for generating infrastructure such as the design for street lights that can use wind-generated electricity, or solar electricity.

Tourist Access to Destination: Tourists' Transportation

The tourism sector relies on transportation to take tourist in and out of their destination. So, this part will suggest the ways to reduce GHG from the tourism transportation sector. One of the tools to reduce GHG from tourists' transportation is allowing tourists to choose or tourism operator to offer how to select the transportation to assess the destination area. Choice of transportation:

By types of transportation - airline, car, train, railway, coach, ship.

[194] *See* Mitigation of Climate Change Summary Report, *supra* note 5, at 14.

By the source of the transportation's energy- biofuel, hybrid vehicle, efficient vehicle, Low Emission Vehicles (LEV), non-motorized transportation.

The most controversial mode of transportation is travel by air. As more tourists travel by air, it will be one of the fastest growing sources of climate change.[195] The Climate Friendly claims that "a round trip for one person between the United States and the UK creates about the same emissions as driving a car for more than a year; between Europe and Asia-Pacific, the same emissions as driving a car for 2 years." [196] Jet aviation is, therefore, a major source of concern.

Tourism infrastructure, like airports and roads should design and manage the operation and traffic management both for car and airplane so that they can mitigate the potential for CO_2 emissions,[197] for example, by flowing traffic to reduce traffic congestion on the runway and road, respectively, which means saving more energy consumption and GHG release.

Furthermore, policy and planning should apply sustainable transportation principles in mitigation planning and connect with other policies like land use policy. Designing of the public transportation infrastructure such as road, airport hub, and rail way must be connected for less use by private transportation. Encouraging partnerships between different transport and tourism stakeholders with the objective to reduce emissions through optimizing the value chain promotes the idea of joint tourism in region for flying less.

Tourism Activities

Technically, the volume of GHG emissions generated by tourist activities relies on the how much fossil fuel is consumed in tourism activities. For example, water skiing results in more emissions than hiking; and amusement parks throw off more CO_2 than river rafting.[198] Therefore, the best strategy to reduce GHG emission from tourism

[195] Climate Friendly, *Offset Flights*, https://climatefriendly.com/flight (last visited Jan. 16, 2009).
[196] *See id.*
[197] *See* Mitigation of Climate Change Summary Report, *supra* note 5, at 13.
[198] *See* Tourism & Climate Change: Confronting the Common Challenges, *supra* note 17, at 3.

activities is promotion of non-motorized tourism activities such as hiking, bicycle, foot, or sail boats.

c. Carbon Offset in Tourism

Governments should also implement the energy policy – by using less fossil fuel energy, greater demanding fuel efficiency, and recycle increasing on alternative energy - to reduce GHG emission from the tourism sector. However, as long as the fossil fuel is still used as the energy's base, the tourism sector continues to emit GHG into the atmosphere. Therefore, the carbon offset idea is to compensate or offset means that an amount of greenhouse gas emissions is equal to that caused by a certain activity,[199] for example, GHG emission from the flight will be reduced elsewhere. In other words, carbon offsetting allows a person or a business to contribute to the environment by purchasing credits that compensate for emissions caused by a voyage or an activity. The aim is to move towards carbon neutrality.[200] However, carbon offsetting still remains a controversial solution because "it shifts responsibility from the supplier to the consumer and lessens pressure on industry to find lasting solutions to the real causes of global warming."[201] Furthermore, the offset is not a sustainable way to solve the climate change problem because it implies that the tourism sector still produces the GHG to the atmosphere.

Carbon Offset Program

Nowadays, there are many tools to keep tracking the CO_2 emission. Many institutions provide the tools to compute CO_2 emission by requiring simple information, such as, for calculating carbon emission from a flight, the traveler just puts "from" and "to" as the basic information. Then the calculator will show the amount of the carbon emission per ton and how much it costs to reduce that carbon emission.[202]

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[199] *See* SIMPSON ET AL., *supra* note 80, at 90.
[200] *See* Tourism & Climate Change: Confronting the Common Challenges, *supra* note 17, at 9
[201] *See id.* at 10.
[202] *See Generally* Climate Friendly, *Offset flights*, https://climatefriendly.com/flight (last visited Jan. 16, 2009) (showing the carbon emission calculator for flight); Climate Care, *Reducing Carbon Emission*, www.climatecare.org (last visited Jan. 16, 2009) (showing carbon calculator including flight); International

Once tourists know the amount of the GHG emission from the trip, the tourists can voluntarily decide whether to compensate their emission from traveling or not. If the tourists agree to compensate the GHG emission, they can choose to donate money to the selected institution. The current problem is how to make the universal standard. Which website is the most accurate? Do we need that level of accuracy? Perhaps this is a point at which additional investments in accuracy are unwarranted. The standardization of the GHG emission calculator will help. If the standard can be agreed upon, it will help the other programs such as CO_2 trading among different institutions or markets.

The carbon offsetting donation can contribute into many projects[203] such as energy-efficiency lighting, building technologies; renewable energy projects – wind power technology projects, biofuel projects, solar photovoltaic projects for households; carbon sequestration[204] – by storing carbon in soil, ocean or forest. Moreover, some kinds of carbon offsetting project can invest indirectly to energy projects such as education or capacity building for understanding energy projects.

Among other carbon sequestration projects, the most effective carbon sequestration for the tourism sector is forest sequestration, because the carbon sequestration process can use trees as the CO_2 sequestration or carbon sinks to absorb CO_2 in the atmosphere in the form of biomass. In the meantime, trees are the environmental resource base of tourism. This means that they can offer a substantial mutual benefit for GHG reduction and tourism resource development. Meanwhile, as for the companies which receive an emission allowance, if they cannot reduce their own emissions, where can they find the credits to offset their emission? So, they need "carbon

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Civil Aviation Organization, *ICAO Carbon Emission Calculator,* http://www2.icao.int/public/cfmapps/carbonoffset/carbon_calculator.cfm (last visited Jan. 16, 2009) (showing carbon emission calculator for air travel).

[203] *See, e.g.,* Climate Friendly's Project at https://climatefriendly.com/projects (last visited Jan 16, 2009).

[204] *See* SIMPSON ET AL., *supra* note 80, at 127 (giving the meaning of Sequestration that "the process of increasing the carbon content of a carbon reservoir other than the atmosphere, for instance forests or oceans. Human biological approaches to sequestration include direct removal of carbon dioxide from the atmosphere through land-use change, afforestation, reforestation, and practices that enhance soil carbon in agriculture. Physical approaches include separation and disposal of carbon dioxide from flue gases or from processing fossil fuels to produce hydrogen – and carbon dioxide-rich fractions and long-term storage in underground in depleted oil and gas reservoirs, coal seams, and saline aquifers.").

credits." The industry can invest in tourism's assets to gain the carbon credits for offsetting their emission allowance.

Carbon Offset case studies

Although the concept is fairly new and the markets relatively underdeveloped, some carbon offset programs have succeeded and offer interesting case studies that illuminate pathways to more comprehensive and effective systems.

Case study –The IUCN World Conservation Congress in Barcelona

Carbon offsetting of the emissions from the traveling exists not only in the tourism sector but for business travel. For example, in 2008 at the IUCN World Conservation Congress in Barcelona,[205] IUCN offset all CO_2 emissions related to travel to and participation in the Congress by staff and sponsored delegates and asked the participants to voluntarily offset their travel emission.

Case study - British Airway Holiday

Since travel-related CO_2 emissions are most significant in aviation, in 2001, British Airways Holidays developed a partnership with Climate Care,[206] a non-profit organization that seeks to mitigate the environmental impacts of CO_2 emissions by funding renewable energy, energy efficiency and rainforest reforestation projects. As a first step, British Airways Holidays (BAH) contributed ₤ 10,000 for projects selected and managed by Climate Care, offsetting approximately 1,500 tons of CO_2, or the equivalent of 12,000 person hours of flying. This contribution was incorporated in the price of a holiday and is referred to in the BAH brochure. Climate Care invested these funds in

[205] The IUCN World Conservation Congress, *Green Congress*, http://www.iucn.org/congress_08/about/green/index.cfm (last visited Jan. 20, 2009) (committing "foster actions that avoid harm to biodiversity and human health, minimize our impact from CO_2 emissions, and contribute to the sustainable development of the local economy" by "IUCN will offset all CO_2 emissions related to travel to and participation in the Congress by staff and sponsored delegates. Voluntary contributions for participants willing to offset their Congress-related emissions will go towards the Barcelona Carbon Offset Fund.").

[206] *See, e.g.,* Climate Care's homepage available at www.co2.org; *see also* Climate Care, *Our Clients*, http://www.jpmorganclimatecare.com/business/clients/ (last visited Jan. 16, 2009) (showing the current Climate Care's client).

three projects: a low-energy light bulb project in Mauritius (10 percent); a reforestation project in the Kibale rainforest in Uganda (40 percent): and a hydroelectric project in Bulgaria (50 percent). These efforts lead to less energy use and lower fuel bills for the users of the low-energy light bulbs in Mauritius; the re-creation of a valuable wildlife habitat in Kibale, and employment for up to 1,000 people from local communities, as well as carbon sequestration; and significant energy savings in Bulgaria, by replacing an inefficient coal power station with a hydroelectric plant, each creating income for their respective communities. Further plans are being made to more actively involve BAH's customers in the program and to offer them the opportunity to offset their specific flights' GHG emissions with the Climate Care Carbon Calculator. For just 80 pence per passenger per hour of air travel, BAH passengers would be able to make their flights "climate neutral." British Airways has also put a number of measures into practice to reduce the impact of its operations, such as reducing the running time of the Auxiliary Power Units that provide services for aircraft on the ground, which saves about 10,000 tons of CO_2 per year.[207]

d. Creating New Tourism – Less GHG Emission Market

As for accommodations, large hotels were found to have more emissions than guesthouses, self-catering apartments or campgrounds because they use more energy to operate extra facilities such as restaurants, bars, swimming pools and spas.[208] This fact can lead to a discussion about how to promote a new kind of tourism. However, currently the need of the societal trends has already created new markets for low-carbon tourism products, and these markets can be expected to grow in the future.[209] For example, ecotourism, which uses less energy to operate and get more potential to contribute to sustainable development. However, ecotourism must have the good planning to achieve sustainable tourism. See Chapter III – "The Climate and Sustainable Tourism: Ecotourism" for the purposing of sustainable tourism.

[207] UNITED NATIONS ENVIRONMENT PROGRAMME, SUSTAINABLE TOURISM: THE TOUR OPERATOR'S CONTRIBUTION 54 (2003) (showing offsetting CO_2 Emission from Air Travel by used British Airways Holidays as a case study).
[208] *See* BECKEN AND HAY, *supra* note 135, at 203-6 (Suggesting energy use and emissions of tourist accommodation).
[209] *See* SIMPSON ET AL., *supra* note 80, at 67.

The tour operators can play a central role in mitigation of the effects of GHG emissions.[210] They can introduce the new tourism products which reduce GHG emission from the tourism sector by promoting short-haul distances, domestic or between neighboring countries, specifically within the often less developed regions near the borders, as well as an increased length of stay, especially for long-haul and mid-haul destinations.[211] Each of these resources would reduce the carbon footprint per tourist day and increase the economic opportunities for destinations.[212] The tour operators can also promote ecotourism as environmentally-friendly by offering offsetting for trips to nature-based tourism destinations.[213]

e. Tourists' Behavior

In addition to collecting relevant information about GHG emissions, a well-balanced climate change strategy would include ways to share it with decision-makers. In the tourism sector, tourists are the most important set of decision-makers, so a robust program would ensure that they have the accurate information.

It may be that the best strategy to combat the climate change issue should start by addressing the behavior of the tourists. By changing tourist expectation and behavior, the tourism sector can effectively reduce GHG emission.[214] The key factors are awareness and education for tourists.[215] Leading tourists to understand and be aware of the problem of climate change in the tourism sector, will help tourists to make the right decision to travel to less GHG emitting destinations and via better modes of travel,[216] such as shifts in transport use from car and aircraft to rail and coach. However, the awareness and education for the consumer must balance between the climate change issue and the

[210] *See generally* CLIMATE CHANGE AND TOURISM – RESPONDING TO GLOBAL CHALLENGES, *supra* note 15, at 10.
[211] *See id.* at 10.
[212] *See id.* at 35.
[213] *See id.* at 8.
[214] *See* Mitigation of Climate Change Summary Report, *supra* note 5, at 12.
[215] *See* Davos Declaration, *supra* note 11 (Introduce education and awareness programs in tourism and climate change for consumers.).
[216] *See id.* (In their choices for travel and destination, tourists should be encouraged to consider the climate, economic, societal and environmental impacts of their options before making a decision).

importance of tourism development contributing to poverty alleviation and the tourism contribution to Millennium Development Goals.[217]

One way of creating tourist awareness about the climate change effects of their travel is by indicating emissions on the transportation ticket and product brochures for tourism accommodation, including tourism activities.[218] This strategy can link with the carbon offsetting program for other carbon offsetting project such as contribute to the preservation of the natural environment and cultural heritage; energy-efficiency; and renewable energy.

C. FINANCIAL RESOURCES FOR CLIMATE CHANGE IN TOURISM SECTOR

The impact of climate change can hinder sustainable tourism, as we discussed in the first chapter. Chapter two examines how adaptation and mitigation strategies combat climate change under the "Climate Change and Sustainable Tourism Model." The cost of the implementation, adaptation and mitigation program is very high, especially for developing countries and small island states which are poor but rely on the tourism sector as a main resource for their economic development. The big question is how to develop a financial mechanism to implement adaptation and mitigation policies. Therefore, financial resources to implement adaptation and mitigation policies will be a key of sustainable tourism in developing countries and small island states.

This section will highlight financial mechanisms which are available for tackling climate change in the tourism sector, as well as allocate financial mechanisms to enhance sustainable tourism. See Figure 2.2, for the summary of Financial Resources and Management. There are a range of financial services that could serve sustainable tourism.

[217] *See generally, supra* note 89, at ¶ 6 (Reiterating "the importance for the tourism sector to identify consensus measures to address climate change but without losing sight of all other priorities, especially poverty alleviation and tourism contribution to Millennium Development Goals.").
[218] *See* CLIMATE CHANGE AND TOURISM – RESPONDING TO GLOBAL CHALLENGES, *supra* note 15, at 9.

1. Overview of Climate Change Financial Mechanism

a. Fund from United Nations Framework Convention on Climate Change and Kyoto Protocol

Under the principle of common but differentiated responsibilities[219] in the United Nations Framework Convention on Climate Change (UNFCCC), it is clearly stated that the developed countries should be responsible because they have emitted for more CO_2 than the developing countries since the Industrial Revolution. Therefore, article 4 of the UNFCCC identified the developed country parties (Annex II Parties) that should provide financial resources to assist developing country parties to implement the Convention.[220] To facilitate this, the Convention established a Global Environment Facilities[221] (GEF) providing for the responsibility of operating its financial mechanism to finance projects to assist developing country parties adapt to the adverse effects of climate change, such as clean energy and reducing their consumption of fossil fuel; removing barriers and building capacity in the areas of policies, financing, technology, business infrastructure, and information; and renewable energy – solar, wind, geothermal, biomass, and small hydropower energy.[222] GEF-financed projects are managed through ten GEF implementing and executing agencies.[223]

Currently, there are GEF avenues available to fund projects focusing on the adverse impacts of climate change under the GEF Trust Fund. Two such programs are most interesting. The Least Developed Countries Fund (LDCF) will support urgent and immediate work programs to assist adaptation needs of Least Developed Countries. The

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[219] *See* UNFCCC, *supra* note 186, art. 3 (1) (Principle of common but differentiated responsibilities).
[220] *See id.* art. 4.
[221] The Commitments to finance adaptation in developing nations are not outlined in the UNFCCC. However at the sixth Conference of the Parties (COP-6) in 2001, three funds were created to specifically support adaptation: the Special Climate Change Fund (~$50 million), the Least Developed Countries Fund (~$32.5 million), and the Adaptation Fund. These funds are disbursed through the Global Environment Facility (GEF).
[222] Global Environment Facility, *GEF's Work on Global Climate Change*, http://www.gefweb.org/uploadedFiles/External_Affairs/Publications/CliCH-insert3_v2.pdf (last visited Jan. 16, 2009).
[223] They are UN Development Program (UNDP), UN Environment Program (UNEP), the World Bank, African Development Bank (AfDB), the Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD), the Inter-American Development Bank (IDB), the Food and Agriculture Organization (FAO), the International Fund for Agricultural Development (IFAD), and the UN Industrial Development Organization (UNIDO).

Special Climate Change Fund (SCCF) will finance projects that increase resilience to the impacts of climate change, through a focus on adaptation responses in such key development sectors as water resources, land, agriculture, health, infrastructure development and disaster preparedness, and in fragile ecosystems and coastal zones.[224]

Furthermore, the Kyoto Protocol also recognizes, under its Article 11,[225] the need for a financial mechanism to fund activities by developing country parties – the Adaptation Fund. The Adaptation Fund was established to finance adaptation projects and programs in developing countries that are parties to the Kyoto Protocol. The Fund is to be financed with a share of proceeds from CDM project activities, 2% of the share of proceeds from CDM projects will be diverted to the fund, which will also receive funds from other voluntary sources.[226]

b. The Other Multilateral Funds

Other entities also offer funding for adaptation and mitigation. Adaptation funding also comes from Multilateral Environmental Agreements (MEAs), such as the Convention on Biological Diversity, the UN Convention to Combat Desertification and the Ramsar Convention on Wetlands.[227] Funds for world heritage monuments that are endangered can be sought from UNESCO. Furthermore, Bilateral and Multilateral Funding includes funding of adaptation projects directly via inter-governmental organizations, national and local governments, institutions and non-governmental organizations.[228] The international financial institutions give grants and loans to the projects battling climate change such as the Asian Development Bank's adaptation program which is responding in three ways: national adaptation planning; project-level "climate proofing"; and specific adaptation investments.[229] All these funding programs

[224] *See Generally* CLIMATE CHANGE : IMPACTS, VULNERABILITIES AND ADAPTATOIN IN DEVELOPING COUNTRIES, *supra* note 149, at 37.
[225] *See* Kyoto Protocol, *supra* note 61, art. 11.
[226] *See Generally* CLIMATE CHANGE: IMPACTS, VULNERABILITIES AND ADAPTATOIN IN DEVELOPING COUNTRIES *supra* note 149, at 38.
[227] *See id.* at 38.
[228] *See id.* at 38.
[229] *See, e.g.,* Asian Development Bank, *Climate Change ADB Programs: Strengthening Mitigation and Adaptation in Asia and the Pacific* 23-24 (2007) *available at* http://www.adb.org/Documents/Brochures/Climate-Change/2008/Brochure.pdf.

are relatively small, and much larger funding will be needed for tourism infrastructure if it is to mitigate and adapt to climate change.

2. Apply Existing Funding to the Tourism Sector

Sustainable tourism relies on some level of coordination or harmonization among many otherwise interdependent factors, such as natural resources, climatic factors, public participation, capacity building, and respect for biodiversity. Solving the climate change problem might be the top priority, but it is just one way to get closer to sustainable tourism. So, we need to address the other factors in the destination area to achieve sustainable tourism, for example, environmental protection, training and capacity building to the local people and reducing GHG emissions. Even though sustainable tourism development is cross-cutting with many factors, it offers a good opportunity to apply funds from a variety of financial mechanisms to support effects to adapt and mitigate. The following is the highlight of how to apply adaptation and mitigation policies and plans using the available financial mechanisms.

The tourism sector can possibly get benefits to enhance resilience and reduce vulnerability to climate change from the SCCF.[230] For example, GEF was working with the United Nations Environment Programme and UNDP for tourism projects in small island states, specifically Fiji and the Maldives, to implement projects including measures emcompassing ecosystem adaptation through natural resource management and mangroves restoration, as well as developing building codes for new hotels and resorts.[231]

Some kinds of tourism, such as nature tourism, or ecotourism, need the forest as the asset for development, so promoting Reducing Emissions from Deforestation and Degradation,[232] under the UNFCCC, can be mutually of benefit both to reduce emissions

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[230] *See, e.g.*, Global Environment Facility, *Adaptation Climate Change: Special Climate Change Fund*, http://www.gefweb.org/interior_right.aspx?id=192 (last visited Jan. 3, 2009).

[231] Global Environment Facility, *Linking Adaptation to Development*, at 9 http://thegef.org/projects/focal_areas/climate/documents/Adaptation_brochure.pdf (last visited Jan. 3, 2009).

[232] *See Generally* United Nations Framework Convention on Climate Change, *Fact sheet: Reducing emissions from deforestation in developing countries: approaches to stimulate action*, http://unfccc.int/files/press/backgrounders/application/pdf/fact_sheet_reducing_emissions_from_deforestation.pdf (last visited on Jan. 3, 2009).

from deforestation and forest degradation; and to regenerate a natural asset for tourism development. At the same time, promotion of nature tourism or ecotourism can increase use of the forests as thereby accelerating deforestation and forest degradation. To prevent this, financing options might come from voluntary contributions from developed countries, bilateral or multilateral arrangements, and establishment of new funds.[233] Developing countries can also implement afforestation and reforestation project activities under the Clean Development Mechanism and linkages to market mechanisms (as in carbon trading, payment for environmental services).[234]

The GEF's funding for biological diversity under the Convention on Biological Diversity can use be used to protect forests and their sustainable use for biodiversity conservation. Also funding from the UN Convention to Combat Desertification can be applied to combating desertification and land degradation as a purpose of forest management.[235] To mitigate GHG emission in the tourism sector is also concerned with how energy is used in the tourist's accommodation, tourist's transportation and tourist's activities. GEF provides finance to develop energy projects such as efficiency energy, and renewable energy.[236] Therefore, the tourism sector can apply funding from GEF to develop tourist accommodations such as developing wind power to operate the tourist's accommodation and developing low emission vehicles to bring the tourist in and out of the destination areas. The GEF also provides the Small Grants Programme (SGP), granting up to $50,000 each directly to non-governmental and community-based organizations.[237] The SGP is another resource that will be helpful for community-based tourism development. Ecotourism projects which rely on the community will get a benefit from the SGP fund.[238]

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[233] *See id.*
[234] *See id.*
[235] *See Generally* CLIMATE CHANGE: IMPACTS, VULNERABILITIES AND ADAPTATOIN IN DEVELOPING COUNTRIES, *supra* note 149, at 38.
[236] *See, e.g.*, Global Environment Facility, *Mitigation Climate change,* http://www.gefweb.org/interior_right.aspx?id=17566 (last visited Jan. 16, 2009) (introducing GEF's project to mitigate the effects of climate change).
[237] Global Environment Facility, *Project Types, Templates and Guidelines,* available at http://www.gefweb.org/interior_right.aspx?id=16674.
[238] *See, e.g.*, The GEF Small Grants Programme, *Rehabilitation and Development of Coastal Resources of Kor Lanta,*

3. The Future of the Financial Mechanisms in the Tourism Sector

The importance of tourism is very clear as it can contribute to sustainable development. However to achieve sustainable tourism is not easy. Adaptation and mitigation in the climate change issue is just an example. There are still a lot of factors that policy makers need to address in the destination area for sustainable tourism such as natural resource protection, capacity building of local communities, public participation of local communities, risk management of the destination areas and natural and human health and life. Currently, different parts of the tourist sector may qualify to apply for support from many financial mechanisms. However, sustainable solution require establishing a new fund for the tourism sector that will finance a comprehensive plan for sustainable tourism.

