Investigating the Feasibility of Establishing a Biosphere Reserve on the Northeast Coast of St. Lucia

by

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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners. I understand that my thesis may be made electronically available to the public.

ABSTRACT

The feasibility of establishing the northeast coast of St. Lucia as a UNESCO-designated Biosphere Reserve was investigated. A Biosphere Reserve is a concept of sustainability that attempts to harmonize development, the welfare of the people, and the maintenance of a healthy ecological system while learning how to manage socio-ecological systems on the ground (UNESCO 1996a). The west coast of the island is heavily concentrated with commercial, tourism, and residential developments while the northeast coast of the island consists largely of dry forest and small, rural communities. The northeast is thus seen as the next frontier for development. However, in contrast to the west coast, conservation and habitat development in the dry forest on the east coast of the island remains possible because large scale tourism development is still in the planning stages there. This research investigates the feasibility of designating the northeast coast of St. Lucia as a Biosphere Reserve as one possible approach to sustainable development especially with regard to biodiversity conservation, tourism, and rural livelihoods. The dry forest is understudied in St. Lucia as are the concepts of sustainable development. The investigation of this study can highlight the sustainability deficiencies that could potentially hinder a biosphere reserve designation. Thus, this research focus and its findings have the potential to address a matter of key concern in St. Lucia's sustainability planning efforts.

Two hundred and fifty individuals participated in interviews and surveys which constituted the potential stakeholder groups of a Biosphere Reserve. They included community members, civil society, government officials, tour operators, tourists, developers, and private land owners. Qualitative analysis within the context of a sustainability framework revealed various themes pertinent to the designation of a Biosphere Reserve. The use of the statistical program NVIVO and Microsoft Excel were employed for such analysis.

The results were analyzed using a combined sustainability framework of the Gibson sustainability assessment criteria (Gibson et al 2005) and the ecosystem-based approach (UNESCO 2000) which is promoted by the Conference of Parties of the Convention on Biological Diversity (2000). The conceptual framework is the product of conceptualisation prior to the analysis of results as well as having emerged from the analysis as a piece of grounded theory. The sustainability criteria embraces the principles of socio-ecological integrity, precaution and adaption, livelihood sufficiency and opportunity, socio-ecological civility and democratic governance, inter- and intra-generational equity that must be integrated to achieve overall positive benefits towards sustainability (Gibson et al 2005). The ecosystem approach and the sustainability criteria overlap significantly however there are areas where they complement each other. The

ecosystem approach espouses adaptive management principles to foster learning within unpredictable socio-ecological systems and promotes decisions that employ precaution but that also lead to better understanding of socio-ecological systems (UNESCO 2005). The ecosystem approach also espouses using economic incentives to protect biodiversity in opposition to market distortions that often undervalue ecosystem services.

Major findings of the analysis included the weakness of the development process on the island; its lack of rigorous policies, the absence of a national land use plan and low public participation; all hindrances to sustainable development and to proper environmental management. Attempting to compete internationally while trying to maintain the island's natural, cultural, and human resources has become an exceedingly difficult challenge and the island has often resorted to the high-density mass tourism route for economic development while the ideal aspiration has been for low-density, environmentally friendly and socio-culturally acceptable tourism. Furthermore, mass tourism impacts negatively on the environment and the majority of the economic benefits are repatriated to the countries of origin. Hence, there seems to be a disconnect between the relevant authorities who have the power to implement acts, laws and plans with the technocrats who prepare those plans and who are involved in research as well as with civil society and the general public who have concerns about the environmental toll and the overall direction of the tourism sector.

People need development within their communities and see the dry forest as suitable for large scale development, more than likely of the tourism form. The ecosystems on the northeast coast which include the dry forest, mangroves, beaches, and the marine environment provide considerable ecosystem services to the people and to the island, such as natural hazard regulation, the provision of food, fuel, erosion control, water purification and waste treatment as well as the cultural services of sense of place, inspiration, and recreation.

The northeast coast is therefore not yet ready to be designated a Biosphere Reserve as it must overcome certain challenges that impede sustainability. The major arguments point to the need for stronger policies for conservation, land use development, and equitable economic benefits for all from the tourism industry. The resolution of many of these issues lies in the structural changes of governance, constitutional reform, empowering the local citizenry through the building of human and social capital, and the creation of a democracy that is more participatory. Civil society and local governance are very weak within the communities and must therefore be built up in order for people to develop a sense of ownership and control over the development of their surroundings. People must be sensitized and educated about the dry forest as an important

ecosystem that needs preservation. These are grand feats that will require a lot of time, vast amounts of effort, and a common vision before the designation of a Biosphere Reserve can be contemplated.