D. CONCLUSION

In the pursuit of sustainable tourism, policy makers, operators and tourists face many obstacles. Climate change itself is one of the most significant and least understood of these obstacles that might change the tourism sector. Therefore, the Climate and Sustainable Tourism model was proposed to address the relationship of sustainable tourism and the climate change issue by introducing the connection of National Policy and a National Action Plan for Climate Change & Sustainable Tourism, climate change adaptation and mitigation policy, and financial mechanisms.

This chapter has argued that for an effective result, adaptation and mitigation strategies need to employ a variety of tools and include all stakeholders. There is no one-size-fits-all solution that can adapt the adverse impact from climate change, as well as mitigate all CO_2 from the tourism sector. However, the effective adaptation and mitigation strategies need the financial mechanism to implement those strategies. Even with the variety of financial resources open for tourism development, however, establishing the new fund for sustainable tourism would be the best solution.

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http://sgp.undp.org/web/projects/11110/rehabilitation_and_development_of_coastal_resources_of_kor_lanta.html (last visited on January 3, 2009).

CHAPTER III: CLIMATE CHANGE AND SUSTAINABLE TOURISM: ECOTOURISM

By 2050, the world's population is forecast to increase by over 2.6 billion people.[239] Therefore, the number of tourists will likely continually rise, as does the world's population. Under an analysis of climate change, as discussed in the previous chapter, tourism is one of the industries that can contribute Green House Gas (GHG) from transportation, accommodations, and tourism activities. Therefore, if tourism sector continues to conduct business in the same manner, the amount of GHG will increase. As tourism develops, populations across the world will suffer from the effects of anthropogenic GHG. This leads to the question of whether there is an alternative solution to addressing climate change and sustainable tourism in a new era of tourism.

As discussed in the previous chapter, one of the adaptations and mitigation strategies to addressing climate change in the tourism industry and to enhance sustainable tourism is to introduce a new kind of tourism. Among other forms of tourism, ecotourism can be a good option for both the adaptation to and the mitigation of climate change by using less energy while operating ecotourism. Furthermore, the ecotourism sector has a longstanding reputation of having a positive impact on sustainable development. These benefits come from the unique characteristics of ecotourism. Therefore, policy makers should proceed cautiously to establish policies regarding the climate and sustainable ecotourism. The specific tools for sustainable ecotourism must be designed by applying the environmental impact assessment and the public participation principle, which provides for the participation of the local community as a bottom-up approach to driving sustainable ecotourism. In the meantime, the tourists also play an important role in developing the new kind of tourism. A body of research indicates that a growing number of tourists demand a new kind of tourism that results in less harm to environment. Consequently, policy makers must plan to promote the ecotourism sector, sensitive to each of these elements.

This part of the dissertation will emphasize the role of local communities and indigenous people in the development of ecotourism, and will discuss ways of enhancing

[239] *World Population to Increase by 2.6 Billion over the Next 45 Years,* United Nations Press Release February 2, 2005, http://www.un.org/News/Press/docs/2005/pop918.doc.htm (last visited Jan. 16, 2009).

the role of the local community and indigenous people to support and drive the development of ecotourism.

A. ECOTOURISM

1. The Characteristics of Ecotourism

Among tourism sectors, ecotourism is unique.[240] Ecotourism was recognized as a possible means of achieving the aims of Agenda 21 by promoting the development and the protection of the environment. Ecotourism also has the potential to foster better understanding among people across the world, to lead to a greater awareness of the rich heritage of different civilizations and to bring about a better appreciation of the inherent values of different cultures, thereby contributing to the strengthening of world peace.[241] Furthermore, ecotourism can assist in implementing the concept of sustainable development into tourism, conserving biodiversity and cultures, educating visitors about sustainability, and benefiting local people.[242] Generally, ecotourism requires natural and cultural assets. So, generally, this sector of tourism depends on husbanding, rather than merely exploiting natural resource.[243]

In order to understand the concept of ecotourism for further discussion in this chapter, an analysis of the definitions used to define "ecotourism" is necessary. Although there are many ways of defining "ecotourism," no firm definition of ecotourism has been agreed upon. Each definition of ecotourism differs slightly depending on what aspects of ecotourism the author intends to highlight.[244] This section discusses the definitions of

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[240] *See generally* WOOD, *supra* note 1, at 11-13 (giving background knowledge about the root of ecotourism); *see generally* HONEY, *supra* note 1, at 7-20 (providing background knowledge and development of ecotourism).

[241] *See* Declaring the year 2002 as the International Year of Ecotourism, *supra* note 58.

[242] *See* WOOD, *supra* note 1, at 7.

[243] MARTHA HONEY, ECOTOURISM & CERTIFICATION: SETTING STANDARDS IN PRACTICE 332 (2002).

[244] *See, e.g.*, The World Tourism Organization & United Nations Environment Programme, *WTO-UNEP Concept Paper, International Year of Ecotourism 2002*, http://www.world-tourism.org/sustainable/IYE/WTO-UNEP-Concept-Paper.htm (last visited Jan. 20, 2009) (The UNWTO identifies the main characteristic of ecotourism as being nature-based travel where the main motivation is the observation and appreciation of nature. Ecotourism incorporates educational features, and is often undertaken in small groups, which minimizes the negative natural and socio-cultural impacts and supports the protection of natural areas); United Nations Environment Programme, *About Ecotourism*, http://www.redturs.org/inicio/docu/abouteco.htm (last visited Jan. 20, 2009) (The UNEP identifies the basic

ecotourism as a way of exploring its values for sustainable development of the tourism sector.

The International Ecotourism Society (TIES) coined the term in 1991. It defines ecotourism as: "responsible travel to natural areas that conserve the environment and improve the well being of local people."[245] In 1996, IUCN defined ecotourism as: "environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature (and any accompanying cultural features – both past and present) that promotes conservation, has low negative visitor impact, and provides for beneficially active socio-economic involvement of local populations."[246] In 1999, Martha Honey discussed ecotourism in her book and defined ecotourism as "travel to fragile, pristine, and usually protected areas that strives to be low impact and (usually) small scale. It helps educate the traveler; provides funds for conservation; directly benefits the environment, development and political empowerment of local communities; and fosters respect for different cultures and for human rights".[247] Furthermore, Megan Epler Wood stated that ecotourism must be planned and managed to successfully offer key social and environmental objectives. This requires:

1. Specialized marketing to attract travelers who are primarily interested in visiting natural areas.

2. Management skills that are particularly designed to handing visitors in protected natural areas.

3. Guiding and interpretation services, preferably managed by local inhabitants, that are focused on natural history and sustainable development issues.

4. Government policies that earmark fees from tourism to generate funds for both conservation of wild lands and sustainable development of local communities and indigenous people.

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elements of ecotourism as contributing to the conservation of biodiversity, sustaining the well-being of local people, involving responsible action by tourists, requiring the lowest consumption of non-renewable resources, and emphasizing local participation).

[245] The International Ecotourism Society, *Definitions& Principles*, http://www.ecotourism.org/webmodules/webarticlesnet/templates/eco_template.aspx?articleid=95&zoneid=2 (last visited Jan. 16, 2009).

[246] *See* WOOD, *supra* note 1, at 9.

[247] *See* HONEY, *supra* note 1, at 25.

5. Focused attention on local peoples, who must be given the right of prior informed consent, full participation and, if they so decide, have access to the means and training to take advantage of this sustainable development option.[248]

The various definitions of ecotourism demonstrate that a common characteristic of the definitions of ecotourism, distinguishing ecotourism from the other tourism sectors, is responsible travel, which mainly involves protecting nature and ensuring that benefits redound to the local community. Therefore, based on the definition of ecotourism, we can conclude that the main elements of ecotourism consist of: (1) travel to undisturbed natural areas; (2) environmentally responsible travel and the promotion of conservation; (3) a low negative visitor impact; (4) the socio-economic involvement of local populations; and (5) the sustainable development of the natural environment. Depending on what kinds of decisions are made regarding ecotourism projects, the development of ecotourism will have either a positive or a negative impact on the local community. Therefore, it is crucial that the local community be involved at the inception of the project.

As good as they are, these definitions of ecotourism fail to illuminate the balance of the ecological setting for the life and health of people and of nature. It is important to note the impact of the development of ecotourism can affect the life and health of people as well as nature. Therefore, as discussed in the previous chapter, this notion came from the output of the Rio Declaration on Environment and Development Principle 1 *"Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature."* In the meantime, nature is considered an asset for sustainable development. Hence, without good life and health of human beings at the center and the natural assets of sustainable development; sustainable development cannot be achieved. Consequently, the definition of ecotourism was formulated based on the definition provide by IUCN and was expanded to include the following concept: ***"…balanced ecological setting for [the] life and health of people and nature."*** Consequently, definition of ecotourism should be:

[248] *See* WOOD, *supra* note 1, at 12-13.

> *"environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature that promotes conservation, has low negative visitor impact, and provides for beneficially active socioeconomic involvement of the local population,* ***as well as a balanced ecological setting for the life and health of people and nature."***

The next part will provide insight into the key background players in the development of ecotourism: the local community and indigenous people. Specifically, it will discuss why the local community and indigenous people are important and play a significant role in the development of ecotourism.

2. The Role of the Local Community and Indigenous People in Ecotourism Development

One significant factor to achieving sustainable ecotourism is ensuring that the local community and indigenous people are enthusiastic about and willing to participate in the project. As an essential component of the host community, the local community and indigenous people can drive ecotourism and play an important role in natural resource protection and management. Because the notion of ecotourism provides that tourists travel to the destination area, local people and the indigenous will experience not only an impact on the environment, but also a social and cultural impact from increased visitorship.

The general role of indigenous people and local communities was recognized in principle 22 of the Rio Declaration on Environment and Development, which states that "[i]ndigenous people and their communities, and other local communities, have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognize and duly support indigenous people's identity, culture and interests, and enable their effective participation in the achievement of sustainable development."[249] Additionally, in Chapter 26 of Agenda 21,[250] which addresses recognizing and strengthening the role of indigenous people and their communities, one of the recommendations involves encouraging states to strengthen the

[249] *See* Rio Declaration, *supra* note 46, at Principle 22.
[250] *See id.* at Chapter 26.

role of indigenous peoples as participants in the process of achieving sustainable development.

The importance of local communities and indigenous people to ecotourism development has been increasing, as the United Nations' General Assemble proclaimed the period from 2005 to 2014 to be the Second International Decade of the World's Indigenous People.[251] The main goal of the new decade is to strengthen international cooperation around resolving the problems faced by indigenous people in areas such as culture, education, health, human rights, the environment, and social and economic development.

According to the definitions and characteristic of ecotourism, one of the key elements of ecotourism is local communities and indigenous people, who can drive the development of ecotourism. Combining the role of the development of the local community and indigenous people with ecotourism development demonstrates that both concepts share the same goal of sustainable development. Furthermore, ecotourism could be the other tool used by indigenous people to solve problems as the UN mentioned. There are many incentives to combine indigenous development and ecotourism development in order to achieve sustainable development. Therefore, ecotourism development is both a conservation strategy and a rural development tool. For example,

[251] *See generally* Second International Decade of the World's Indigenous People, *supra* note 59,
The Decade has five main objectives:

- *Promoting non-discrimination and inclusion of indigenous peoples in the design, implementation and evaluation of international, regional and national processes regarding laws, policies, resources, programs and projects;*
- *Promoting full and effective participation of indigenous peoples in decisions which directly or indirectly affect their lifestyles, traditional lands and territories, their cultural integrity as indigenous peoples with collective rights or any other aspect of their lives, considering the principle of free, prior and informed consent;*
- *Redefining development policies that depart from a vision of equity and that are culturally appropriate, including respect for the cultural and linguistic diversity of indigenous peoples;*
- *Adopting targeted policies, programs, projects and budgets for the development of indigenous peoples, including concrete benchmarks, and particular emphasis on indigenous women, children and youth;*
- *Developing strong monitoring mechanisms and enhancing accountability at the international, regional and particularly the national level, regarding the implementation of legal, policy and operational frameworks for the protection of indigenous peoples and the improvement of their lives.*

the local communities and indigenous people can promote ecotourism development by using their traditional knowledge, combined with their cultural and social assets to attract tourists to visit the destination area. In other words, traditional knowledge and culture can be transformed into a commercial asset for ecotourism development. Consequently, where value can be estimated in economic terms, traditional knowledge can transfer and connect to the next generation in the form of an economic mechanism. In the meantime, promoting ecotourism can lead the local community to reduce the degradation of natural resources and conserve natural resources, because natural resources and biodiversity conservation can be an asset for ecotourism. Furthermore, ecotourism can be a key to creating understanding between the local community, indigenous people, and tourists. Therefore ecotourism development and the indigenous people are mutually involved with development.

The Quebec Declaration on Ecotourism states in paragraph 27 that ecotourism aims at ensuring that "the private sector work[s] actively with indigenous leadership and local communities to ensure that indigenous cultures and communities are depicted accurately and with respect, and that their staff and guests are well and accurately informed regarding local and indigenous sites, custom and history"[252] Paragraph 45 of the Quebec Declaration discusses the goal of encouraging "inner-governmental organizations, international financial institutions and development assistance agencies [to] develop financial mechanisms for training and capacity building, that take into account the time and resources required to successfully enable local communities and indigenous peoples to participate equitably in ecotourism development."[253]

Indigenous ecological knowledge may be utilized to suggest ecotourism development in the planning process, which could help avoid or reduce the inadvertent long and short-term damage to the ecosystem and traditional culture. Furthermore, the traditional knowledge of indigenous people can be useful in combating the effects of climate change.

[252] *See* Quebec Declaration, *supra* note 78, ¶ 27.
[253] *See id.* ¶ 45.

3. The Impact of Ecotourism Development

Tourism development differentiates trade in services from trade in goods. Tourists travel to consume at the host or destination area,[254] and, in the case of international travel, this is called cross-border consumption.[255] Because tourists bring their own cultural assumptions and many of their material expectations with them, any cross-border consumption is likely to have a direct environmental, economic and socio-cultural impact on the destination and the host countries.[256] For example, socio-cultural problems might occur in places where the tourism industry is centered on the traditional social system, such as isolated communities or indigenous peoples.[257] The tourists may demand changes in local customs or practices related to sanitation, commerce or gender relationships. Any of these demands could have significant effects on local culture.

As in the other types of tourism, there are two sides to ecotourism. On the one hand, ecotourism constitutes a tool that can contribute sustainable development. On the other hand, the impact of the development of ecotourism has become increasingly far-reaching. As ecotourism is one sector of the tourism sectors, so its might share some characteristics with other forms of tourism. However, in some cases, the impact of ecotourism might affect the destination area more than any other kind of tourism if the ecotourism process is poorly managed, because ecotourism explicitly uses fragile environments and local cultures as its principal assets.[258]

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[254] *See* A GUIDE FOR POLICY MAKERS, *supra* note 3, at 9 (describing the characteristic of " the consumer of tourism (the tourist) travels to the producer and the product."); *see* A Local Authority Perspective, *supra* note 26, ¶ 10 (describing "tourist destination" that "…where the tourist product is consumed. No other global industry structures itself in such a way that the consumer is brought to the product, rather than the product being delivered to the consumer in his or her own community.").

[255] *See* General Agreement on Trade in Service, *supra* note 27.

[256] *See* Programme for the Further Implementation of Agenda 21, *supra* note 1, ¶ 24 (developing in economic sector, such as tourism "must take responsibility for the impact of their activities on human well-being and the physical environment."); *see* A Local Authority Perspective, *supra* note 26, ¶ 10-11, (describing "[t]his structural difference produces unique social impacts upon the local tourist community, including the interruption of local customs and lifestyles, the spread of infections diseases, changes in local demographics, and changes in local housing and labor markets…. If these [tourism] business activities degrade the community's heritage and wealth, then the community suffers more directly than the consumer, who, can return to his or her own community without responsibility for or awareness of the impacts of his tourist activities.").

[257] *See* A Local Authority Perspective, *supra* note 26, ¶ 12.

[258] *See* The Global Importance of Tourism, *supra* note 29, ¶ 9 (describing "…if Travel & Tourism is

Ecotourism, like other kinds of tourism, which can inject economic development - such as job production and poverty reduction - to the local and indigenous community. Besides, ecotourism development can create economic value in resources whose conservation would otherwise be seen as having no financial value such as wildlife, forests, wilderness areas, buildings, and cultures. The gorilla tourism in Rwanda evidences this fact. By offering jungle tours to views these primates, Rwandans are commercializing as otherwise idle asset. Therefore, the quality of life of a community can be enhanced by economic diversification through ecotourism. From a social and cultural point of view, the impact of tourism cannot be measured by statistics. By elevating the financial status of its gorilla, Rwandans, society may be elevating certain aspects of human culture, for instance by destabilizing existing power structures to the benefit of these who make a living from the ecotourism. Tour operators may over-rule tribal chiefs about where and how to develop. There can be long-term damage to cultural traditions and the erosion of cultural values, resulting in cultural change beyond a level acceptable to the host destination. Historic sites can be damaged or destroyed and local traditions can be lost.[259] In some cases, the socio-cultural and traditional celebrations can be changed as a result of the demands of tourism and the commercialization of local cultural products.

Caroline Stern's study of Drake Bay, Costa Rica attests to the numerous negative impacts of ecotourism development in social aspects, including increased solid waste generation, cultural loss, community and familial disintegration, and increased access to alcohol and drugs. Specifically, many witnesses spoke of families falling apart because spouses became involved with ecotourists and of people losing their traditions while trying to emulate foreigners. In Drake Bay, several interviewees expressed regret that they no longer felt a sense of unity amongst villages. They noted that their neighbors, concerned with reaping the greatest financial benefit, would rather help a tourist than a local resident. As one resident explains, 'He who benefits from tourism thinks he is above

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managed badly, it can have a detrimental effect – it can damage fragile environments and destroy local cultures.").

[259] *See* WOOD, *supra* note 1, at 38.

him who is not working in tourism all the time. He strives to fit in well with tourism, not with his neighbor…who has been his own friend… We are now worth less to them.'[260]

From an environmental perspective, nature and culture can create a leading source of revenues for protected areas. Ecotourism can beneficially contribute to the conservation of sensitive areas and the preservation of historic sites. One of the tools of management is the use of entry fees,[261] which are collected from visitors at national parks and protected areas. These fees can be used to ensure that a set portion of the revenues derived from an ecotourism project are re-invested in the community. When conservation results in economic incentives for the local community, the local community proves more enthusiastic about protecting and preserving the natural resources upon which the industry relies.

Some infrastructure development, such as airports, roads, electricity, hospitals, and water supplies which are frequently justified and supported as a benefit of tourism development, can also have a positive or a negative impact on the destination area. On the one hand, local communities can benefit from creating public infrastructures and, therefore, can improve their quality of life. It becomes easier for locals to trade or to travel for pleasure or business. On the other hand, road and airport construction can lead to economic leakage,[262] land degradation, the loss of wildlife habitats, and the deterioration of scenery, as well as social problems.

Issues such as climate change must be taken into account in the context of sustainable development. The adverse effects of climate change are already evident[263] in higher temperatures, threats to biodiversity, and a rising sea level. Climate change affects ecotourism because of its dependency on natural resources such as beaches and mountains. Transportation, a main part of the tourism industry, can contribute GHG to

[260] Caroline J. Stem, et al., *How 'Eco' is Ecotourism? A Comparative Case Study of Ecotourism in Costa Rica*, 11 J. Sustainable Tourism 322, 332-33 (2003).
[261] *See* WOOD, *supra* note 1, at 24 (showing the Galapagos Islands of Ecuador, have directly benefited from entry fee paid by nature and ecotourism companies on behalf of their clients and also from license fees from boats. In 1998, nearly 65,000 travelers visited the Galapagos Islands, with Ecuadorian nationals paying $6 to enter and foreigners paying $80. Visitor entrance fees totaled $4.3 million, averaging $66 per visitor).
[262] *See* HONEY, *supra* note 33, and A Local Authority Perspective, *supra* note 33.
[263] *See* Johannesburg Declaration, *supra* note 52, ¶ 13.

the atmosphere, leading to global warming. Most of the modern day forms of transportation still burn fossil fuels, which lead to atmospheric emissions.[264] The tourism business should make efforts to reduce atmospheric emissions, especially as tourism increases across the globe. While the ultimate harm from failing to do so may seem quite remote, it is real. And failure to take appropriate measures will inevitably lead to significant and unwelcome changes.

Ecotourism and its economic, environment, socio-cultural and climatic impacts are highly interdependent. An imbalance of one of the aspects of ecotourism can have significant implications for the operation of the others. When one pillar benefits unilaterally, another pillar can experience cost and degradation. Therefore, it is a continual challenge to ensure that the pillars and related factors are balanced in order to achieve sustainable development. The next part will suggest how to balance all of the pillars to achieve sustainable development.

[264] *See* Agenda 21, *supra* note 45 ¶ 9.13.

B. THE DEVELOPMENT CYCLE MODEL FOR SUSTAINABLE ECOTOURISM

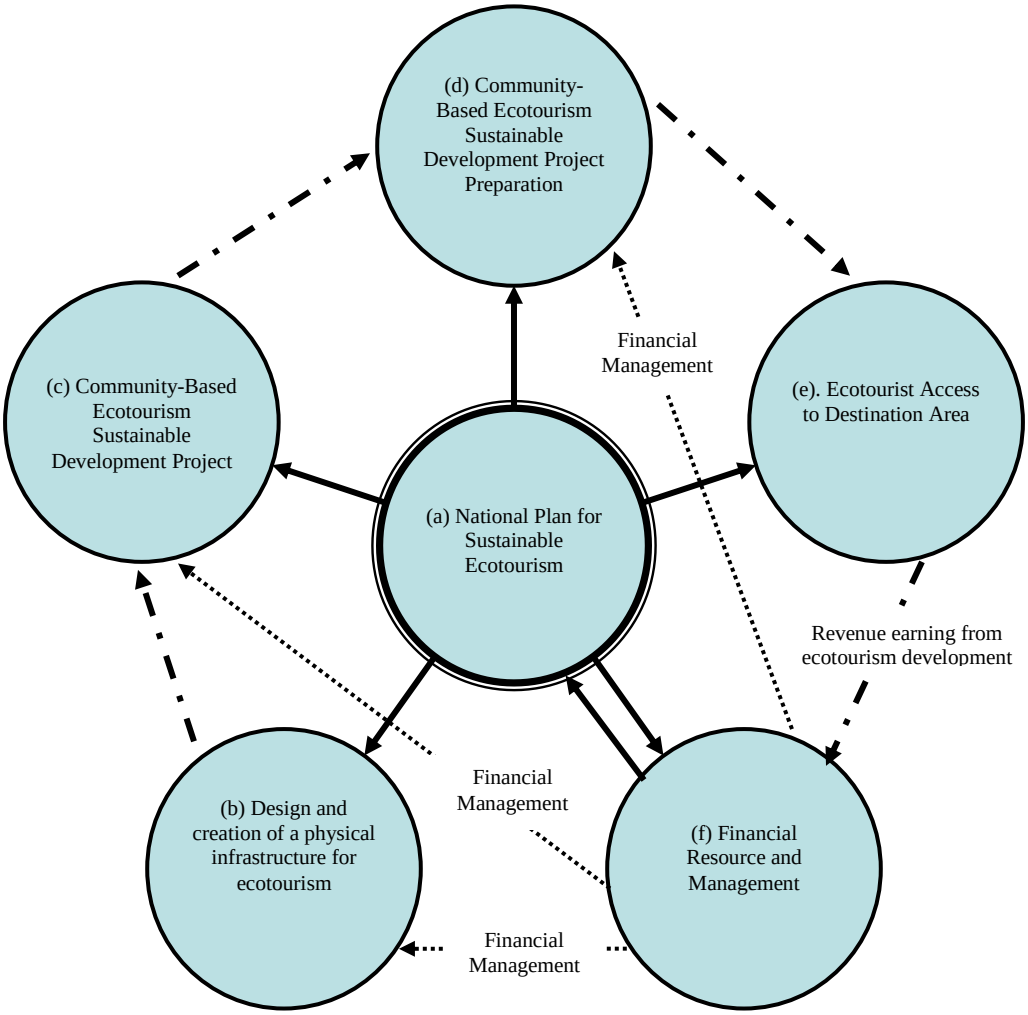

Figure 3.1: The Development Cycle Model for Sustainable Ecotourism
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1. What is the Development Cycle Model for Sustainable Ecotourism?

This part will introduce a new model, "The Development Cycle Model for Sustainable Ecotourism" (hereinafter the "Sustainable Ecotourism Model") as a new analytical method and a basis for ecotourism planning. It is a guide for governments to establish ecotourism development plans and policies. Since ecotourism is dependent on

the coordinated interaction of many fields, governments must play a large role in establishing the policy, support, and promotion of the ecotourism sector.

The Sustainable Ecotourism Model sets forth the ecotourism development process, and discusses methods and techniques for protecting natural resources, cultural and historical sites; fostering ecotourism project development; encouraging local and indigenous community involvement; and guaranteeing the long-term sustainability of financial revenue earning and financial management. Furthermore, the Sustainable Ecotourism Model can assist in predicting and solving potential problems arising from the development of ecotourism. In the meantime, the model could strengthen and expand to the ecotourism development project, and it can build on work already done to improve, policies, planning, and natural resource management techniques that should be conducted by governments.

Policy makers can use the Sustainable Ecotourism Model to gain insight into the scoping process of the Environmental Impact Assessment (EIA) principle. The scoping process is very important to the EIA because if the scoping process is underestimated, the EIA will not produce a true result. Therefore, the Sustainable Ecotourism Model can save time and costs for scoping the EIA process (thereby ensuring better outcome) because the cycle can serve as a guideline for professionals who plan the ecotourism projects. Moreover, even though the cycle is primarily designed for governments in the ecotourism planning process, the cycle can be studied by individuals interested in ecotourism development.

2. Overview: How does it work?

The cycle consists of six main parts, with the most important part being the National Plan for Sustainable Ecotourism, which is crucial to shaping sustainable ecotourism. The remaining five parts are equally and mutually important for achieving sustainable ecotourism: the design and creation of a physical infrastructure for ecotourism; community-based ecotourism sustainable development project; community-based ecotourism sustainable development project preparation; the access of ecotourists to the destination; and financial resource and management. (See Figure 3.1)

Understanding the cycle provides insight into how ecotourism can serve as a tool for sustainable development. Governments can begin by implementing parts of the cycle. Once the cycle is complete, governments can launch multiple cycles simultaneously. Once one cycle runs successfully, ecotourism will be on the path to achieving sustainable development.

a. National Policy for Sustainable Ecotourism

The ecotourism policy is the most important element to achieving sustainable ecotourism, as can be seen from the Sustainable Ecotourism Model. It is at the heart of the ecotourism development project, and triggers the other factors in the Model. The government should lead the broad-based effort to develop ecotourism policy because sustainability relates to areas of public concern, such as air, water, natural and cultural heritage, and the quality of life and health. Moreover, many of the relevant resources are managed by governments.[265] Furthermore, governments have many of the tools and resources that can be used to make a difference, such as the power to make laws and regulations, the ability to offer economic incentives, control over zoning, and the resources and institutions to promote and disseminate good practice.[266] However, to enact the good ecotourism policy representatives from private sector, academic, and NGOs should be involved as a working group. Ideally, the working group would include authorities and representatives from that coordinates the policy formation process the following groups:[267]

- National Tourism Authorities, who generally serve as initiator, and secretariat

- Other ministries or government agencies: principally representing culture and heritage; the environment; National Social Economic Councils; the forest department; agriculture; decentralization; scientific research; biodiversity; meteorology; and athletics ;

- NGOs;

[265] *See* A GUIDE FOR POLICY MAKERS, *supra* note 3, at 3.
[266] *See id.*
[267] *See* Quebec Declaration, *supra* note 78, ¶ 3.

- Individuals from the Private Sector, such as tour operators, travel agents, hotel owners and their trade association;

- Local or regional authorities;

- National bodies for protected areas;

- The local community, as well as indigenous representatives;

- Environmental or ecotourism associations;

- Universities and academicians, including schools of management;

- Tourism trade organizations;

- Hotel trade national federations or chambers of commerce; and

- National representatives of international conservation organizations (e.g. Nature Conservancy, Conservation International, WWF).

The working group members will use their expertise to set the National for Sustainable Ecotourism Policy. During the planning process, the working group must be concerned with all the processes in the Sustainable Ecotourism Model, because the policies must link all of steps in the Sustainable Ecotourism Model's cycle. As can be seen from the Sustainable Ecotourism Model, ecotourism policy has the important role of controlling and forming relationships among other steps of the cycle. Therefore, every step of the model should harmonize with the ecotourism policy. In particulars, working group should design an ecotourism policy consistent with the sustainable development principles to ensure that ecotourism policy will incorporate important aspects of sustainable development.

b. The Design and Creation of a Physical Infrastructure for Ecotourism

Infrastructure for tourism, such as roads, airports, railways and ports, operate as channels to transport tourists to and from the destination area. Upon arriving in the destination area, tourists need other kind of infrastructure such as hospitals and clean water to secure and support their life during staying at the destination area. This part focuses on tourism infrastructures, and discusses the type of infrastructure required for ecotourism. The infrastructure of ecotourism can be divided into two main categories: Public Infrastructure and Private Infrastructure.

Public Infrastructures

General speaking, ecotourism can promote the development of infrastructures and facilities that equally benefit both tourists and local communities. Public infrastructure will be invested by either local government or national government. So, the local communities in the area can use it as a form of public service, such as roads, airports, railways, water pipes, waste systems, hospitals, electricity, and communication lines.

Private Infrastructure

In the mean time, the private sector will invest in its infrastructure, in order to transport ecotourists to the destination sites. This infrastructure might be connected with the public infrastructure, depending on the location of the destination sites. Therefore, the role of government should be to oversee the private sector in order to ensure that the private infrastructure will be consistent with the sustainable tourism principle. Furthermore, the government can use laws and regulations such as building codes or land use law, as well as the EIA, to command and control the private sector in order to ensure the government's sustainable development goal.

To deal with climate change, both public and private infrastructure should apply the adaptation and mitigation to GHG emissions idea to the design and creation of a physical infrastructure for ecotourism. For example, by requiring that the infrastructure have low or zero environmental impact, or that of use as many local materials, products, and people as much as possible.

c. Community-Based Ecotourism Sustainable Development Project

This section is designed as a guideline for establishing a community-based ecotourism sustainable development project. It provides important factors for policy makers to address in order to achieve sustainable ecotourism goals.

Basic questions

First, in order to set up a suitable plan, policy makers should answer basic questions in order to keep the focus on ecotourism:

- Can the purposes of the ecotourism project contribute to sustainable development? This question will remind the policy maker to address the sustainable development principle throughout the community-based ecotourism sustainable development project.

- How can the project conserve natural and cultural heritage around the project area? This question reflects ecotourism's goal of conserving the environment.

- Will the project have a negative impact on the life and health of the local community or indigenous people and nature? This question will remind the policy maker to bridge the gap among development, environmental and social aspects.

- Will the project provide a benefit to the local or indigenous community, such as creating the jobs for the local population? An important principle of ecotourism is that it create jobs for the local people.

- Can the ecotourism project use the local natural resources in the construction of accommodations? This question will reduce the economic leakage from the ecotourism project. Furthermore, using local natural resources and materials for construction will reduce the GHG emission from transportation material outside the destination area.

- How can tourists access the area? This question is related to the climate change policy of tourism development, and involves an analysis of how to mitigate the GHG emission from the tourist transportation.

- How long do ecotourists want to stay? This question is concerning the new marketing strategy - the longer ecotourists stay, the greater the possibility that ecotourists will contribute the economic growth.

Establishing a Community-Based Ecotourism Sustainable Development Project

To establish the community-based ecotourism sustainable development project, necessary data from the destination area is needed in order to support decision - making. The data should consist of the following: the availability of resources; geological and geophysical data; the population of the area, including the socioeconomic composition of the community; the population of fauna and flora; a list of the endanger species of the area; the general climatology and seasonal weather patterns (visibility, temperature, winds, and rainfall); and water resources. Alternatively, the policy maker can use the Geographic Information System[268] (GIS) as a tool to integrate and analyze various types of information about the environment and as a resource for supporting decision-making.

Furthermore, the data base should include information and research on natural disasters, such as earthquakes, volcanic activity, flooding, hurricanes, and typhoons. This data will be one of the main factors for policy makers to consider when deciding whether a project should be established in the destination area. If the project is launched, this data can be used to form a data base for risk management. The data collected should include, for example, a summary of archeological and historic sites; details about scenic sites; and descriptions of the local and indigenous people's cultural and historical sites. The data will be useful for designing community ecotourism activities, such as cultural ecotourism, natural ecotourism, and historic ecotourism.

In addressing the issue of climate change, the policy maker can use the information provided by the Climate and Sustainable Tourism Data Center (See Chapter 2), which can assist in planning for the mitigation and adaptation to climate change in the ecotourism sector. For example, the national hot spot map can serve as supplemental data to be used in designing the ecotourism project. Furthermore, establishing a

[268] *See generally* The Guide to Geographic Information System, http://www.gis.com/ (last visited Jan. 19, 2009).

community-based ecotourism sustainable development project must involve planning for ecotourists to access to the destination area. All the data must be analyzed in the planning stage in order to the impact of tourists to the environment and reduce or eliminate GHG emission from the tourism transportation sector.

d. Community-Based Ecotourism Sustainable Development Project Preparation

To achieve the goal of sustainable ecotourism, the government must simultaneously promote the development of ecotourism and the enhancement of the performance of the local and indigenous community, such as capacity building, promoting the destination area's ecotourism, and preparing the resources of the destination area. Therefore, this section will discuss how the destination area can prepare for supporting community-based ecotourism development.

Capacity Building

Educational program

Since a goal of ecotourism is sharing experiences between the host community and ecotourists, education is an important key for community preparation for long term sustainability ecotourism development to share the knowledge of the local environmental information, such as natural and cultural history. The education program also needs to focus on the children and other young people who constitute a key factor to enhancing awareness of nature conservation and sustainable use, in addition to local and indigenous cultures and their relationship with ecotourism.[269] Visitor education programs can also help ecotourists become more aware of the impact of their own activities on local ecosystems, economies, and cultures, and encourage important changes in travel choice and behavior.[270] In the meantime, the tourism guidelines can advertise the tourism destination area.

[269] *See* Quebec Declaration, *supra* note 78, ¶ 17 ("educational programs addressed to children and young people to enhance awareness about nature conservation and sustainable use, local and indigenous cultures and their relationship with ecotourism.").
[270] LISA MASTNY, TRAVELING LIGHT: NEW PATHS FOR INTERNATIONAL TOURISM 9 (2001).

Training programs

In the ecotourism sector, numerous jobs are created to support the ecotourism industry, such as formal employment in resorts, restaurants, travel agencies, and tour companies, as well as positions in tourism-related sectors like construction and agriculture.[271] Therefore, job training and development can boost the revenue to the local people. For example, RARE[272] has provided the training program for ecotourism guides called the "Nature Guide Training Program" in Honduras. The training has provided 51 Hondurans the opportunity to create a better life for themselves and their families and make a living by protecting their precious natural and cultural heritage.[273] To ecotourism destination project must be inclusive to international ecotourists, and foreign languages must not be a barrier for ecotourism development. In addition to learning the natural and cultural history of the region, the guide should be able to communicate in several languages and have the necessary skills to communicate and express her knowledge to international ecotourist.

Technical assistance

Mitigating climate change and its impact is a growing concern in the tourism sector. Preparing the community-based ecotourism development project is more complicated when addressing and taking into account the climate change factor. Governments must play a large role in providing close technical assistance to the local and indigenous community for ecotourism project development for both adaptation and mitigation to climate change. The government should also provide or lead financial support for the local and indigenous community to combat climate change.

[271] *See id.* at 24.
[272] RARE Conservation, *About Rare*, http://rareconservation.org/about/ (last visited Jan. 16, 2009).
[273] RARE Conservation, *Rare Trains 51 New Nature Guides in Honduras*, http://rareconservation.org/news/article.php?id=19 (last visited December 29, 2008).

Preparing ecotourism assets of the destination areas

Significant investments may be required to bring the destination up to its capacity as a host of ecotourism. In addition to up front investments, significant resources may also be required to maintain the site's capacity.

Natural Resources

One of the most important factors to preparing the ecotourism destination for tourist is implementing programs to maintain and regenerate ecotourism attractions, such as natural resources, cultural sites, and historical sites. Hence, this leads the question of how to maintain and regenerate these assets for sustainable ecotourism. In the process of developing ecotourism, policy makers must ensure that renewable resources such as water and forests are maintained for future generations. Therefore, governments must focus on replanting of trees, keeping water clean, and preventing pollution. In the case of nonrenewable resources, policy makers should confer with authorities to enact zoning and other regulations to protect and conserve nonrenewable resources, such as minerals and to address anticipated impacts of climate change.

Local and indigenous products

In addition to maintaining natural and cultural assets for ecotourists, local and indigenous products can be an asset for the development of ecotourism. For example, the unique handcrafts from indigenous people or local communities may prove a good attraction to draw ecotourists to the destination area. Local handicrafts not only make income for the local community, and then production and sale also strengthens, nurtures, and encourages the community's ability to maintain and use traditional skills, particularly when applied to home-based arts and crafts, agricultural produce, traditional housing and landscaping that use local natural resources in a sustainable manner.[274]

[274] *See* Quebec Declaration, *supra* note 78, ¶ 47 ("Strengthen, nurture and encourage the community's ability to maintain and use traditional skills, particularly home-based arts and crafts, agricultural produce, traditional housing and landscaping that use local natural resources in a sustainable manner.").

Recreating an extinct culture as an attraction in the destination area

In terms of cultural ecotourism, local communities may reconstitute extinct cultures that once existed in the destination area in order to serve as an attraction, create revenue, and promote historical and cultural awareness. Communities lacking extensive natural resources or populations will especially benefit from the added attraction that revitalizing cultures brings to the area. Cultures can be revitalized by recreating cultural aspects such as dancing, songs, food, clothes, language and religion. It is advisable that communities interested in reviving cultures work with experts at museums and historical societies in the destination area.

Reconstructing extinct cultures may be crucial for destination areas to understand the complete history of the region. It is essential that destinations convey their process of recreating cultures to tourists. Information should be available to tourists about the extinct culture, the reasons for which the culture became extinct, the importance of the extinct culture, and the efforts, if any, taken to preserve the culture. Tourists who are enthusiastic about the culture will likely be a good source of information for other potential tourists and may even return to the destination area. This seems particularly likely among diaspora populations. There has long been a market for Italian-Americans to visit Italy and now a growing number of Chinese ethnics are visiting their homeland.

Preparing sustainable accommodations in the destination areas

Policy makers must address and promote sustainable building principles throughout the destination area. The strategy adopted may need to receive cooperation from architects and engineers in order to ensure the best results. For example, the design of buildings should take into account the wind and sunshine direction for cooling in the summer and warmth in the winter to reduce to use energy for air conditioning and heaters, respectively. Accommodations should use local materials to the greatest extent possible to eliminate not only the transportation costs, but also the GHG emission from transportation. Furthermore, policy makers should encourage the use of low or zero maintenance material to build the accommodations for long term sustainability, such as materials that do not need painting. Furthermore, accommodations should use as much

recyclable material as possible. In order to ensure successful water management, areas receiving plenty of rainwater should make good use of the water. In order to ensure efficient landscaping, indigenous trees and flowers should be planted in order to reduce the need for additional maintenance.

Preparing energy resource policies and planning of the destination areas

Policy makers should also establish effective energy policies in the destination area that address the issue of climate change. The ecotourism policy must apply to the climate change policy. The policy must base on the following questions: how to reduce energy use; how to improve energy efficiency; how to increasing the use of renewable energy and alternative energy. (See Chapter 2: Energy policy for details)

Creating awareness among the local community

An important component of ecotourism development is to "provide for beneficially active socio-economic involvement of local populations."[275] Therefore, the local and indigenous community must aware and be a part of the benefits of the ecotourism project development. One comparative field research study, held in Costa Rica, a country widely acclaimed for embracing tourism as a national conservation and development strategy, demonstrates that in some areas of tourism development, local people do not feel as if they benefit from tourism. On the other hand, local people who live in another tourism development area in Costa Rica nearly all see the benefit of tourism development. They believe that their lives had improved overall since the arrival of tourism.[276] In short, results may vary, presumably in part based on factors that can be reflected in the design and operation of ecotourism facilities.

[275] *See* WOOD, *supra* note 1, at 9.
[276] *See* Stem, et al., *supra* note 260, at 331-32 ("[O]nly about 30% of survey respondents in La Gamba feel they have benefited from tourism in any way, while even fewer people in Cerro de Oro claimed to have benefited, with the notable exception of those who indicated they benefited from interchanging ideas with tourists. In contrast, those in Drake Bay, especially Agujitas, cited numerous tourism-related benefits they have experienced. Nearly all interviewees believed their lives had improved overall since tourism's arrival.").

e. Access of Tourists to the Destination

The Sustainable Tourism Model establishes a framework to support ecotourism development and achieve the goal of sustainable development. However, without access to ecotourists or travelers to the destination area, all of the policies and plans are nothing. Therefore, without ecotourists, the cycle cannot achieve sustainable ecotourism goal because the cycle will lack of the economic injection from the ecotourist. Therefore, this step of the Sustainable Tourism Model will focus on how to attract new ecotourists to the area, in the meantime, how to maintain the destination area. This strategy directly concerns marketing questions, since as far as promotion is concerned, the ecotourism businesses could benefit from ecotourism's promotion campaigns. The government should promote the ecotourism destinations via media, television, posters, or with the events.

f. Financial Resources and Management

Financing tourism development is an interesting part of the Sustainable Ecotourism Model to discuss because it functions like fuel in driving the Sustainable Ecotourism Model and keep the cycles running. (See Figure 3.1, above, to illustrate how the cycle runs). The financial resource and management policies must be consistent with the other sustainable ecotourism policies. Financial resources are the initial fuel needed to commence the Model's cycle. The Sustainable Ecotourism Model offers a promising investment, because once the cycle begins, the money will be reinvested and developed through the community-based ecotourism development project; the creation a physical infrastructure for ecotourism; and community-based ecotourism development project preparations. The Sustainable Ecotourism Model demonstrates that, outside the tourism policy setting, if one cycle loop is from step (b) – (f); then a second cycle will start after revenue management injects money into other parts of Model in the second cycle. Once one cycle begins, if successful, the second cycle should need less "fuel," or financial aid from outside the Sustainable Ecotourism Model, in order to run the cycle. The cycle can run only by revenue management, such as managing income from ecotourism development and can also generate income for governments to address other issues, such

as education, training, health care, and infrastructure projects. Therefore, under the Sustainable Ecotourism Model, tourism can become sustainable development or sustainable ecotourism.

Many funding mechanisms can contribute financial aid to support ecotourism development. The funding mechanisms for the operation of business associations or cooperatives can assist with ecotourism training, marketing, product development, research, and financing.[277] The funding mechanisms provided by the government support infrastructure such as roads, airports, railways and ports, which might overlap with other national policies such as infrastructure for exporting national goods and products, or the fundamental infrastructure for national people. As previously discussed, the distinguishing feature of ecotourism development is its potential for use as a tool to mitigate GHG emission. Therefore, possible sources of the funding mechanisms for ecotourism development might include the GEF, the World Bank, the Asian Develop Bank and financial institutions under international treaties. (See Chapter 2, Part C: Finance Resource and Management Plans for discussion about financial mechanisms for ecotourism development pertaining to the issue of climate change).

C. THE TOOLS OF ENVIRONMENTAL IMPACT ASSESSMENT AND PUBLIC PARTICIPATION CAN BE APPLIED TO ENHANCE THE SUSTAINABILITY OF ECOTOURISM

1. Environmental Impact Assessment

One way to ensure that the Sustainable Ecotourism Model will function effectively is to use the Environmental Impact Assessment (EIA) to examine it. The principle of EIA is to ensure that potential problems are foreseen and addressed at an early stage in the project's planning and design, by using the environmental factors in the planning stage and comparing with the other factors, including social, health and cultural heritage issues, regarding actions proposed by governments, industry, other institutions or organizations and the alternatives, which can save the cost of the mitigation in the future.

[277] *See* Quebec Declaration, *supra* note 78, ¶ 31 *("create* and *develop* funding mechanisms for the operation of business associations or cooperatives that can assist with ecotourism training, marketing, product development, research and financing.").

EIA was first developed in the United States under the National Environmental Policy Act of 1970 (NEPA),[278] as a tool for improving decision-making to predict the environmental consequences of a proposed major development project. Since then, national governments[279] around the world have set up similar laws based on NEPA. The important role of EIA in the international forum appeared in the Rio Declaration on Environment and Development in 1992 as Principle 17. It stated that "[e]nvironmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority"[280] as the import role in bridging the gap between the development and environment issue. In the ensuing years, the EIA has been widely recognized as an effective and efficient tool.

2. Public Participation as a Part of the EIA Processes

The role of public participation is very important to enhance sustainable ecotourism. Especially, the character of ecotourism, which is tourist travel to a destination means local communities will be the ones who receive both directly and indirectly the impact from the tourist visiting. Therefore, ecotourism development should respect the rights and wishes of local and indigenous people by providing opportunities for the wider community to participate actively in decision-making and management issues that have an impact on their own future.

Typically, public participation[281] is a part of the EIA process.[282] Public participation connects the policies, plans and projects with the public, among other

[278] *See* NEPA § 102 (C), 42 U.S.C. § 4332(C) (1994).
[279] *See* Nicholas A. Robinson, *EIA Abroad: The Comparative and Transnational Experience*, in ENVIRONMENTAL ANALYSIS: THE NEPA EXPERIENCE, 679, 684-88 (STEPHAN G. HILDEBRAND & JOHNNIE B. CANNON eds.)(1993); *see* Nicholas A. Robinson, *International Trends in Environmental Impact Assessments*, 19 B.C. ENVTL. AFF. L. REV. 591, app. 1 at 611 (1992) (presenting the list of environmental impact assessment statues from different countries).
[280] *See* Rio Declaration, *supra* note 46, at Principle 17.
[281] The importance of public participation is also recognized on the international level as can be seen in the Rio Declaration. The stated outline for the concept of public participation in Principle 10 emphasizes that public participation is essential for sustainable development. The Rio Declaration, *supra* note 46, at Principle 10 (stating that "[e]nvironmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-

stakeholders. The proposed project creates awareness in the public of future happenings in the community. The public will also have the opportunity to become involved in the project and provide input.