Based on the research outcomes a preparatory phase of no less than 10 years to make the northeast coast an area suitable for a Biosphere Reserve is recommended. During this period of time significant gains should be made towards sustainable community economic and social development, environmental education concerning northeast coast ecosystems of the dry forest mangroves, and coastal systems, communities should be educated on Biosphere Reserves, small-scale sustainable tourism should be undertaken as well as other economic development initiatives in other sectors such as agriculture.

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CHAPTER 1-INTRODUCTION

1.1 SUSTAINABLE DEVELOPMENT

Sustainable development, a ubiquitous phrase of the 21st century has pervaded the academic, political, sociological, economic, ecological, and cultural spheres. Despite the controversy and confusion surrounding the concept, it has assumed its role as the common goal for the global community, nations, communities and individuals (Rotmans 2006). Achieving economic viability without compromising social, cultural, and ecological integrity is a struggle for all, as it is an extremely attractive and captivating concept that holds great promise for the future, particularly in light of current environmental concerns: global warming, climate variability, desertification, food security concerns, the loss of species and the loss of habitats and ecosystems. Anthropogenic activities, as the main contributor to these issues have thus become the target (Stefan et al 2005). The reduction of fossil fuel use, the organic or local food movement, renewable energy technologies, retrofitting of buildings to curb energy consumption, and greater community involvement in policy making, entrepreneurship, and community building are all initiatives that have attempted to address the matter by progressing in the direction towards sustainable development. The principles underpinning the concept of sustainable development remain the same: economic viability, ecological integrity, respect for and the incorporation of social, political, and cultural factors (Robinson 2003). Sustainable development may also be defined by complex systems theorists is the adaptive capacity of a system to absorb disturbances while maintaining its structure and function and to further promote the emergence of opportunities leading to long term viability (Hollings, 2004).

1.2 SMALL ISLAND DEVELOPMENT

Development is another goal of all nations on the planet. Some nations are significantly more advanced than others, which has lesser developed countries focusing intently on attaining that same level of development as seen in their more developed counterparts. The desire for proper infrastructure, housing, education, and human resource development is unvarying among all nations, yet the traditional paths chosen to reach those destinations have concentrated immensely on economic dimensions of development (Robinson 2003). Evolving sustainable development paradigms advocate for a path towards economic development that is tempered by

environmental awareness and respect for the socio-cultural context in which societies are embedded (Robinson 2003).

Small Island Developing States (SIDS) are small islands located in the regions of Latin America and the Caribbean, Africa, and Asia and the Pacific to which North American and European tourists flock for vacations during the winter time. Typically they are low-lying, tropical countries that possess very similar inherent characteristics making them economically and ecologically vulnerable (United Nations 1994).

Many SIDS are also considered as Least Developing Countries. They are small in size and population, insular, and susceptible to natural disasters. Their small physical size confers upon negate them limited resource endowments and consequently their high import content makes them heavily reliant on international trade, with their economic vulnerability being directly linked to their lack of influence on the terms of trade (United Nations 1994).

Saint Lucia is a SIDS in the West Indies that is struggling to attain a desired level of development within the constraints of its limited natural and human resources. The prime economic driver of the island, tourism, has bestowed upon the island many benefits. Contributions to the GDP and the economic growth of the island as well as improved infrastructure have resulted from the tourism industry yet there are serious concerns surrounding the sustainability of the industry. Does the country possess the necessary services and natural resources to support the local population as well as the tourism industry? Are environmental losses and degradation justified by the economic contributions of the industry? And are local people adequately involved and do they benefit sufficiently from the tourism industry?

1.3 BIOSPHERE RESERVES

Biosphere Reserves (BR) are UNESCO designated sites that are meant to integrate conservation of natural resources with sustainable development that is socio-culturally positive (UNESCO 1996b). The theory behind a Biosphere Reserve is such that the mutually reinforcing and interdependent pillars of sustainability can be embodied in a prescribed region. This region subscribes to a zoning model based on functional uses. There are three zones; the core, the buffer, and the transition zones. The core zone is strictly for conservation while the buffer zone is for slightly higher impact activities. The transition zone includes a range of activities from community settlements to business enterprises and agriculture. A Biosphere Reserve is internationally

recognized as a means to promote sustainable development while also acting as a demonstration site for how the various elements of sustainability can be integrated and reconciled (UNESCO 1996a). A Biosphere Reserve may potentially serve as way to help countries struggling with development and conservation issues to achieve sustainable development.