In the EIA process, the environmental impact of major public and private projects must be studied and published prior to decision making and often includes public hearings as a formal part of the process. EIA requires public disclosure of the environmental analysis and the opportunity for public comment[283] to ensure fairness and balance in the final decisions. When used in the context of the EIA process, the "public" means the individuals, indigenous people, groups, organizations, or communities as well as business groups; in other words any, stakeholders who have an interest in or could be affected by the proposed action.[284]

3. EIA and the Sustainable Ecotourism Model

As we discussed in the first part of this chapter, the definition of ecotourism for the purpose of this dissertation is:

> *"environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature that promotes conservation, has low negative visitor impact, and provides for beneficially active socioeconomic involvement of the local population, as well as a balanced ecological setting for the life and health of people and nature."*

As can be seen from the definition, ecotourist travel to fragile environments, which if poorly managed, may have adverse impacts from ecotourism sector to the area more than any other kind of tourism sector. Furthermore, these impacts will directly and indirectly affect to the local and indigenous community. Therefore, the EIA in the ecotourism sector must be focused on the different aspects from the analysis of the EIA in the other

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making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.").

[282] *See* 40 C.F.R. 1508 (2004).

[283] *See* 40 C.F.R. 1503 (2004).

[284] *See* IAN THOMAS and MANDY ELLIOT, ENVIRONMENTAL IMPACT ASSESSMENT IN AUSTRALIA: THEORY & PRACTICE 202 (4th ed. 2005) (providing an idea of potential participants, which include people directly affected by the proposal; people or organizations expressing a public interest in the proposal; and relevant government departments).

business or industrial sector, even from the mass tourism sector. So, the EIA in ecotourism development must focus on the foreseen impact to the life and health of the local and indigenous community as well as nature. In other words, the EIA in ecotourism development must addresses social issues along with the development and environment issue. Therefore, the central point of the consideration issue in ecotourism development is the life and health of the natural and local and indigenous communities.

One of the most important mechanisms in the EIA process is scoping. Scoping is a method to determine environmental effects as they are identified. The issues will be investigated and considered in the Environmental Impact Statement (EIS).[285] Scoping in the EIA process is very important to get an accurate assessment. Accordingly, the benefit of using the Sustainable Ecotourism Model for tourism will be a guideline in the scoping stage, which saves time and cost for scoping to set up the scoping to assess tourism planning, because the Sustainable Ecotourism Model can work as a guide for the personal and professional who plans the tourism projects.

The EIA method can be used in the Sustainable Ecotourism Model. For example, a strategic EIA can be used for the overall national plan (Step (a) of the Sustainable Ecotourism Model, Figure 3.1) or for the overall design of the physical infrastructure (Step (b)). A site specific or action specific EIA could be used for projects, destinations, or transportation (Step (c), (d) and (e)). A social impact EIA should be included at each site.

4. The Problem of EIA and Public Participation in the Sustainable Ecotourism Model

The benefit of the EIA process is clearly to bridge the gap between development and environmental aspects. However, one limitation is that EIAs are often required only for major projects.[286] Each country establishes rules or regulations in order to determine which projects need assessments. The question arises as to whether or not the existing EIA that is used in general development projects can be applied to ecotourism

[285] *See id.* at 139, 149.
[286] UNITED NATIONS ENVIRONMENTAL PROGRAMME, GEO-2000: UNEP'S MILLENNIUM REPORT ON THE ENVIRONMENT 212 (1999).

development. Should a new kind of EIA be established for ecotourism? What criteria should apply to the EIA for a community based ecotourism development project? How to bring the community to participate in the ecotourism project? These important questions must be answered.

In the ecotourism sector, in practice, the EIA might not apply to the ecotourism development according to the size of the ecotourism development project, which is usually small or of medium size. Moreover, each ecotourism development project might not significantly impact the destination area. Therefore, the ecotourism project development might not comply with the EIA process. In other words, the tourism projects might not need an environmental assessment.

Furthermore, if the ecotourism project complies with the EIA process, the following questions arise: how to enhance the efficiency of public participation in the ecotourism project since some groups of local and indigenous communities, who have an interest in or could be affected by the proposed project, might have barriers to the public participation process such as a language barrier or lack of EIA understanding and awareness, meaningful and effective public participation may significant technical costs on the EIA process. This leads to the question of how to enhance the public's view to become more concrete and whether it can be a significant factor for the ecotourism project's decision making?

These problems confirm that a specific EIA for ecotourism development and a specific public participation procedure for local and indigenous people should be designed for the purpose of sustainable ecotourism. The new EIA for ecotourism development needs to combine with the characteristic of ecotourism, EIA's technique and the opportunity for the local and indigenous community to participate and express their own need of ecotourism development. The result of the public participation will reflect the need of the local and indigenous community, and the authority has got accurate information for decision making for the project.

Therefore, to make public participation in Ecotourism be truly meaningful, there must be some specific procedural mechanism to guide the authority and the developer, as

well as local and indigenous communities, to guarantee the benefit that they will receive from public involvement. So the next part will discuss and suggest the model for techniques for public participation in ecotourism project.

D. THE ENVIRONMENTAL IMPACT ASSESSMENT MODEL FOR COMMUNITY-BASED ECOTOURISM DEVELOPMENT

1. Overview

Ecotourism destinations are usually located in natural areas or remote locations, and are connected with local communities. One distinctive element of ecotourism and other cross-border tourist sectors is that some types of ecotourism are less demanding of high-end or luxurious accommodations. This factor can be an opportunity for the local people to operate an ecotourism business by investing in the small or medium size accommodations while still responding to the ecotourists' need. Ecotourists may not expect hotels to have multi-storey atria, vast restaurants stocked with endangered species, or glittery signage. Therefore, when considering the ecotourism business, such as accommodations or ecotourism activities, around one ecotourism destination area, the signs of harmful or negative impacts from each ecotourism project development to the destination area might not occur. However, if we consider the impact of comprehensive ecotourism development all around the ecotourism destination, cumulative impacts can occur to the destination area, which result from the individual impacts of small and minor ecotourism project developments.

The local community plays a big role in ecotourism development. Therefore, the community-based ecotourism concept implies that "the community has substantial control and involvement in the ecotourism project, and that the majority of benefits remain in the community."[287] Instead of staying in a custom built suite on the 45th floor of a resort, ecotourists may prefer the opportunity to stay in the home of a local family where they can experience local culture and cuisine, satisfied that they are supporting at rather than destroying it. They are also likely to save money. The idea for community-based ecotourism is to provide an opportunity for local communities to own their fortune

[287] *See* WOOD, *supra* note 1, at 41.

and to eliminate poverty in the local community, as well as to fully and directly benefit from ecotourism development in terms of economic development. In the meantime, the local community can remain proud of its social-cultural heritage and conserve its environment, which is an asset of ecotourism development.

Furthermore, after recalling the climate change impact to and from tourism development, the need for responsible tourism, which reduces the GHG emission, comes along with enhancing sustainable development. Ecotourism is also addressed as a good option for mitigation of climate change by using less energy while operating ecotourism compared with mass tourism. Therefore, this is a good opportunity and a benefit to promote ecotourism development which can contribute to sustainable development and mitigation of GHG emission.

Especially, as we discussed in the previous chapter, financial institutions should provide the grants for ecotourism development, as ecotourism can be a tool for sustainable development and can mitigate GHG emission. Under this scenario, the government can receive the grant from financial mechanisms or financial institutions under the obligation of climate change treaties, for promoting the ecotourism development in their countries.

2. The Principle of the EIA Model for Community-Based Ecotourism Sustainable Development

This part will present an alternative approach to the EIA which is designed for enhancing sustainable ecotourism by applying the concept of the EIA and public participation in community-based ecotourism development. Therefore, the EIA in the ecotourism sector will use a different approach from the analysis of the EIA in industrial and other kinds of development. The EIA for ecotourism must balance the impact from an ecotourism project on the environmental and socio-cultural heritage of a local community; and the development of the economy. Therefore, the EIA model for community based ecotourism development will be used as a method to enhance sustainable ecotourism development.

The EIA model for community based ecotourism development is a bottom-up approach to the community-driven development idea which will need local community involvement in setting the purpose of the ecotourism project development. The idea is that the ecotourism project should enable people to drive their own ecotourism development at the local level. Then, the government authority at the local level will assist the local community by shaping the proposal of the ecotourism project development. Later, the project will submit to another government authority level to check and balance that the project will not impact the destination area by using the EIA process and licensing system as a tool. Although, the cost of the EIA may be considered high, time-consuming and overly detail intensive, ecotourism development, and social-cultural and economic development are very sensitive issues, leading to the key question – how to design the EIA for ecotourism to reach the characteristic of the ecotourism businesses and balance sustainable development, and in the meantime, not impact upon or endanger the life and health of people and nature? To provide meaningful answers requires significant investment in assessments – preferably before the far greater investments are made in developing the facilities.

3. Objectives of the Model

The Sustainable Ecotourism Model has several objectives which it seeks to fulfill by promoting awareness, enhancing the planning process, and cultivating an enlightened set of investments.

- Enhance community-based ecotourism development by giving priority to the local community to get privilege from the ecotourism development and to have the power and authority to choose their own project;

- Promote public involvement – local communities making decisions for their life;

- Eliminate Poverty through economic development and create jobs by community based projects;

- Promote coordination with local community and government authorities;

- Promote social and cultural learning in the destination area;

- Avoid cumulative effects from small-medium sized ecotourism business development around the destination area;

- Promote financial cooperation between international, national and local levels;

- Promote ecotourism competition in the local area; and

- Promote ecotourism as a responsible tourism to mitigate GHG emission from the tourism sector and to assist local communities to adapt to climate change impacts.

4. The Process of Environmental Impact Assessment for Community-Based Ecotourism Development (See Figure 3.2 and 3.3 for summary)

1) Setting up as Organization for EIA for community based ecotourism development

1.1) National Ecotourism Committee

National Ecotourism Committee Membership

The government should establish the National Ecotourism Committee, which should consist of:

- Government agencies involved with Trade, Environment, Finance, Human Resources, Communication, Tourism, and Environmental Impact Assessment;

- Local government;

- Tour operators;

- NGOs; and

- The representative from the local community and indigenous people.

Functions of the National Ecotourism Committee (regarding to the process of EIA for Community Based Ecotourism Development)

The functions of the national committee for ecotourism are the following:

- Set up a comprehensive plan for ecotourism policy;

- Set up the national strategy for ecotourism;

- Set up the guidelines and policies for the Provincial Ecotourism Committee;

- Set up the EIA regulation of ecotourism for investors;

- Provide expert reports and scientific information on environmental conditions; including climate change;

- Support capacity building, and provide training to the local communities;

- Cooperate with international organizations to find the funds for ecotourism development; and

- Develop and announce the criteria for the Village Ecotourism Working Group.

1.2) Provincial Ecotourism Committee

Provincial Committee Membership

- Local authorities, such as the authority who regulated land use;

- Protected area manager;

- NGOs;

- Conservation Groups;

- Tour operators;

- The EIA expertise from EIA; and

- The representative from local community and indigenous people.

Functions of Provincial Ecotourism Committee

- Set up the Technical Consultation Group of experts, including climate change experts;

- Coordinate, and consult with the government in their territory;

- Consider the village ecotourism development plan;

- Do EIA process in their territory;

- Permit the ecotourism project; and

- Report EIA's result to the National Ecotourism Committee.

1.3) Technical Consultation Group

Technical Consultation Group Composition

- Local government agencies who train for project management and EIA;

- Researchers; and

- Interpreter – when language obstructs communication between the Technical Consultation Group and local communities.

Function of Technical Consultation Group

- Assist the Village Ecotourism Working Group to design the village ecotourism development plan; and

- Assist the village for capacity building (including human resource development).

1.4) Village Ecotourism Working Group

Village Ecotourism Working Group Composition

- Elected people from the village such as the leader of the village, the people who know their tradition;

- Local Conservation Groups; and

- NGOs.

Functionl of Village Ecotourism Working Group

- Working with the Technical Consultation Group to design the village ecotourism development plan

2) Climate Change Funding

The financial institutions should focus on ecotourism as a development tool that can contribute to sustainable development and reduce GHG emission by providing grants for ecotourism development.

Using climate change funding is an option for governments; when such funding is available, the government can receive funding under climate change treaties. So, the government can contribute to the local community by making an announcement via National Ecotourism Committee to the local community to submit a proposal for ecotourism projects to receive funds for community development. However, if no funding from such a resource exists, this model still works to bridge the gap among environmental and socio-cultural concerns and development.

3) Community-Based Ecotourism Project Development

The Provincial Ecotourism Committee will announce criteria for "the Environmental Impact Assessment for a community-based ecotourism development project" to the village by following the guidelines of the National Ecotourism Committee. Then, the Technical Consultation Group will work with the Village Ecotourism Working

Group to discuss and design an ecotourism development project for the local community. The community-wide meeting will be held for public participation. The outcome of the meeting will be submitted along with the village ecotourism development plan. The ideas are the result of public participation the planning level. This public participation process can reduce the conflict between the local community and local government because it can assume that the project meets the approval of the majority of people from the area.

3.1) The Technique for Design of the Ecotourism Project Development

The following are some suggestions not limited to the Technical Consultation Group and the Village Ecotourism Working Group to design the ecotourism project.

- Using SWOT analysis to analyze Strengths, Weaknesses, Opportunities and Threats to the local community of a particular ecotourism development project;

- Project proposals should balance all sustainable development pillars and climate change issue, by considering climate change issue, environmental protection and the conservation of natural resources with other social, health and economic considerations; and

- Apply adaptation and mitigation principle in the ecotourism project development

- Avoid significant and cumulative adverse impacts.

3.2) The Village Ecotourism Development Plan consists of

- Detailed description of the village such as population; economic; social and physical aspects of the community; job rate; and a map of the village, which shows the main areas, roads, and attraction areas;

- The community-based ecotourism project, which contains sufficient details about the project such as the background of the project; type of the ecotourism project; the foreseen impact of the project to the economic, environment and social – cultural; any possible cumulative impact to the destination area; and how the project contributes to the sustainable development; and

- Community meeting's report; including public participation.

Then analyze all the data of the social community. All the data will be useful for the tourism development to set up the plan, policy and program for the destination area.

4) The Private Ecotourism Project Development

Additionally, the EIA for the community-based ecotourism development model is also designed to look after the private ecotourism project to secure sustainable development. However, no funding or grant is provided to the private ecotourism project. The private investor has to apply for doing the ecotourism project under the specific rule from the National Ecotourism Committee. The specific rule for a private ecotourism project must submit documents based on section 3.2 of this part - The Village Ecotourism Development Plan - and apply the public participation principle by setting up a public meeting and letting the local people and indigenous people participate in the meeting. During the community-wide meeting, the private investor should prepare the summary of the project, which contain sufficient detail about the project.

After the meeting, the private investor will submit all of the documents to the regional committee for ecotourism and await the decision of the Provincial Ecotourism Committee, which uses the process as shown in section 5.2 of this part – The Licensing and Condition for Community Based Ecotourism Project.

5) EIA process

Then, the Provincial Ecotourism Committee will collect all village ecotourism development plans and evaluate them for the comprehensive EIA in their territory. In some cases, if the proposed project might impact another province, the Provincial Ecotourism Committee might consult the other Provincial Ecotourism Committee in the other territory to find the best way to evaluate the EIA.

The Provincial Ecotourism Committee will consider project by project as specific EIA to assess any adverse impact, which might be significant or have a cumulative impact on the environment or impact upon or endanger the life and health of people and

nature around each project area. The Provincial Committee can use the outcome from the comprehensive EIA and specific EIA to make decisions for the ecotourism development projects.

5.1) Scope of EIA assessment

- Considering the existing condition focusing on the possibility, and the direct, indirect and cumulative impact, especially the balance of environmental protection and the conservation of natural resources with other social, health and economic considerations. Especially, impacts on the traditional uses of resources and the livelihood of indigenous people and also the consideration of alternatives.

- Predict the likely environmental impacts of projects

- Mitigate unacceptable impacts and shape the project so that it suits the local environment

- Prepare the scoping process by using "The Development Cycle Model for Sustainable Ecotourism" as a guideline (please see part B. of this chapter).

5.2) The Licensing and Condition for a Community-Based Ecotourism Project

After the Provincial Ecotourism Committee considers the Village Ecotourism Development Plan, the Provincial Ecotourism Committee can make the decision for each ecotourism development project. Therefore, the decision-making could be: adding a mitigation plan into the community ecotourism project starting a community ecotourism project based on the village ecotourism development plan, or no project.

If the Provincial Ecotourism Committee decides to give the licensing to the village or private ecotourism project development, the Provincial Ecotourism Committee can determine the additional request for the ecotourism development project such as:

- In the case of a very sensitive area, the Provincial Ecotourism Committee will announce the maximum capacity of the area. In other words, the number of ecotourists allowed for each year or each season per zoning areas

- type and size of the ecotourism facilities

- suggested ecotourism activities such as cultural tourism, natural tourism.

6) Monitoring

The Provincial Ecotourism Committee will set up the oversight and auditing functions to monitor and inspect all ecotourism projects. If the project does not comply with the permit from the Provincial Ecotourism Committee, the Provincial Ecotourism Committee will order that community-based ecotourism project to correct the matter; otherwise the permission could be suspended.

The inspector is not only the monitor of the ecotourism business, but also collects ecotourism business information as a data base for the Provincial Ecotourism Committee.

7) Information Management between the Provincial Ecotourism Committee and National Ecotourism Committee

All the data for the comprehensive EIA for each area will be sent to the National Ecotourism Committee. As the secondary resource, it is very useful for the comprehensive ecotourism planning, as well as National Ecotourism Strategy Plan.

E. THE WAY FORWARD

The EIA for community-based ecotourism development is designed as a purpose to be an alternative choice for ecotourism development – balancing sustainable development pillars and achieving an ecological setting for the life and health of people and nature. The EIA for a community-based ecotourism development project alone is not a universal medicine that can cure all of the problems in ecotourism development. At least, it can be a tool for local community and indigenous people to make their own plans and decisions for their own future under the government's assistance to enhance sustainable development.

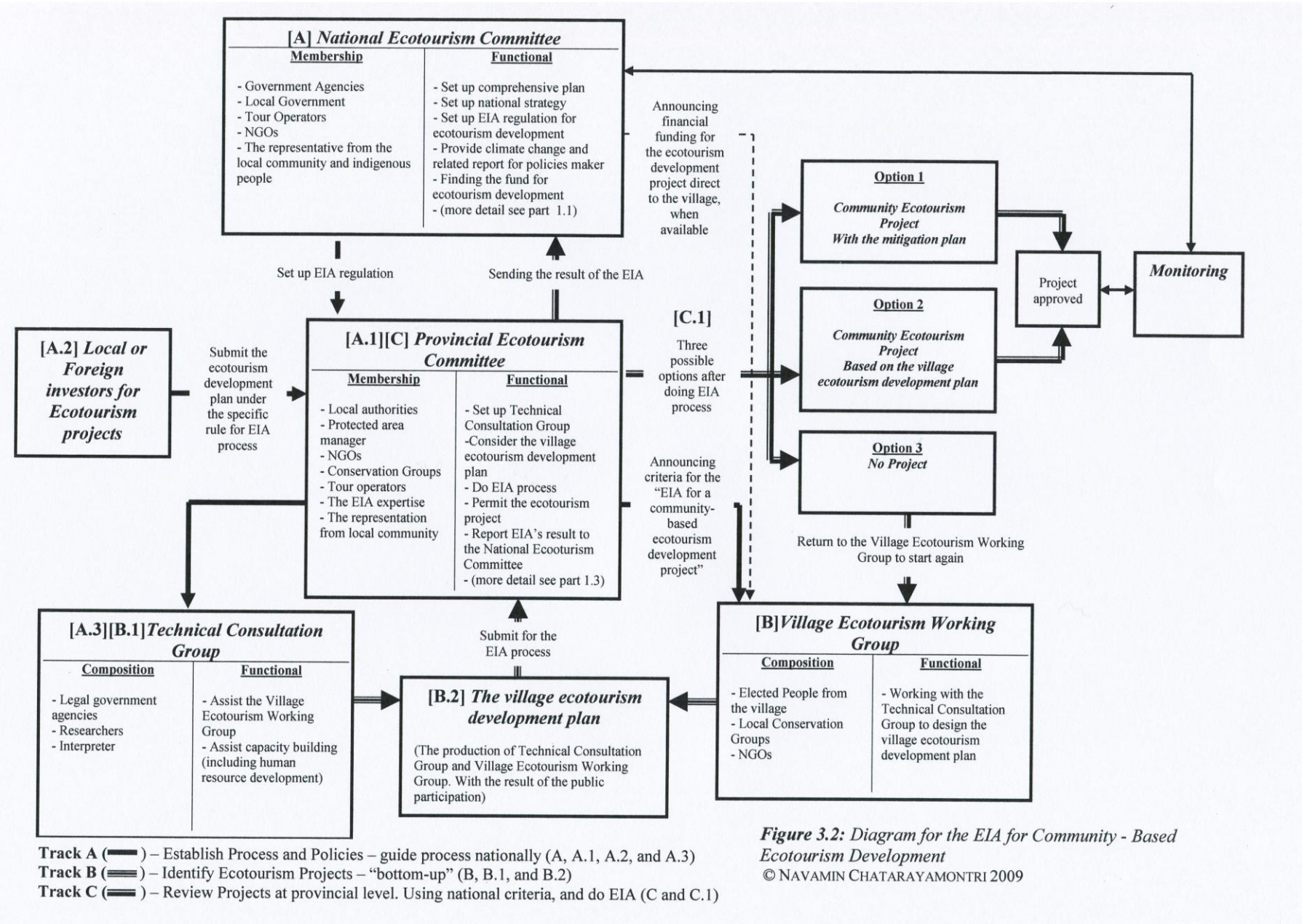
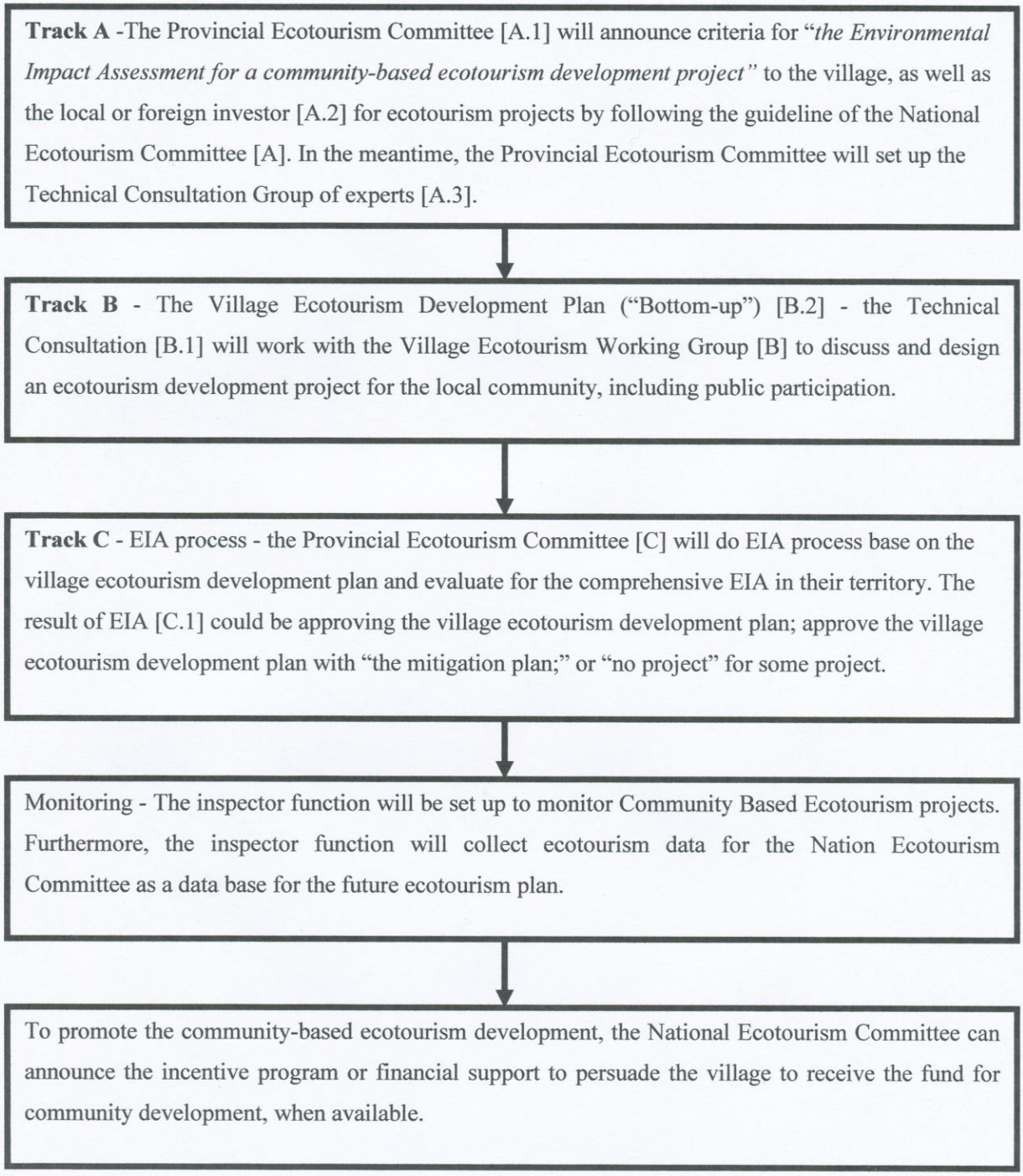


Figure 3.2: *Diagram for the EIA for Community - Based Ecotourism Development*

Figure 3.3: *The Summary Chart for the EIA for Community - Based Ecotourism Development*



CHAPTER IV: MARKET-BASED SOLUTIONS TO MITIGATE CLIMATE CHANGE: OPTIONS FOR THAILAND'S PARTICIPATION

INTRODUCTION

Under the principles of international law, the majority of countries in the world have agreed to take measures to stabilize the concentrations of Green House Gas (GHG) currently in the atmosphere in order to deter hazardous anthropogenic interference with the climate. As part of this effort, many countries are a party to the United Nations Framework Conventions on Climate Change (UNFCCC) and its protocol - the Kyoto Protocol – which establish a framework and action plan to address the issue of climate change. Under the Kyoto Protocol's flexible mechanism, among other measures, a market-based solution is an efficient tool to mitigate climate change, in addition to a cap-and-trade program, which is prevalent among many countries. Aside from leading to a reduction in GHG, a market-based solution will ensure energy efficiency and the development of technology.

This chapter examines the question of how to reduce the emission from tourism business by using market-based solutions. Tourism can contribute GHG to the atmosphere from the transportation, operation of accommodations and tourism activities, many of which emit the GHG to atmospheric emissions. Especially of concern is the transportation sector because tourism needs transportation to bring tourists in and out from the destination area. Therefore, the tourism industries should take responsibility to make efforts to reduce the atmospheric emissions, as tourism increases across the globe. This is of growing importance because the tourism sector has a potential to emit more GHG in the future. The idea to create an emission trading market is useful for tourism development, and must be considered in any event because it will apply to all other business sector.

To analyze the notion of market-based solutions in developing countries, Thailand will be chosen as an example. As with many developing countries, the top priority of economic development of Thailand comes from tourism development. Therefore, if Thailand is to achieve sustainable development, Thailand must address the relationship of

tourism development and climate change, especially, how to mitigate GHG from tourism development and harmonize with the environmental sustainability.

To deal with the climate change issue, Thailand is a party to both the UNFCCC and the Kyoto Protocol. These treaties do not yet require Thailand to implement a GHG emission reduction target under the common but differentiated responsibilities principle. However, the post-Kyoto protocol negotiation round has started to create and implement a plan to address climate change after the 2012 international negotiation round addressing climate change. In order to prepare to implement the results of the post-Kyoto protocol negotiations, Thailand and other developing countries will possibly be required to reduce emissions under the new specific GHG emission reduction target. Thailand should gain the benefit from market-based solution to ensure efficiency and the development of technology. Furthermore, it is important to prepare the Thai's enterprises to alert them to the new trend of doing green business in the future.

This leads to the question of whether Thailand is prepared for future GHG emission reductions. This chapter concentrates on the new legal issues of GHG emission reduction for Thailand by focusing on the emission trading aspect. Therefore, Thailand should learn from and compare emission trading experiences from different emission trading systems and other countries. Engaging in such a study will permit the design of Thailand's emission trading system. Moreover, the cap-and-trade program can assist in addressing the issue of climate change at the regional level. Indeed, the European Union (EU) has begun by requiring airplanes flying in the EU to purchase credits and off-set their GHG emissions. Just as the EU has acted regionally, there may be a role for The Association of Southeast Asian Nations (ASEAN) to do so also.

This chapter will also analyze not only a country, like Thailand but will analyze the potential of the region market, by using ASEAN, whether the EU model can apply to the ASEAN market. So, the comparative method will use.

This chapter is divided into four sections. First, this chapter provides the background and principles of international law addressing climate change. It examines the Global Village's agreement to tackle climate change by focusing on the UNFCCC

and the Kyoto Protocol. Second, it offers a discussion of the economics of climate change. Third, this chapter analyzes the global response to emission trading, while surveying and comparing emissions trading programs among the European Union Emission Trading Scheme; the Northeast USA Regional Greenhouse Gas Initiative; the Chicago Climate Exchange; and the Emission Trading Program of China.

Finally, this chapter concentrates the new legal issues of GHG emission reduction for Thailand by focusing on the emission trading aspect. Why should Thailand focus on emission trading? What can Thailand learn from the emission trading survey? Which emission trading is best for Thailand? What steps should Thailand take in order to make emission trading work?

A. THE INTERNATIONAL RESPONSE TO CLIMATE CHANGE: THE INTERNATIONAL FRAMEWORK

The majority of nations have agreed to take action in addressing climate change. Many nations have signed and ratified the United Framework Convention on Climate Change and the Kyoto Protocol, which currently have 192 and 182 parties, respectively. The main purpose of these agreements is to guide and require international cooperation to reduce GHG in the atmosphere. Therefore, this part will present the principles of both treaties.

1. United Nations Framework Convention on Climate Change

The United Nations Framework Convention on Climate Change[288] (UNFCCC) was opened for signature in 1992 at the United Nations Conference on Environment and Development in Rio de Janeiro.[289] The objective of UNFCCC is to achieve the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."[290] The UNFCCC

[288] UNFCCC, *supra* note 186.
[289] *See id.*art. 20 (UNFCCC was opened for signature by State Members of the United Nations or any of its specialized agencies, or Parties to the Statute of the International Court of Justice and by regional economic integration organizations at Rio de Janeiro, during the United Nations Conference on Environment and Development (between June 3-14 , 1992), and thereafter at United Nations Headquarters in New York from 20 June 1992 to 19 June 1993).
[290] *See id*. art. 2.

went into force in 1994 when a sufficient number of parties had ratified the UNFCCC. The UNFCCC divides participating countries into two main categories: developed counties[291] and developing countries as Annex I and non-Annex I respectively. The countries were divided into categories because of the UNFCCC views that developed countries bear a greater historical responsibility for the accumulation of GHG emission,[292] and the differing ability of states to respond to it. Consequently, Article 3 sets forth one of the foundations regarding developing nations' responsibility toward climate change; the idea of "common but differentiated responsibilities and respective capabilities,"[293] combined with the notion that developed countries should take the lead in fighting climate change. The developed countries listed in Annex I to the Convention took greater responsibility than developing countries in creating policies and measures aimed at stabilizing GHG emissions at 1990 levels by 2000.[294]

The Convention constitutes a mechanism to hold regular meetings to draft concrete measures, under which a series of meetings, known as the Conference of the Parties (COP), have been and continue to be held. The COP is the supreme body of the UNFCCC; it is the highest decision-making authority and is an association of all the countries that are parties to the Convention. The COP consists of all of the governments that are parties to the Framework Convention. It has responsibilities for reviewing the implementation of the UNFCCC.[295] The COP also can adopt amendments or new protocols to the Framework Conventions.[296]

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[291] *See id.* Annex I.
[292] *See id.* pmbl (stating "the largest share of historical and current global emissions of greenhouse gases has originated in developed countries, that per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs.").
[293] *See id.* art. 3(1) – (2) and art. 4(1)(a)-(j) (recognizing differentiated responsibilities of developed and developing nations).
[294] *See id*. art. 4(2)(b).
[295] *See id*. art. 7.
[296] *See id*. art. 15 – art. 17.

2. The Kyoto Protocol to the United Nations Framework Convention on Climate Change

The Kyoto Protocol to the United Nations Framework Convention on Climate Change[297] (Kyoto Protocol) was adopted in 1997 at the third annual Conference of the Parties (COP-3) in Kyoto, Japan. The Kyoto Protocol established the legal framework within which GHG[298] and mechanism reduction would take place by maintaining the concept of differentiated responsibilities established by the UNFCCC. The Kyoto Protocol aimed at reducing emissions of GHG to stabilize "greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system,"[299] by establishing legally binding agreements by industrializing countries[300] (Annex I parties) committed to limit their specific individualized emission targets, listed in Annex B of the Kyoto Protocol.[301] It has an overall goal of reducing greenhouse gas emissions to 5.2% below 1990 levels by 2008-2012 ("Kyoto Commitment Period" or "First Commitment Period").

These goals are far from being attained. The Kyoto Protocol took a long time before coming into force. A precondition for the Protocol to take effect was ratification by fifty-five member signatures, representing at least 55% of total climate change emissions.[302] Therefore, the Kyoto Protocol did not come into force until February 2005, after Russia added itself to the list of 141 ratifying countries in November 2004. The Kyoto Protocol also provides "flexible mechanisms,"[303] including emission trading under which Annex I Parties are enabled to achieve their emission reduction goal at the lowest economic cost. The flexible mechanisms offer market-based approaches for

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[297] *See* Kyoto Protocol, s*upra* note 61.
[298] *See id.* Annex A (listing carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride as greenhouse gases).
[299] *See* UNFCCC, *supra* note 186, art. 2.
[300] *See id.* Annex I.
[301] *See* Kyoto Protocol, *supra* note 61, Annex B.
[302] *See id*. art. 25 (1).
[303] *See generally* Report of the Conference of the Parties on its Seventh Session, Held at Marrakesh from 29 October to 10 November 2001, U.N. Framework Convention on Climate Change, 7th Sess., 8th plen. Mtg. Addendum, Vol. II, Decision 17/CP.7, U.N. Doc. FCCC/CP/2001/13/Add.2 (2002), *available at* http://cdm.unfccc.int/Reference/COPMOP/decisions_17_CP.7.pdf (addressing trading mechanisms, compliance systems, and other key elements of the Kyoto Protocol).

achieving emission reductions across borders. The key features of these flexible mechanisms are:

(a) Joint Implementation (JI)[304] allows an Annex I Parties to receive Emission Reduction Units (ERUs) credits for implementing a carbon emission-reducing project in another Annex I country, and these ERUs can be traded.

(b) Clean Development Mechanism (CDM)[305] this allows Annex I Parties to implement the long-term, measurable benefits of emission reduction projects in non-Annex I Parties in order to generate a Certified Emission Reductions (CERs) with the CDM Executive Board (EB)[306] under the certain circumstances.[307] The host country must have an established Designated National Authority (DNA), which decides whether the proposed CDM project promotes the country's sustainable development goal. The CERs approved and registered can be used to meet emission reduction commitments by trading.[308]

(c) Emission trading[309] this involves the Annex I Party setting an overall cap on emission allowances (EUAs) that can be allocated to the affected national industry participants, each allowance representing a ton of CO_2 equivalent (CO_2e). Emissions trading allows companies to emit in excess of their allocated allowances by purchasing allowances from other participants with surplus allowances within a market trading structure. Not only can Annex 1 parties trade allotted credits, they can also trade any credits they receive through the other CDM and JI mechanisms.[310]

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[304] *See* Kyoto Protocol, *supra* note 61, art. 6; *see also* UNFCCC, *Joint Implementation*, http://unfccc.int/kyoto_protocol/mechanisms/joint_implementation/items/1674.php (last visited Jan. 20, 2009).
[305] *See* Kyoto Protocol, *supra* note 61, art. 12; *see also* UNFCCC, *Clean Development Mechanism*, http://unfccc.int/kyoto_protocol/mechanisms/clean_development_mechanism/items/2718.php (last visited Jan. 20, 2009).
[306] *See* Kyoto Protocol, *supra* note 61, art. 12(4).
[307] *See id.* art. 12 (5)(a)-(c).
[308] *See id.* art. 12 (3)(b).
[309] *See id.* art. 17.
[310] *See id.* art. 6 and art.17.

B. ECONOMIC THEORY

1. Global Warming and its Economic Aspects

The Stern Review on the Economic of Climate Change, or the Stern Report, addressing the economic aspects of climate change, published in October 2006 by Sir Nicholas Stern, confirms that climate change is a serious problem that has "serious impacts on world output, on human life, and on the environment."[311] The current level of greenhouse gas levels is 430 parts per million (ppm) CO_2 equivalent (CO_2e). If we start taking action now to stabilize greenhouse gas emissions at a reasonable level, such as 450-550 ppm CO_2e to reduce the worst impacts of climate change, it would prove difficult and costly to stabilize the level at 450 ppm CO_2e. However, if we delay, the opportunity to stabilize at 500-550 ppm CO_2e may be lost. Moreover, if no action is taken to reduce emissions, the global average temperature could rise by more than 2 degrees Celsius by 2035, as compared with pre-industrial levels. Therefore, the Stern Report concludes that the benefits of strong and early action far outweigh the economic costs of not acting. Furthermore, the Stern Report estimates that action now would cost around 1 percent of global gross domestic product (GDP) each year, whereas doing nothing now and handling with the result of climate change later would cost between 5 to 20 percent or more of annual GDP. The rich countries must support the less affluent countries in addressing climate change by providing them with better information, and improving planning and climate-resilient crops and infrastructure, even though adaptation will cost tens of billions of dollars a year in developing countries.[312] Stern's view is that in solving and addressing global warming, countries must act sooner rather than later.

One of recommendations for the future international frameworks found in the Stern Report is emission trading. By "expanding and linking the growing number of emissions trading schemes around the world is a powerful way to promote cost-effective reduction in emissions and to bring forward action in developing countries: strong targets in rich countries could drive flows amounting to tens of billions of dollar each year to

[311] Her Majesty's Treasury, *Stern Review: The Economics of Climate Change, Summary of Conclusion*, at vii (2006), *available at* http://www.hm-treasury.gov.uk/d/CLOSED_SHORT_executive_summary.pdf.
[312] *See id.* at vi-ix.

support the transition to low-carbon development paths."[313] However, some critics of the Stern Report,[314] such as Robert Mendelsohn an economist at Yale, challenge the scientific foundation of the Stern Report and arguing that it may be missing some important analysis. Mendelsohn says that Stern overestimates the extent of environment damage that will occur, and underestimates the ability of humans to adapt to climate change. Therefore, the policymakers should fully consider all aspects of the report and its critiques before significantly investing in abatement measures.[315]

2. Market-Based Solutions to Climate Change: Cap-and-Trade Program

The theory behind the market-based solution or emission trading is to implement the "polluter pays" principle and fix a price for each CO_2 equivalent (CO_2e) unit of GHG emissions. Cap or emission quota is the amount of pollution that can be produced by industrial source, such as power plants and other factories. The cap-and-trade program generally includes the following basic components: First, the environmental authorities determine the emissions sources to be covered by the cap. Second, the environmental authorities establish the total amount of emissions to be allowed from all of the sources, commonly referred to as the "emissions cap." Third, each environmental authority issues one allowance for each ton of emissions, up to the amount of the cap, and those allowances are distributed to the generators and the market.

In practice, if a generator emits at levels below the cap, it may bank the excess quota for future use, or trade with other emitters who are unable to meet the cap. On the other hand, if a generator emits at levels higher the cap, it may either reduce its emissions or purchase additional credits. Generators must apply a cost analysis approach to

[313] *See id.* at ix.
[314] *See, e.g.,* Martin Weitzman, *A Review of the Stern Review on the Economics of Climate Change*, 45 J. Econ. Literature 703 (2007); Partha Dasgupta, *Commentary: The Stern Review's Economic of Climate Change*, 199 Nat'l Inst. Econ. Rev. 4 (2006); Richard S.J. Tol, *The Stern Review of the Economics of Climate Change: A Comment*, 17 Energy & Env't 977 (2006); Gary W. Yohe & Richard S.J. Tol, *The Stern Review: Implications for Climate Change*, 49 Environment 36 (2007) (discussing the Stern Report's assumptions, arguments, and recommendation are biased and unpersuasive); *see also,* Daniel H. Cole, *The Stern Review and its Critics: Implications for the Theory and Practice of Benefit-Cost Analysis*, 48 Nat. Resources J. 53 (pointing out flaws of the Stern Review and its various reviews, as well as explaining that the disagreement among scholarly papers over the quality Stern Report reflect disagreements about how benefit-cost analysis generally should be done).
[315] Robert O Mendelsohn, *A Critique of the Stern Report,* 29 Regulation 44, 44-46 (2007), *available at* http://www.cato.org/pubs/regulation/regv29n4/v29n4-5.pdf.

determine the most efficient solution available. Thus, sellers of credits recover at least a portion of the cost of their environmental protection efforts, and purchasers have an expanded emission quota beyond the pollution targets established by the environmental protection authorities.

Therefore, the benefits of emission trading are a reduction in GHG emission; energy efficiency; and the creation of new technologies. Since the GHG has a market value, generators might find it most beneficial to reduce their emissions and earn profit by selling credits from emission reduction on the market. One of the key factors of reducing GHG is determining how to use energy efficiency. Most energy sources come from fossil fuel, which is the main cause of GHG. Therefore, greater energy efficiency means less GHG emissions. Furthermore, the market mechanism of emission trading motivates generators to create the new technologies to reduce and store GHG from their production process.

C. CURRENT EMISSION TRADING SYSTEMS

As the Kyoto Commitment Period will finish in 2012, so in December 2007, the COP met in Bali to prepare a post-Kyoto Legal Framework. After the UNFCCC Bali Action Plan negotiations concluded, all current emission trading systems will need to apply the new treaty commitment and be amended quickly. As a result, the existing models of trading will be modified. Meanwhile, negotiations are examining the existing models as possible foundations for the new emission trading regime. Therefore, the following models are the actual experiences that form the basis for the new international framework – under the UNFCCC.

This part will survey four different models of emission trading: the European Union Emission Trading Scheme; the Northeast USA Regional Greenhouse Gas Initiative; the Chicago Climate Exchange; and Emissions Trading Program of China. While each program differs in detail, each program shares the common goal which is reducing GHG emission by using market – based solutions. And they yield insights that are useful for addressing the development of sustainable ecotourism.

1. EU Emission Trading Scheme

The EU Emissions Trading Scheme[316] (EU ETS) was established under directive 2003/87/EC. The EU ETS began operating on January 1, 2005. The goal of EU ETS is to assist member states in meeting their reduction target levels under the Kyoto Protocol. The EU ETS is the largest multi-national, greenhouse gas emissions trading system in the world, with all twenty-five member states of the European Union participating.

The EU ETS sets a mandatory "cap and trade" scheme for GHG emission allowance and divides their operations in phases: Phase I runs from 2005 to the end of 2007 and phase II from 2008 to 2012. During Phase I, the EU ETS allocates 2.2 billion tons of emission allowances trading from around 10,000 large energy-intensive installations across the EU member nations per year. During Phase II, the EU Commission is proposing to reduce the allowances by 6% and to add additional facilities into the allowance system.[317]

Each EU state must create and implement a National Allocation Plan (NAP), which specifically states the number of credits to issue and the division of credits among individual companies throughout the state. Each state's NAP must be approved by the European Commission.[318] Then, the member state must oversee and enforce its NAP, verifying that each entity emitting GHG has an allowance and the authority to do so[319] in the form of GHG emission permits.[320] By April 30 of each year, installations must surrender an actual number of allowances.[321] Under the Directive, the excess emission penalty must be fined EUR 100 per ton of carbon dioxide over the limit. However, the payment of the excess emission penalty shall not relieve the operator from the obligation

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[316] The European Parliament and the Council of the European Union, *Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a Scheme for Greenhouse Gas Emission Allowance Trading within the Community and Amending Council Directive 96/61/EC,* 2003 O.J. (L275) 32-46, *available at* http://ec.europa.eu/environment/climat/emission/implementation_en.htm [hereinafter EU ETS].

[317] *See generally* Commission of the European Community, *The Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading system of the community, available at* http://ec.europa.eu/environment/climat/emission/pdf/com_2008_16_en.pdf (last visited Jan. 20, 2009).

[318] *See* EU ETS, *supra* note 316, art. 9.

[319] *See id* art. 4.

[320] *See id* art.s 5 – 6.

[321] *See id* art. 12(3).

of surrendering an amount of allowances equal to those excess emissions when surrendering allowances in relation to the following calendar year. The penalty is one of the keys to boosting emission trading, because the company risks surpassing its quota will try to trade by comparing cost-effective and economic efficiency in order to obtain emission credits in order to avoid the penalty. In addition to emissions credits allocated under the EU ETS, companies also can use credits from emission reduction projects under the Kyoto Protocol (Joint Implementation and Clean Development Mechanism) to cover their emissions.[322]

2. Northeast USA Regional Greenhouse Gas Initiative

The United States of America (US) did not sign the Kyoto Protocol, so it is not obligated to reduce GHG. However, under the US Constitution, individual states retain the authority to enact laws aimed at reducing GHG. For example, California and New York have enacted their own GHG reduction laws. However, in order to achieve market efficiencies of scale, one of the goals of the emission trading system in the US should be for states to work together to establish regional emissions reduction programs, such as that adopted in the Northeast part of the US.

The Regional Greenhouse Gas Initiative ("RGGI," pronounced "Reggie") began in April 2003, when New York Governor George E. Pataki invited the governors of the Northeastern states to participate in the design of a mandatory cap-and-trade program to address power plant emissions. The result of the meeting was the RGGI Memorandum of Understanding (MOU), a historic agreement outlining the program in detail, as well as, the framework for the seven Northeast states[323] to serve as a role model which addresses climate change while increasing energy efficiency investments and stimulating emerging clean energy technology markets. Currently, the members include Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York,

[322] *See id* art. 16(3).
[323] *See generally* Regional Greenhouse Gas Initiative, *Memorandum of Understanding*, http://www.rggi.org/docs/mou_12_20_05.pdf (last visited Jan. 16, 2009) [hereinafter RGGI MOU] (The seven Northeast states consist of Connecticut, Delaware, Maine, New Hampshire, New Jersey, New York and Vermont).

Rhode Island and Vermont. The governor of Pennsylvania chose to have the state observe the process.[324]

RGGI will be the first mandatory cap-and-trade program in the United States created to reduce carbon dioxide emissions from electric power plants that have a capacity of at least 25 MW in the ten Northeastern states of US. Collectively, the member states are such large emitters that they would count as the sixth largest country in the world by volume of GHG emissions in 2000.[325] After the cap-and-trade program for power plants is implemented, the states may consider expanding the program to other kinds of sources.[326] RGGI's mandatory emission reduction goals are to be achieved through stabilizing CO_2 emissions at established baseline levels from 2009 through 2014, followed by a 10 percent reduction between 2015 and 2018.[327]

The emissions allowances under RGGI will be distributed to sources, or otherwise into the open emissions market. The states have agreed that at least 25% of the emissions allowances will be allocated to a "consumer benefit or strategic energy purpose,"[328] which means that 25% of the allowances may be auctioned and the revenues used to support energy efficiency, renewable energy, innovative energy technologies or consumer rebates.

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[324] Regional Greenhouse Gas Initiative, *Design Elements for Regional Allowance Auctions under the Regional Greenhouse Gas Initiative*, http://www.rggi.org/docs/20080317auction_design.pdf (last visited Jan. 20, 2009).

[325] *See* Eleanor Stein, "*Regional Initiatives to Reduce Greenhouse Gas Emissions,"* GLOBAL CLIMATE CHANGE AND U.S., 321 (MICHAEL B. GERRARD ED. 2007) (Explaining that "[c]onsidered as a single entity, the original signatory RGGI states emitted 577 million metric tons of CO_2 equivalent in the year 2000, This would place the RGGI states sixth in the world for volume of GHG emissions, after the United States, Japan, Germany, Canada, and the United Kingdom.").

[326] Regional Greenhouse Gas Initiative, *Goals & Guiding Principles*, http://www.rggi.org/goals.htm. (last visited June 17, 2008).

[327] *See* RGGI MOU, *supra* note 323, ¶ 2(C) - (D).

[328] *See id.* ¶ 2(G)(1).

3. Chicago Climate Exchange

Chicago Climate Exchange (CCX), launched in 2003, is the world's first and North America's only active voluntary cap-and-trade program. The legally binding program integrated trading systems to reduce emissions of all six major greenhouse gases (GHG),[329] with offset projects worldwide.[330]

Implementation of the CCX helps to build and test the institutions and skills needed to cost-effectively manage GHG. The goals of the CCX are to encourage the trading of GHG allowances with price transparency, to create the skills and institutions necessary to manage GHG, to initiate measures in the public and private sector which lead to the reduction of GHG, to increase the body of knowledge surrounding GHG reduction, and to inform the public about managing the threats of global climate change.[331]

In 2003, with the 13 entities, the CCX held an initial auction and launched the world's first multi-national, multi-sector market for reducing and trading GHG. By 2004, 2005, and 2007, its members reached 60, 110, and 300 respectively. The members are not only the entities from the U.S., but also from abroad. For example, in 2006, Australia, China and India joined the CCX.[332] Current CCX emitting members (Members) come from various industrial sectors, as well as, municipalities, states, and universities. Members include Ford Motor Company, DuPont, American Electric Power, Sony Electronics Inc, the Bank of America Corporation, the City of Chicago, the State of New Mexico, the University of Minnesota, and others.[333]

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[329] *See* Chicago Climate Exchange, *Keys Features*, http://www.chicagoclimatex.com/content.jsf?id=25 (last visited Jan. 20, 2009) (Emission of the following six GHGs from facilities owned by CCX Members are covered, as applicable: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6) Emissions of all non-CO_2 GHGs are converted to metric tons CO_2e using the one-hundred-year Global Warming Potential (GWP) values established by the Intergovernmental Panel on Climate Change).

[330] *See* Chicago Climate Exchange, *About CCX: Overview*, http://www.chicagoclimatex.com/content.jsf?id=821 (last visited Jan 20, 2009).

[331] *See id.*

[332] *See* Chicago Climate Exchange, *CCX Overview Brochure*, http://www.chicagoclimatex.com/about/pdf/CCX_Overview_Brochure.pdf (last visited Jan 20, 2009).

[333] *See* Chicago Climate Exchange, *Current Members of CCX*,

Members make a voluntary albeit legally binding commitment to meet annual GHG emission reduction targets. The emission reduction targets and timetable are divided into phases: Phase I (2003-2006) emission reduction targets were 1% per year, below an average of the baseline period 1998-2001. Phase II parameters extend the reduction period through 2010, with an additional 2% reduction commitment for Phase I Members and a total of a 6% reduction commitment by 2010 for new Members joining in Phase II.[334]

Members are allocated annual emission allowances depending on their emissions baseline and the CCX Emission Reduction Schedule. Members who decrease emissions beyond their allocation have surplus allowances to sell or bank; those who do not meet the targets must comply through purchasing CCX Carbon Financial Instrument (CFI) contracts.[335] One CFI contract is equal to 100 metric tons of CO_2 equivalent. CFI contracts are comprised of Exchange Allowances and Exchange offsets. Exchange Allowances are issued to emitting Members in accordance with their emission baseline and the CCX emission reduction schedule. Exchange Offsets are generated by qualifying offset projects.[336] All trades take place on the Internet-based CCX Electronic Trading Platform, and are linked directly with the CCX Registry, which consists of Member accounts and is the official holder of record and transfer mechanism for the CCX.[337]

The Financial Industry Regulatory Authority (FINRA) audits and verifies emissions of Members annually, through an established annual reporting system.[338] The FINRA verifies Member Baselines and annual emissions and utilizes state of the art

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http://www.chicagoclimatex.com/content.jsf?id=64 (last visited Jan. 17, 2009).

[334] *See generally* Chicago Climate Exchange, *Emission reduction commitment*, http://www.chicagoclimatex.com/content.jsf?id=72 (last visited Jan. 20, 2009).

[335] *See* Chicago Climate Exchange, *supra* note 330.

[336] *See generally* Chicago Climate Exchange, *CCX Offsets Program*, http://www.chicagoclimatex.com/content.jsf?id=23 (last visited Jan. 20, 2009) (CCX has developed standardized rules for eligible Offset project for issuing CFI contracts for the following types of projects: Agricultural methane, Coal mine methane, Landfill methane, Agricultural soil carbon, Rangeland soil carbon management, Forestry, Renewable energy, Ozone depleting substance destruction. Other project types, to be approved on a project-by-project basis, may include: Energy efficiency and fuel switching, Clean Development Mechanism (CDM) eligible projects).

[337] *See* Chicago Climate Exchange, *Frequently Asked Questions*, http://www.chicagoclimatex.com/content.jsf?id=74 (last visited Jan. 20, 2009).

[338] *See id.*

market surveillance technology to monitor CCX trading activity against fraud and manipulation. FINRA also reviews offset verification reports for thoroughness.

4. China's Emissions Trading Program: Sulfur Dioxide Emission Trading

Under the Kyoto Protocol, China is not obligated to meet the Kyoto Protocol's emission limits. Furthermore, Sulfur Dioxide (SO_2), a cause of acid rain, is not one of the GHG listed in Annex A of the Kyoto Protocol. However, SO_2 emissions and acid rain are major environmental problems in China due to the national's heavy reliance on coal and the burning of coal at power plants.[339] Consequently, the Chinese's government established an SO_2 emission trading mechanism, or cap-and-trade program, as an important tool to reducing SO_2 emissions.

The Chinese government has developed a number of policies to address its SO_2 concerns, including the Total Emissions Control (TEC) policy. The TEC policy imposes a total SO_2 emissions quota in all sectors of the economy, and the government allocates quota to individual sources in the form of an emission target. In September 2000, amendment to the Prevention and Control of Atmospheric Pollution Law[340] provided a legal foundation for Total Emissions Control, and TEC policies gained additional political support when they were formally outlined for the first time in the Tenth Five Year Plan (2001-2005).[341] According to the Tenth Five-Year Plan Period, which established the SO_2 emission reduction target for 2005, the total SO_2 emission should be reduced by 10 percent below the level they were at in 2000.[342] Therefore, in order to combine the structure of the TEC policy with an emission trading principle which promotes economic development and protects public health and the environment, China established the cap-and-trade program.

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[339] Jintian Yang and Jeremy Schreifels, *Implementing SO2 Emission in China*, http://www.oecd.org/dataoecd/11/23/2957744.pdf (last visited Jan. 16, 2009) (SO2 created serious impact on human health, visibility, agriculture, forestry, architecture, and cultural resources).

[340] *Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution* (Sep. 1, 2000), *available at* http://english.sepa.gov.cn/Policies_Regulations/laws/environmental_laws/200710/t20071009_109943.htm.

[341] U.S. Embassy Beijing, *China's Emissions Trading Pilot Projects (Dec. 2003), available at* http://www.usembassychina.org.cn/sandt/Emissions-Trading.htm [hereinafter Pilot Projects].

[342] China State Council, *The National Tenth Five-Year Plan for Environmental Protection (2001-2005) (abstract), available at* http://english.sepa.gov.cn/plan/Tenth.htm.

China's first SO_2 emissions trading agreement between two plants in different cities came into effect in July 2003.[343] The seller, Nanjing Jiaguan Power Plant, and the buyer, Taicang Port Huanbao Power Company, are both located in Jiangsu Province. The buyer requires an additional SO_2 emission quota in order to generate more electricity and an additional 2,000 tons of SO_2 to meet local demand. On the other hand, the seller of the state-of-art technology can save 3,000 tons per year with regards to its emission quota. This constitutes a win-win situation for both parties.

One of the keys to successfully operating the SO_2 emission trading pilot project has been the cooperation between China and other countries or organizations, such as United States, Japan, the European Union, and the Asian Development Bank. These entities have provided the Chinese with technical assistance, training, advising, low interest loans, and other services.[344]

However, despite China's efforts, the State council reports that the project failed to obtain the environmental protection targets of the Tenth Five Year Plan period, and there has effectively been a 27.8% increase in SO_2.[345] However, the State council still expects that by the year 2010, SO_2 emissions will be under control. The new target will be reduced by 10 percent below the 2005 level, although the SO_2 reduction did not reach its goal in the Tenth Five Year phase. However, the Chinese government has confidence from running the pilot project and already has the basic conditions in place necessary for instituting an emissions quota and trading system. Therefore, China is ready to apply the cap-and-trade program to other sectors.[346]

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[343] *China Trying Emissions Trading to Curb Acid Rain*, People's Daily. Jan. 17, 2003, available at http://english.peopledaily.com.cn/200301/17/eng20030117_110281.shtml (last visited Jan 20, 2009).
[344] *See* Pilot Project, *supra* note 341.
[345] China State Council, *The National Eleventh Five-Year Plan for Environmental Protection (2006-2010), available at* http://english.sepa.gov.cn/Plans_Reports/11th_five_year_plan/200803/t20080305_119001_1.htm.
[346] Emma Graham-Harrison, *China Eyes Domestic Emissions Trading Scheme*, Thomson Reuters News Service (India), June 9, 2008, available at http://in.reuters.com/article/oilRpt/idINPEK31864920080606 (last visited Jan. 20, 2009).

D. MARKET-BASED SOLUTION TO MITIGATE CLIMATE CHANGE: OPTIONS FOR THAILAND'S PARTICIPATION

1. Overview

Thailand is a party to both UNFCCC[347] and the Kyoto Protocol.[348] However, Thailand as a non – Annex I party may not yet be required to meet the Kyoto Protocol emission limits under the common but differentiated responsibilities principle. However, Thailand, as many developing countries, can benefit from other countries' technology, foreign and national investments, and the benefit of sustainable development in the host country, as required by CDM project one of the Kyoto Protocol's flexible mechanism.[349] Thailand also will need to consider its participation in the Post-Kyoto agreement that will be considered at the UNFCCC COP in 2009 in Copenhagen, Denmark.

In July 2007, Thailand has enacted the Royal Decree to establish the Thai Greenhouse Gas Management Organization (Public Organization)[350] (TGO). TGO serves as a secretariat for the Designated National Authority of Clean Development Mechanism (DNA-CDM) office in Thailand, which works on the CDM project.[351] In June 2007, the Thai Prime Minister enacted the regulations on Actions toward Climate Change.[352] The main purpose of the regulations is to set up climate change policies, strategies, plans, and measures, as well as to cooperate with the private sector and the international forum in order to address the climate change problem and to establish the National Climate Change committee.

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[347] Thailand signed the UNFCCC in June 1992 and ratified the convention in March 1995.
[348] Thailand signed the Kyoto Protocol in February 1999 and ratified it on August 2002.
[349] *See* Kyoto Protocol, *supra* note 61, art. 12.
[350] *The Royal Decree to establish the Thai Greenhouse Gas Management Organization (Public Organization) BE 2550 (2007)* [hereinafter The Royal Decree]; *see generally* Thailand Greenhouse Gas Management Organization (Public Organization), http://www.tgo.or.th/english/ (last visited Jan. 16, 2009).
[351] *See* The Royal Decree, *Supra note* 350, art. 7 (The TGO's Objectives and Duties as following: (1) Analyzing and screening the CDM projects for issuance of the Letter of Approval and monitoring the projects; (2) Promoting CDM projects and CERs Market; (3) To be the National Information Clearing House of Greenhouse Gas; (4) Management all information regarding the approved CDM projects and CERs' value; (5) Enhancing the capacity building of the government and private sectors on greenhouse gas management; (6) Promoting the public outreach regarding greenhouse gas; and (7) Promoting and supporting all activities related to climate change).
[352] *See The Thai Prime Minister regulation on Actions toward Climate Change BE 2550 (2007).*

2. Market-Based Solution: the Next Step to Mitigate Climate Change in Thailand

The previous survey of four different international emission reduction systems demonstrate that an efficient means of reducing GHG emissions is through a market-based solution. A market-based solution not only reduces GHG emissions by market mechanisms, but also leads to energy efficiency and the development of crucial technology.

Regardless of the location where GHG is emitted, its emission into the atmosphere will have an impact on the rest of the world. Consequently, all nations have a duty to care for the common nature. Therefore, Thailand should use a market-based solution to reduce emission in Thailand in order to reduce the effect of global warming as a whole.

In the future, after the conclusion of post-Kyoto, many countries will remain enthusiastic about emission trading. In order to achieve both economic and environmental security and advantages, Thailand must plan for the emerging global emission trading market, because sooner or later, Thailand must have such a market. Therefore, Thailand and its economy must develop and implement a plan for participating in emissions trading.

3. The Option for Thailand's Participation in Emission Trading

Each cap-and-trade program is unique and each has different advantages and disadvantages. This part will analyze each emission trading program and discuss what Thailand's emission trading model can take away from other emission trading programs.

a. Create Thailand's Emission Trading Scheme

Thailand's Emission Trading Scheme (Thailand ETS) can learn from China's emission trading program experience. At the beginning of its emission trading pilot program, China enacted legislation addressing SO_2, even though SO_2 is not a listed GHG and China does not have an emission reduction target under the Kyoto Protocol. China's pilot project focused on SO_2 trading only. China's experience with a trading system is

relevant to the climate change negotiations. The other key element to China's success was the cooperation between China and other countries, especially the USA, a country engaged in very successful in SO_2 trading since 1980's.[353] China gained insight and experience from creating and implementing its SO_2 cap-and-trade system. Consequently, the Chinese now have the knowledge and skills to establish a domestic emission trading scheme that could cover emissions ranging from GHG to water pollutants.[354]

Thailand ETS should also analyze RGGI's experience in establishing its model. Similarly to China's model, the RGGI model started with capping certain types of gases in specific sectors prior to expanding to other sectors. One of RGGI's initial goals was to cap CO_2 from electric power plants that have at least 25 MW. After its current program is implemented, RGGI will expand the cap other sources of emissions from other sectors.

If Thailand decides to use national market-based solution in designing the Thai emission trading model, Thailand ETS might consider using the models of China and RGGI as a startup model. Both have successfully started to address emissions by imposing caps on certain gases, such as SO_2 and CO_2 in China's and RGGI's program respectively, and successfully implemented a pilot project cap-and-trade system. In the meantime, China worked with experienced countries. These models will be useful for Thailand in establishing Thailand ETS. After Thailand gains experience, Thailand can create an individualized approach that takes into account Thailand's environment and economy while expanding the trade of other GHGs and imposing caps on additional industrial sectors.

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[353] *See* U.S Environmental Protection Agency (EPA), *Clean Air and Energy Projects in China*, http://www.epa.gov/international/air/chinaair.html (last visited Jan. 20, 2009) (EPA's Office of Atmospheric Programs is helping the China's Environmental Protection Administration (SEPA) assess opportunities and obstacles to implementing emissions trading programs to control SO2 emissions. An emissions trading program would allow emission sources to meet their emissions targets at a lower cost. EPA and SEPA have completed a feasibility study that explores many of the obstacles to implementing an emissions trading program and presents possible solutions to these obstacles. The two agencies are currently drafting a policy guide and building the institutions and infrastructure for improved air quality management policies).

[354] *See* Emma Graham-Harrison, *supra* note 346.

b. Creating a Regional ETS – The Association of Southeast Asian Nations Emission Trading Scheme

The Association of Southeast Asian Nations (ASEAN) consists of 10 countries,[355] which are, for the most part, developing countries, that have no obligations under the Kyoto emission reduction target. The ASEAN member states have relatively fast-growing economies, and frequently have a large number of foreign investors, such as Thailand and Vietnam. However, without correct emissions control, development through relationships established in ASEAN can cause climate change problems in countries participating in ASEAN, which will spread to other parts of the world. Clearly, addressing climate change is an emerging issue requiring cooperation and action at the regional level.

[355] ASEAN's members consist of: Brunei Darussalam; Cambodia; Indonesia; Lao PDR; Malaysia; Myanmar; Philippines; Singapore; Thailand; and Vietnam.

Table 4.1: Top GHG Emitting Countries[356] (CO_2, CH4, N2O, HFCs, PFCs, SF6) in year 2000

	Country	MtCO2 Equivalent	% of World GHGs
1	United States	6,928	20.6
2	China	4,938	14.7
3	EU-25	4,725	14.0
4	Russia	1,915	5.7
5	India	1,884	5.6
6	Japan	1,317	3.9
7	Germany	1,009	3.0
8	Brazil	851	2.5
9	Canada	680	2.0
10	United Kingdom	654	1.9
11	Italy	531	1.6
12	South Korea	521	1.5
13	France	513	1.5
14	Mexico	512	1.5
15	Indonesia	503	1.5
16	Australia	491	1.5
17	Ukraine	482	1.4
18	Iran	480	1.4
19	South Africa	417	1.2
20	Spain	381	1.1
21	Poland	381	1.1
22	Turkey	355	1.1
23	Saudi Arabia	341	1.0
24	Argentina	289	0.9
25	Pakistan	285	0.8
	Top 25	**27,915**	**83**
	Rest of world	**5,751**	**17**
	Developed	**17,355**	**52**
	Developing	**16,310**	**48**

According to table 4.1, ASEAN's emission rate is not show among the top 25 emitting countries. However, Indonesia, a member of ASEAN, ranks 15 out of the top 25 GHG emitting countries, which emitted 503 Mt CO_2e in 2000. If the emission rates of the other nine ASEAN members are added to that of Indonesia, ASEAN as a whole will rank among the top GHG emitters throughout the world, with an emission rate over 503 Mt CO_2e.

[356] *See* KEVIN A. BAUMERT ET AL., NAVIGATING THE NUMBERS: GREENHOUSE GAS DATA AND INTERNATIONAL CLIMATE POLICY 12 (2005) *available at* http://pdf.wri.org/navigating_numbers_chapter2.pdf.

According to the common but differentiated responsibilities principle, as the member of Global village, ASEAN should minimize the amount of emissions it releases and address the issue of climate change. Taking steps to curtail emissions as a group will enhance ASEANS's power in the regional emission reduction negotiations, and will allow ASEAN to benefit from the EU ETS' experience. Setting up a market-based solution like ASEAN ETS can encourage the region to development cost-effective carbon mitigation along with energy efficiency.

c. Creating a Voluntary Emission Trading Scheme – Thailand Climate Exchange

Setting up a voluntary program in Thailand, similar to the Chicago Climate Exchange (CCX) will benefit Thailand's companies. For example, emission trading can reduce energy costs; foster positive relations with government agencies and NGOs; enhance their public image; help companies become familiar with clean energy and climate mitigation technologies, and allow Thailand to receive credit and credibility for its activities in future negotiations. Also, a company can obtain experience in emission trading before it conducts business in areas where emission trading is mandatory. However, in implementing a voluntary program, the Thailand Climate Exchange (TCX) market must ensure that it has a sufficient volume of emissions to trade.

In addition to reducing emissions, the creating of TCX will also provide incentives for Thailand to enhance public relations and business ethic. In persuading companies to volunteer and join the market, the government will need to offer incentives and benefits to join the program, such as a competitive advantage. This will in turn allow Thailand to develop its public relations.

d. Steps to Making Emissions Trading Work in Thailand

While Thailand has already established the Thailand Greenhouse Gas Management Organization (TGO), the main purpose of the TGO is to concentrate on CDM projects to mitigate climate change, while largely focusing on Thailand. In establishing the cap-and-trade system, Thailand will need to focus both on its internal

market (either mandatory or voluntary market) and the global environment. It will also need to consider the ASEAN market. Consequently, Thailand will need to examine and analyze the market, in addition to drafting laws and regulations.

In order to make the emission market successful, Thailand will need to outline concrete steps that must be taken. It must consider the scope of its cap-and-trade system. Thailand should prepare and compile: a national inventory database of all GHG emission sources in Thailand; National Carbon Calculator - tracking and registration systems; a baseline and time table; a voluntary or mandatory emission trading program; guidelines on the industries to be addressed; an allocation of GHG emission quota, and whether they will be free or auction; and the monitoring and assessment of compliance for the emission trading system. Thailand could also benefit from additional international assistance in the forms of consulting, training, trading documents and trading projects.

Thailand must develop an explicit formal legal structure for emissions trading. The emission trading law is a new challenge and new era for the Thai legal system because it combines legal, economic, science, commerce and environment principles. Emissions trading law is highly technical, covering criteria of trading programs, compliance, monitoring, enforcement and technical measures to control GHG. Numerous questions regarding the principles of the emission trading law in Thailand still remain, such as whether the law should include penalty or what ramifications should exist if companies are unable to obtain their emission reduction baseline.

In the drafting process, learning from and adopting principles from the existing emission trading programs around the world would be a short cut for Thailand. However, the existing laws and regulations may not apply directly to Thailand, as each program has different roots and goals. Therefore, in drafting the Thai emission trading law, the authority must focus on, for example, on Thai current economic, environment, as well as public health issues to design the right emission trading law and regulations for Thailand. To draft the emission trading law, a working group is highly recommended, in order to obtain various opinions from experts in many fields such as legal environmentalists, economists, scientists and lawyers.

Therefore, it is strongly recommended that Thailand conduct further in-depth study of both the market and legal aspects surrounding emissions trading. Either Thailand should conduct its own study or choose to undertake a cooperative study for the ASEAN Trading region using, for example, an Asian Development Bank (ADB). Additionally, since ASEAN, when including Indonesia, is among the top 25 GHG emitting regions, a study of the market for all of ASEAN would be useful. Finally, the pilot emission trading program would be encouraged.

CHAPTER V: CONCLUSION

In the beginning of 2009, global socio-economic well-being faces new challenges, because of the economic recession, collapse of international trade negotiations and climate change. The economy around the world is in recession, which some economists forecast may be worse than the Great Depression in 1929. The Doha round of trade negotiations under the World Trade Organization has collapsed and remains suspended. Furthermore, much of the evidence of climate change is now appearing in nature, as can be seen from the extreme weather events around the world, such as Hurricane Katrina that hit New Orleans, U.S.A. in 2005 or Typhoon Nargis that hit Myanmar in 2008, as well as other extreme wind events, storm surges, flooding and heat waves. All these extreme weather events also are consistent with the Intergovernmental Panel on Climate Change's fourth report about the impact of climate change. However, scientists still need more evidence to come to explain the full impact of climate change. These emerging issues will directly and indirectly affect all levels – international, regional, national, local and individual. Therefore, in the future, we will have a different world and a different path. The model of international trade will be not the same. New approaches to attaining sustainable tourism will be needed.

The tourism sector was chosen as the case study. The tourism sector, one of the fastest and largest growing industries, can make an important contribution to sustainable development. Certainly, each of the emerging new challenges – economic recession, international trade and climate change – can impede the progress toward reshaping tourism to become sustainable. Even the World Tourism Organization forecasts that the number of tourists is growing. However in an economic downturn, some tourists may not afford to travel. Like a chain reaction, economic losses will hit the tourism sector as the tourism business relies on the tourists with incomes who travel to the destination area.

For the international trade aspect, tourism is a part of trade in services that is subject to negotiation in the World Trade Organization. The result of the failure of the Doha trade negotiation round can impact the future of the tourism sector. Furthermore, climate change not only leads to a changing climate in tourist destinations, but also has a

significant impact on economic and sociocultural aspects of the environment, on which tourist destinations rely. On one hand, the tourism sector can contribute Green House Gas (GHG) to the atmosphere; on the other hand, tourism can be affected by the climate change problem, especially its effect on the natural resources, which are the asset for tourism development. These "feedback" loops require careful analysis.

Therefore, to enhance sustainable development, we must find solutions to address economic recessions, international trade and climate change. The objective is to discover how to achieve sustainable tourism.

A. THE PRINCIPAL FINDINGS OF THIS DISSERTATION

1. Climate Change: A Barrier to Sustainable Tourism

Climate change today is affecting all social and economic life. According to the consensus on climate change set forth by the Intergovernmental Panel on Climate Change (IPCC), the results of climate change mostly have environmental consequences, such as an increase in average temperature, the widespread melting of snow and ice, and a rising average global sea level. However, climate change also has a direct and indirect impact on economic and socio-cultural aspects. Actually, these aspects – economic, environmental and social aspects – are considered as the main components of sustainable development. Therefore, the problem of climate change is not only the phenomenon of the change in climate, but also of the obstruction of sustainable development.

Recognizing the complex inter-relationship between climate change and tourism, we see, on the one hand, that climate change has an impact on tourism, especially when considering tourism destinations in coastal, mountain, drought, and flood-prone areas. On the other hand, tourism also contributes to the causes of climate change, especially through emissions resulting from transportation and the use of energy.

The emergence of climate change can impede the tourism sector from its potential to reach sustainable tourism. Climate change can impact all sustainable development pillars- economic, environment, and social pillars. Consequently, the impact from climate change will affect humans and nature, which are the heart of sustainable development. It

is challenging to balance the benefit of tourism in terms of economic aspects and environmental and social aspects to achieve sustainable tourism.

The issue of sustainable tourism and climate change is a challenge for the policy maker seeking to balance how to implement and develop policies, plans and strategies regarding tourism and climate change. However, solving the issues raised by climate change must not end the development of tourism, especially because the effort to alleviate poverty is recognized as one of overriding important by the Millennium Development Goals. Many developing countries and small island developing states depend on international tourism for their tourism revenues and economies in general. In the meantime, the reduction of GHG emissions should be considered in the context of development and the reduction of poverty.

2. The Keys of Sustainable Tourism

Since the tourism industry relies on many distinct parties their economics are interdisciplinary, and planning will be the most important tool for developing sustainable tourism. The policy maker must understand the climate change issue, as well as the essential role of adaptation, mitigation and financial mechanisms to ensure the sustainable development of global tourism. To achieve sustainable tourism, the "quadruple bottom line" principle – incorporating climate, environmental, social and economic considerations – must apply at the beginning when setting up the policy and planning long-term sustainability. Therefore, the government should design climate and sustainable tourism policies and plans that are consistent with the imperatives of sustainable development, poverty reduction, adaptation and mitigation of climate change, and financial resource management.

To serve this purpose, the "Climate and Sustainable Tourism model" was introduced in chapter 2. It is a new analytical method for policy makers engaged in planning and establishing policies for climate and sustainable tourism. The climate and sustainable tourism model applies and expands the quadruple bottom line principle to connect adaptation, mitigation and financial resource and management together. Understanding the model can create awareness, and lead to better decision making. It can

also assist in addressing climate change problems and create seeds for balancing social, economic and environmental factors that lead to achieving sustainable development.

To do so governments will inevitably be “big players” and must establish the framework policies. Good policy should come from the cooperation from all related players. Setting up a committee to steer the direction of National Policy and a National Action Plan for Climate Change and Sustainable Tourism will be a good option. All stake-holders should be invited to serve on such a committee, for instance tour operators, travel agents, hotel owners, environmental association, non-governmental organizations, local and indigenous representatives, national and local authorities.

To make better-decisions on the climate change issues, it is necessary to collect the climate change information by creating the Climate and Sustainable Tourism Data Center (Data Center). It attempts to collect data such as climate change assessment and a National Hot Spot Map to serve tourism development. However, later on the Data Center can expand to collect data for the national climate change purpose. In the future, Data Centers in each country can exchange data among countries to create a global climate change data network center.

In order to achieve sustainable tourism, government needs the right tools to create better decision-making, such as by including a Strategic Environmental Impact Assessment and public participation.

In order to mitigate the effects of climate change on tourism, nations must develop and manage a plan for adaptation and mitigation. A climate change adaptation policy in the tourism sector is necessary to address impacts resulting from the climate change effect which is already unavoidable due to past emissions. This can be done by such measures as management of the destination area, compensating for risk by using insurance policies, capacity building, using Environmental Impact Assessment, planning risk management, promoting new tourism markets, enhancing cultural site stewardship, and enhancing biodiversity and natural site stewardship.

A climate change mitigation policy in the tourism sector would reduce GHG emission from the tourism sector. There are many essential tools to set up and use for further mitigation such as the National Carbon Calculator. The mitigation policy must be concerned with the energy policy – how to reduce energy use: how to improve energy efficiency; how to increase the use of renewable energy and alternative energy? The energy policies must focus on the energy policy in the tourism facilities, and tourist's transportation, tourist's activities. The role of tourists as individuals in mitigation GHG is by making their choices to reduce GHG – how they travel, staying and choose activities? Likewise, tourists can choose to offset CO2 to reduce their GHG footprint.

However, the cost of adaptation and mitigation is high. All the effective adaptation and mitigation policies in developing countries and Small Island states can be implemented by applying the climate change financial mechanism. Managing the revenue earning from tourism and funding from financial mechanism must be planned to enhance sustainable tourism. The revenue and funding must be allocated to prepare for adaptation and mitigation policies, as well as to maintain the destination area in good condition and attract the tourist sector.

Furthermore, to effectively address destination management for future climate variability and extreme events, the government can use the command and control principle by enacting law or regulations. For example, it can use building law to set up building standards to conduct tourism's facilities such as hotel and resort construction under the same standard, or land use law for zoning areas for tourism zoning.

3. Promoting a New Kind of Tourism

Research has found that the ecotourism sector can be a good solution to bridge the gap between sustainable tourism and the climate change issue. The ecotourism sector has a longstanding reputation for having a positive impact on sustainable development. In the meantime, ecotourism can be a good option for both the adaptation to and the mitigation of climate change by using less energy while operating ecotourism compared with operating mass tourism. These benefits come from the unique characteristics of

ecotourism; therefore, the policy makers must proceed with caution in establishing policies regarding the climate and sustainable ecotourism.

"The Development Cycle Model for Sustainable Ecotourism" (Sustainable Ecotourism Model) was proposed as a key to successful ecotourism development. The distinguishing feature of the model is that offers a tool for sustainable tourism by working as a dynamic. Understanding the cycle provides insight into how ecotourism can serve as a tool for sustainable development. Governments can begin by implementing parts of the cycle. Once the cycle is complete, governments can launch multiple cycles simultaneously. Once one cycle runs successfully, ecotourism will be on the path to achieving sustainable development.

Furthermore, ecotourism's policies and practice show that ecotourism destinations are usually located in natural areas or remote locations, and are connected with local communities. Therefore, the impact of ecotourism development can be not only to the environment, but also to the sociocultural aspect of the local and indigenous communities. If we consider the impact of comprehensive ecotourism development all around the ecotourism destination, cumulative impacts can occur to the destination area, which result from the individual impacts of small and minor ecotourism project developments. Therefore, research must be provided for the "Environment Impact Assessment Model for Community-Based Ecotourism Development" in order to implement the environmental impact assessment principle and the public participation principle. Community-based ecotourism will be one aspect of tourism that can contribute to sustainable tourism. It could be a win-win situation of ecotourism development in terms of economic and sociocultural issues. It would be both effective and wise to let the community own their ecotourism development under the EIA monitor from the national and local authorities.

4. Market-Based Solution

The relationship between the tourism sector and the climate change issue is brought out in this dissertation to address methods to mitigate GHG emissions from the tourism sector. Among other measures, a market-based solution is an efficient tool to

mitigate climate change, in addition to a cap-and-trade program, which is prevalent among many countries. In addition to leading to a reduction in GHG, a well-implemented market-based solution will ensure energy efficiency and the development of technology.

B. BEYOND THIS DISSERTATION: THE WAY FORWARD

Analysis of tourism provides a clear and practical way to approach the climate change issue to understand the concept of sustainable development and sustainable tourism, and to address the climate change issues of adaptation, mitigation, use of new technology and the providing of financial mechanisms. The conclusion from the dissertation is not the end of the story. Instead, it is the starting point for addressing the new challenges, such as how to apply climate change policy and planning to tourism and all other economic developments issue. This dissertation seeks to offer practice insights about what we all should do for effective combating of climate change.

1. Apply the Climate Change Issue to the Other Sectors

Clearly, an understanding of the relationship between the tourism sector and the climate change issue can yield insights that may prove useful to other sectors such as agriculture, transportation and insurance. Policy makers must add the climate change issue when they are planning the new policies or amending old policies. Understanding the principle of adaptation, mitigation use of innovative technologies and financial mechanism will be a key to their success.

2. Investment in "Green Tourism" for Stimulating the Economy

The tourism sector can bring economic development and job opportunities, and consequently, poverty alleviation. However, the success of tourism relies on tourists traveling to destinations. The recent increase in the global tourism industry may slow for several reasons. The recession is a factor that is hard to predict but that will likely have a slowing effect. Furthermore, tourism is a sensitive sector that depends on many factors such as the rising of oil price, the war, and terrorism. These also influence to the tourist's decision-making. The reducing number of the tourists impact the tourism sector, and also sectors such as agriculture, construction, and transportation. However, from the past

experience we see that tourism business cycle shows that once the recession ends, the tourism business will come back and become an economic pillar again. So, the stakeholder must to ensure that tourism business is ready and in the meantime they prevent tourism businesses from closing down.

The tourist is the key player who drives to run the tourism business, by generating the income to the tourism sector. As illustrated in the Sustainable Ecotourism Model in Chapter III, the revenue earnings from tourists are very important to achieving sustainable tourism. Actually, government can assist the ecotourism development by investing the initial budget for the tour destination, such as, providing infrastructure, ecotourism project development, and human resource development. However, once the tourists come and visit the tour destination, the revenue from tourist can be reinvested destination. The local community will get income from each tourist. In the meantime, the government must allocate some of the revenues earned, from taxes or fees, to support all parts of the Sustainable Ecotourism Model. For example, such investment would include payments to construct and maintain infrastructures, to develop the tour destination such as natural conservation to assure environment protection, and to local community for capacity building. Once the Sustainable Ecotourism Model runs by itself without the financial aid from outside, it could be prove that the tour destination is achieving sustainable ecotourism.

So, the key question is how to make the tourist come to the destination and how to manage the Sustainable Ecotourism Model by using revenue earning from tourist visited. Therefore, marketing strategies must show the way to add more tourists to the tour destination. However, the Sustainable Ecotourism model shows how to prepare the destination area ready for the tourism development. Both, function must be mutually development for sustainable ecotourism.

In light of the adaptation and mitigation strategies, as suggested in the chapter two of this dissertation, in the economic recession some tourism's adaptation strategies can be begun, such as building dam to protect from the adverse impact from sea rising in tour destinations, or to regenerate the forest for tourism to make the tour destination ready

after the economy restores. These kinds of tourism adaptation projects overlap with the public interest, so both public and tourism sector will both enjoy the benefit of the projects. Furthermore, these kind adaptation projects can apply funding from the climate change financial mechanism such as GEF funding. This approach also creates jobs and builds employment in all aspects of the tourism sector.

3. Need for More Cooperation Among Regional and National Entities

The climate change issue is global. GHG emissions in one place will affect other parts of the world. Therefore, international and regional cooperation is recommended. The European Union (EU) is a good example of its success. Recently, it was ambitious to established legislation on climate change - climate change action and a renewable energy package to meet its target for 2020. In contrast, the Association of Southeast Asian Nations (ASEAN) announced the Singapore Declaration on Climate Change, Energy and the Environment in November 2007 to cooperate among the ASEAN members. However, ASEAN still has a long way to go to catch up to the EU on the climate change issue. Focusing on the ASEAN region, many opportunities are open for ASEAN member to cooperate to reduce GHG. For example, in the tourism sector, ASEAN can promote green travel in ASEAN as "one tourism destination." By setting up a tourist hub and connecting countries by Low Emission Vehicles such as trains and ships, they create fewer GHG emissions than airplane flights.

4. Cross-Sector Cooperation

Cooperation is not only at the national or regional level. All economic sectors are inter-related, and by learning how sustainable tourism can help to combat the climate change, we learn lessons that are useful when applied to other sectors. The knowledge of climate change should expand all careers. It should not be only for scientists, policy makers and related stakeholders. For example, the new design of a building can adapt to climate change. Architects and engineers must understand the problem of climate change and apply this understand in their work.

The key to successful cross-sector cooperation is education about climate change issues. For example, adding classes about environmental law and principles in engineering school and architectural school may inspire engineers and architects to consider environmental protection and sustainable development in their design and work.

5. The Role of the Individual

Because of the persuasive nature of the climate change issue, the role of the individual can affect the direction of climate change; for example, just by the individual changing his or her behavior on buying, using, and making a choice. These decisions will influence the way business is conducted and let market mechanisms work their wonders. For example, if the individual consumer demands only a hybrid car, the car manufacturer must follow the consumer's demands in orders to compete successfully with other car manufacturers. However, for an efficient result, the government may provide support by injecting the incentive plan for all stakeholders such as for the consumer and the manufacturer to move in the right direction by changing the tax structure to support the new path. In addition, environmental ethics can guide new policies and programs that build sustainable tourism and all adaptations to climate change.[357]

C. SUGGESTION FOR THAILAND

1. Thailand and Climate Change

At Thailand's national level, the emergence of economic, international trade and climate change directly and indirectly impact many sectors. Especially, regarding climate change, the economics of Thailand rely on climate-influenced businesses such as agriculture and tourism. The adverse impact of climate change can obstruct sustainable development in Thailand. Thailand must prepare to adapt and mitigate the climate change issue. Like many developing countries, Thailand will get the chance to get financial support from the financial mechanisms of international treaties.

[357] *See, e.g.*, The Earth Charter at www.earthcharter.org, endorsed by UNESCO and IUCN.

Thailand can benefit by using the relationship between tourism and climate change as a lobbying tool to get financial support from financial mechanisms. There are many financial mechanism options open for tourism development and climate change issues such as GEF and the World Bank. Besides, the Thai people can share the benefits from the development such as investment in roads, which bring tourists to the destination area. Not only Thailand, but other developing countries and small island states can benefit from the establishment of such financial mechanisms as in Thailand.

2. Thailand's Emission Trading Market

In the first half of 2008, the parties to the UNFCCC began their negotiations to establish a post-2012 GHG regime. One of the key principles for negotiations in the post-Kyoto Protocol are the principles of common but differentiated responsibilities, respective capabilities, and the social and economic conditions.[358] The national GHG emission rates[359] show that in 2000, three developing countries, China, India and Brazil, ranked among in the top ten GHG emitting countries. China, India and Brazil, which place second, fifth and eighth in the world, respectively, as well as the industrialized countries such as the US, the number one emitter, did not commit to the Kyoto Protocol. These three developing nations are part of the current negotiations, with Brazil being the chair. This leads to the questions of whether the principle of "common but differentiated responsibilities" will still apply in the future to distinguish between Annex I countries and non-Annex I countries in the Kyoto Protocol regarding the issue of climate change, and of whether the new negotiations will divide countries in the alternative, or whether the parties will take equal responsibility. Some new formula is probable, and may emerge from the negotiations under the "Bali Action Plan" for a Post-Kyoto new agreement.

The options for addressing climate change issues after 2012 are still being negotiated between countries. In 2009, we not yet know what they will look like but a new set of emission trading rules is likely for after 2012, at least for the top 25 GHG

[358] United Nations, *Bali Action Plan (Decision -/CP.13),* http://unfccc.int/meetings/cop_13/items/4049.php (last visited Jan. 20, 2009) (stating the "Common but Differentiated Responsible" principle).
[359] *See* BAUMERT ET AL., *supra* note 356.

emitting countries, which would include ASEAN. The emission trading schemes can be a good solution for regional cooperation to develop cost-effective carbon mitigation.

Many of the physical effects of climate change are not yet evident to scientists, and are only now appearing in nature. However, if all the predictions of the IPCC report are likely, countries should not risk high stakes by waiting to ensure that climate change is certain before starting to act. The best solution right now should be preparing and enacting mitigation and adaptation strategies. Therefore, GHG issues will create major policy, economic, legislative, and legal issues. These issues will implicate environmental, energy, legal and corporate sectors.

Thailand is a party to the United Nations Framework Convention on Climate Change (UNFCCC) and its protocol - the Kyoto Protocol, and participates in the "Bali Action Plan" which establishes a framework and action plan to address the issue of climate change. However, even though Thailand may not yet be required to meet Kyoto Protocol emission limits under the common but differentiated responsibilities principle, nonetheless, the post-Kyoto protocol negotiation round has started to create and implement a plan to address climate change after the year 2012. In order to prepare to implement the results of the post-Kyoto protocol negotiations, Thailand should prepare to ensure the reduction of GHG.

Therefore, in order to prepare to implement the results of the post-Kyoto protocol negotiations, Thailand should learn from and compare emission trading experiences from many emission trading systems. Such a study will permit design of the Thai's emission trading system. In the meantime, Thailand's national plan and policy must do more to focus on climate change issues and should start with developing a Thai emission trading regime. Also, since emission trading is a new occurrence in Thailand, it will require cooperation across many professions such as scientists, environmentalists, lawyers, policy makers, financial analysts, and business people. This will build awareness of climate change among the Thai people. It is not too soon to start.

Therefore, Thailand should learn from and compare emission trading experiences from different emission trading systems and other countries. Engaging in such a study

will permit the design of Thailand's emission trading system. Thailand's emission trading system should support adaptation and mitigation measures that build sustainable tourism, for the reasons set forth in this dissertation. Furthermore, the cap-and-trade program can assist in addressing the issue of climate change at the regional level, such as through ASEAN.

Emission trading will create major policy, economic, environmental, and legislative challenges. Therefore, Thailand must develop a formal legal structure for emissions trading that combines legal, economic, scientific, commercial, and environmental principles. It is clear that Thailand and its legal system are facing an exciting challenge and a new era.

3. The Role of Thai Authorities

Climate change is an overarching issue. Climate change requires a national agenda, which demands cooperation from all the sectors. Climate change is interrelated with many topics, because many issues can directly or indirectly impact from climate change. The government must be the central and leader, because the government holds many tools, which are essential to coordinate and develop and enforce new rules.

Thailand has been moving. In June 2007, the Thai Prime Minister enacted regulations on Actions toward Climate Change. The main purpose of the regulations is to set up climate change policies, strategies, plans, and measures, as well as to cooperate with the private sector and with the international actors. These government actions will address climate change problems and lead to establishing the National Climate Change committee. These regulations anticipate that the Thai government cannot govern in the accustomed ways, as usual. The following is a recommendation for the Thai authorities to prepare and combat climate change:

(i) Prepare and promote climate change issues as among the top priorities to be addressed at all level of in any Thai authorities – national and local.

(ii) Explain and define manageable climate problems confronting Thailand.

(iii) Be anticipatory and proactive, and define best way is chase the problem by planning short, medium and long term strategies to adapt and mitigate climate change.

(iv) Preparing a Climate Change assessment in each Thai government sector – what is the impact of climate change to impact to the work under each Thai's authority and how climate change impacts each Thai's authority mission?

(v) Preparing by studying the new laws and regulations related to climate change, such as those in the EU. Prepare further for discussion the climate change international forum, such as by the UNFCCC.

The Role of the Ministry of Commerce

In considering the purpose actions for Thai authorities described above, the Ministry of Commerce (MOC) should serve as a role model, to elaborate and apply the recommendations above. The vision of the MOC is to "Be a lead agency in driving domestic and international trade and economy towards continuous and sustainable growth for better standards of living of the Thai people at all levels"[360] In the meantime, the mission of the MOC is "1) Generating income for the country; 2) Strengthening the domestic economy and trade systems; and 3) Strengthening consumers' power and protecting consumers' interests."[361]

The Thai economy relies on heavily upon export-dependent commerce, especially agriculture products for trade in goods, and tourism for trade in services. Thai tourism produces significant international income for the Thai economy, as well as domestic employment. However, both these prime economic sectors in Thailand are climatic-sensitive, so the influence of climate change will definitely have an impact on the Thai economy.

The impact of climate change is also be reflected in international trade, for example the trend of promote a carbon label, which shows the products that are produced with low emissions of greenhouse gases use of labels or certification programs for goods

[360] *See* Thailand, Ministry of Commerce, *About MOC*, http://www.moc.go.th/ (last visited Jan.20, 2009).
[361] *See id.*

and services is growing, and especially tourism is of concern because its relationship with the transportation. One of the trade and climate change issues will be the carbon footprint for the tourism sector, which comes from transportation. These examples show that trade in services can push adaptation and mitigation measure to achieve reduces GHG. However, such carbon policies for labels or certifications could be considered also as technical barriers to trade in the future.

Climate change and trade will pose important challenges for the World Trade Organization (WTO), even though, climate change is not yet a part of the WTO rules. Sooner or later, the climate change issues will become a part of the trade negotiations at all levels. Especially, new financial mechanisms taxes such as taxes and tariffs, market-based GHG mechanism, will become related to trade in services. These measures may become subject to WTO rules and procedures, as well as to the new UNFCCC rules to be designed through the Bali Action Plan. It is absolutely clear that climate change has a direct and indirect impact on the work of MOC. Therefore, it will be advantageous and essential for the MOC to consider the problem of climate change as the ministry's number one priority. The MOC needs to apply the climate change principle for both trade in goods and trade in services.

If not carefully designed to be consistent with rules governing international trade, the climate change adaptation measures could be new trade barriers. So the MOC must understand the climate change issue and take it into account in all its policies for trade in goods and services. Capacity building, training, and education for trade and climate change issue is very important for MOC officer, not only for the routine work but also for the international negotiation under WTO and UNFCCC forum.

Furthermore, even when Thailand set up the Thai National Climate Change Committee, so far unfortunately MOC is not yet a member of committee. Since, trade in goods and trade in services will be affected by climate change, the MOC needs to become a member of the committee. Once this is done, the national climate change policy and plan will be more completed.

D. THAILAND AS AN INTERNATIONAL MODEL

Thai tourism is clearly world famous. In order to adjust to the challenges of climate change, and restore economic growth from the recession, Thai tourism needs to become sustainable and to change. To do so, it needs to use the planning and legal methods discussed here. If it does so, it can become a model for international best practices.

APPENDIX: LIST OF FIGURES

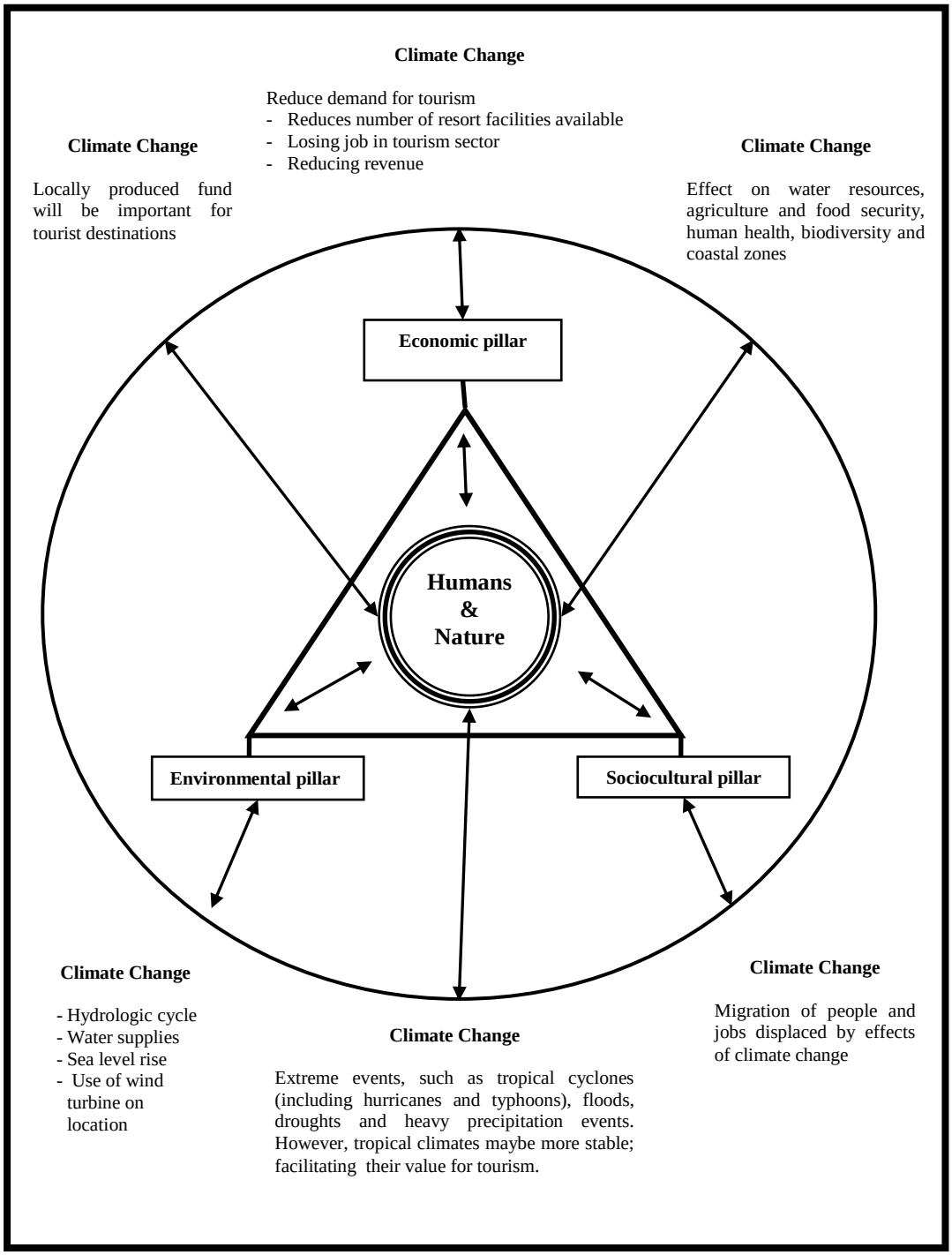

Figure 2.1: *The Sustainable Tourism Model - The relationship between sustainable tourism and climate change (impacts described in IPPC reports)*

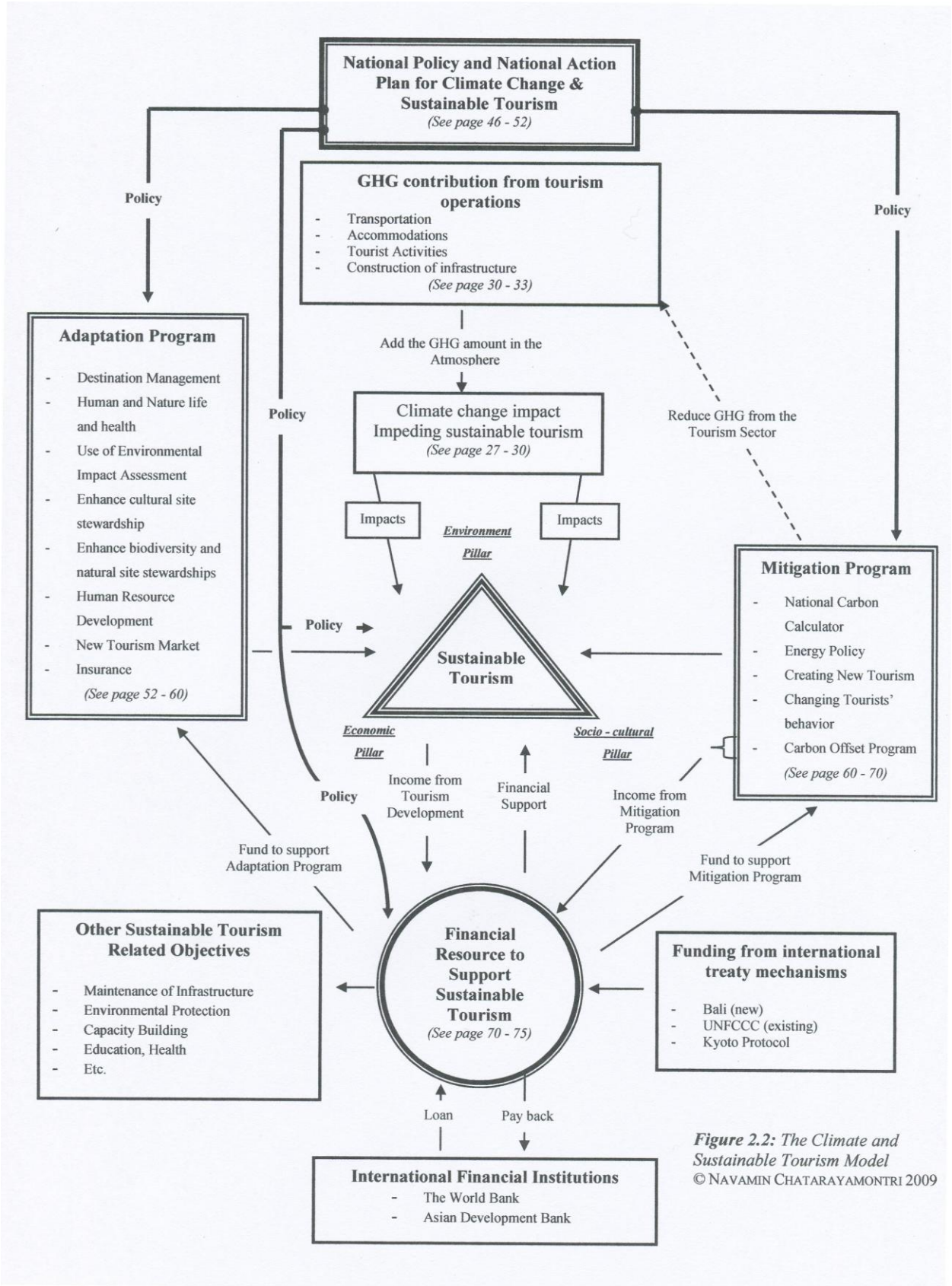

Figure 2.2: *The Climate and Sustainable Tourism Model*
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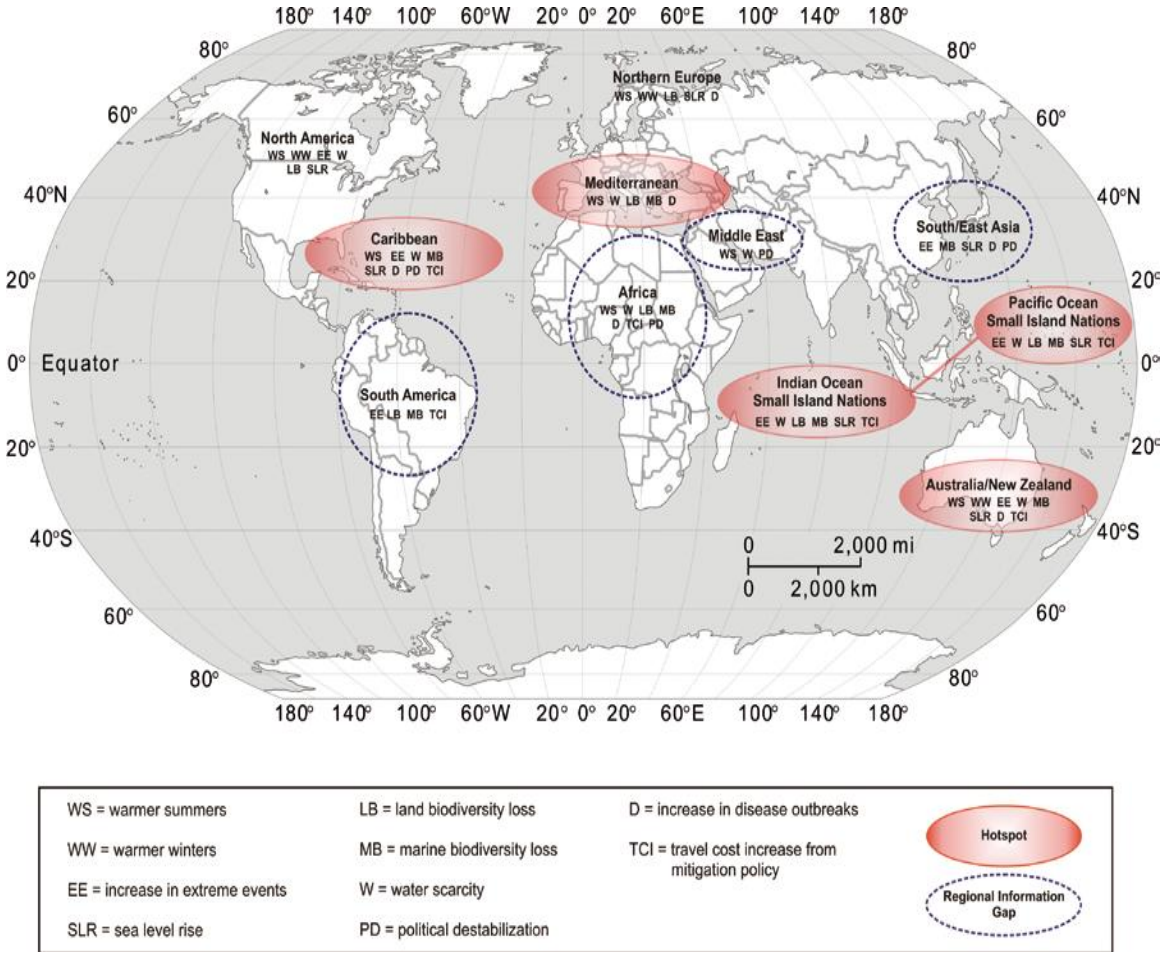


Figure 2.3 Geographic Distribution of the Impact of Major Climate Changes Affecting Tourism Distribution.[†]

[†] WORLD TOURISM ORGANIZATION AND UNITED NATIONS ENVIRONMENT PROGRAMME, CLIMATE CHANGE AND TOURISM – RESPONDING TO GLOBAL CHALLENGES 31 (2008).

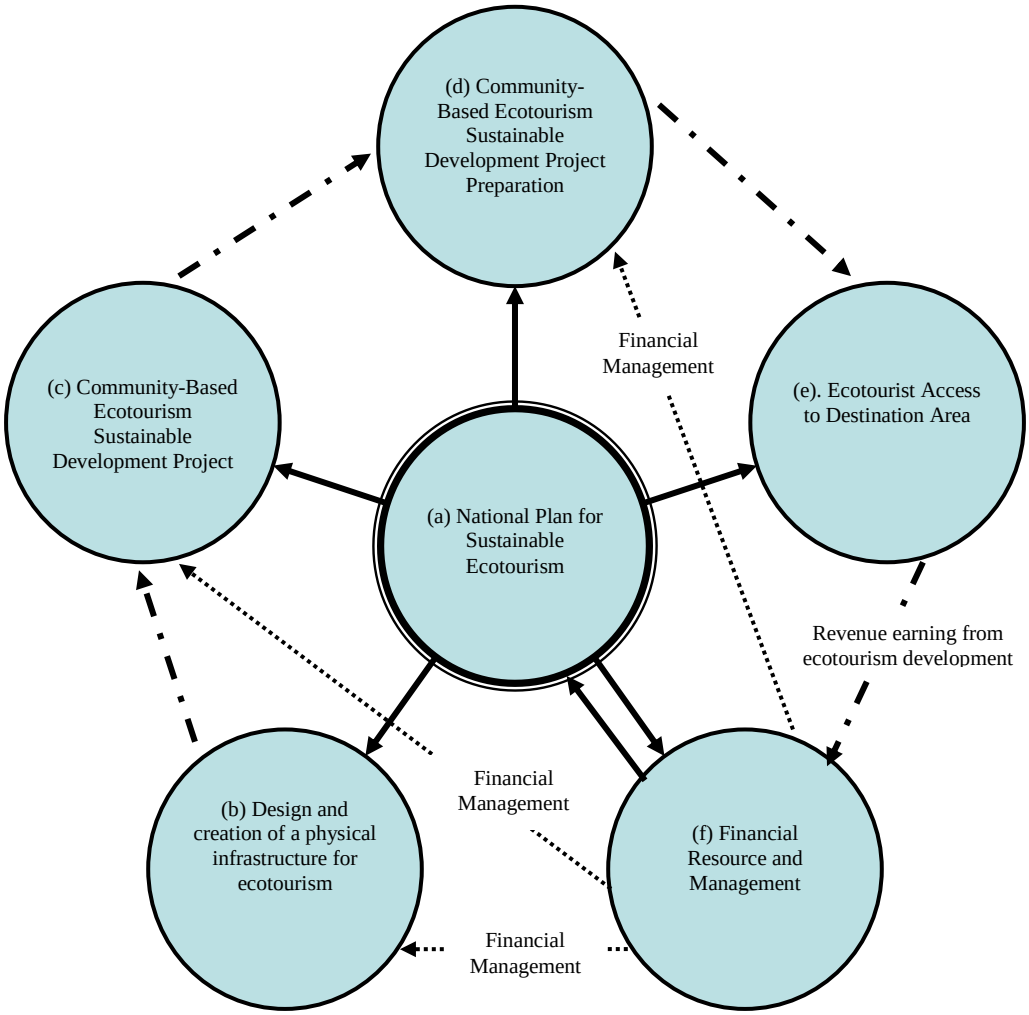


Figure 3.1: The Development Cycle Model for Sustainable Ecotourism

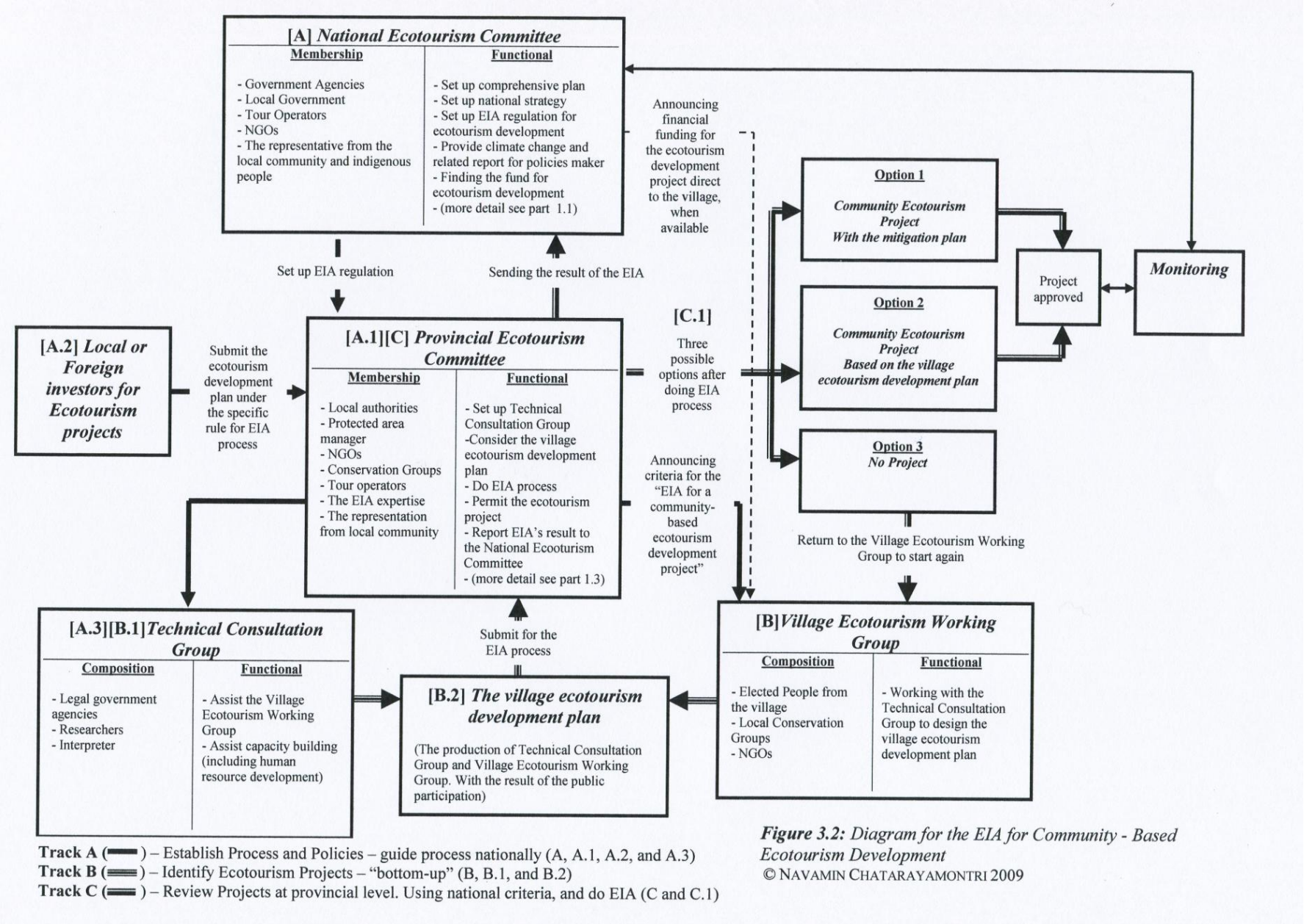
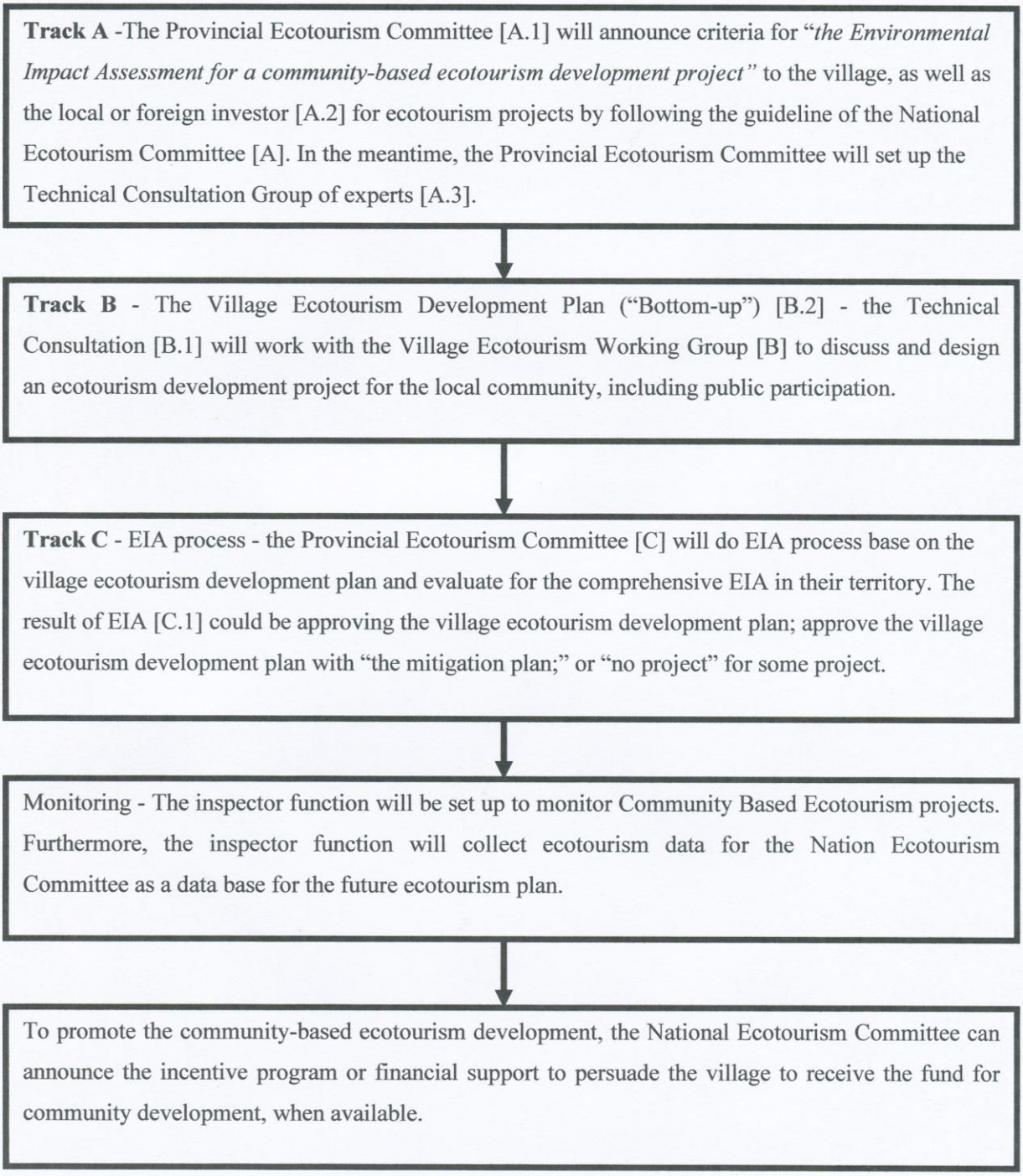


Figure 3.2: *Diagram for the EIA for Community - Based Ecotourism Development*

Figure 3.3: *The Summary Chart for the EIA for Community - Based Ecotourism Development*



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