1.4 RATIONALE

Biosphere Reserves acknowledge the importance of biodiversity and environmental integrity via conservation, and they encourage education, research, and training through a logistic component. Biosphere Reserves have been used elsewhere as tools to protect the forests (UNESCO website, http://www.unesco.org/mab/mabProg.shtml). Biosphere Reserves focus on community-oriented and culturally appropriate means of creating opportunities for sustainable livelihoods—another key element in appropriate socio-ecological development.

Identified potential benefits of a Biosphere Reserve are many, and include: a more resilient community through enhanced social programs, protection of biodiversity, skills training, capacity building of local people and more positive interactions between the hotel industry and local people (UNESCO 1996a). For example, a valued component of a Biosphere Reserve is environmental integrity and protection. In Saint Lucia this component could potentially promote the conservation of the dry forest, and thus directly benefit local communities and the island at large as tropical forests are extremely important as buffers against climatic elements such as hurricanes that frequently affect the West Indies (Lisa Hansen pers. comm. 2008). Biosphere Reserve may also help to ensure that people whose livelihoods depend on the environment are protected (Stoll-Kleeman 2007) and also, just as important are intended to stimulate a plethora of opportunities for local people that can emerge from initiatives geared towards sustainable development (Stoll-Kleeman 2007). Tourism plays a major role in economic livelihoods in SIDS like St. Lucia. A Biosphere Reserve may be able to provide ways to introduce sustainability in the already existing tourism industry but it may also be able to create new tourism as well as local enterprise opportunities. In terms of the logistic function, once a Biosphere Reserve has received its designation, it becomes part of the world network of Biosphere Reserves. On the basis of this and other potential benefits emerging from an examination of the Biosphere Reserve literature, the potential application of the Biosphere Reserve concept to the dry forest area of Saint Lucia emerged as a research focus for this dissertation.

The dry forest is located on the northeast coast of St. Lucia and is seen as the next frontier for development (see Map 2). It is home to the rare green iguana, and to a host of other bird and reptile species, some of which were endemic to the Lesser Antilles and others endemic to only St. Lucia and many of them being threatened. The beach of the northeast coast is the nesting sites of two species, the green iguana (*Iguana iguana*) and the leather back turtle (*Dermochelys coriacea*). Hills, valleys, mountains, beaches, rivers, waterfalls, banana plantations, farms, estates from the colonial era, and communities are all encompassed by the dry forest, and the dry forest, through its ecosystem functions and its sheer size protects and provides for people and species both within and outside of its borders (Matthew Morton pers. comm. 2009).

Despite the beauty and magnificence of the dry forest, it nonetheless remains vulnerable to exploitation and reckless endangerment through human action. Development entailing deforestation for the purposes of tourism in the form of hotels, villas, and golf courses is the main threat. With many proposed, large scale developments (see Fig. 2 Proposed Developments on the northeast coast) concern for the future wellbeing and survivability of the dry forest is clearly justified.

The west coast of the island has already been extensively developed for the tourism industry. The mass tourism model features the development of activities to attract large numbers of people (Aronsson, 2007). This results in large hotel complexes being built and an increase in the need for public services such as solid waste, water, power, roads, and medical services. What must be realized and understood is that St. Lucia is small (approx. 616 km^2) and has limited natural resources. People depend on the government to provide employment. There is therefore a dilemma, not unique to St. Lucia, which describes the need to grow economically while somehow preserving natural resources. Sustainable development is therefore of utmost importance in the future development of the island (Aronsson, 2007). Despite the economic gains made through the mass tourism model mainly through foreign exchange, one argument of this research is that the mass tourism model in its current state does not follow the requirements of sustainability. This research argues that for St. Lucia to progress in a positive fashion, sustainable development must be understood and implicated in all developmental activities affecting the people, natural resources, and institutions.

Sustainable development within a developing country is challenging as the country strives towards development, yet developed countries inadvertently display a model of development that is not sustainable (Briguglio et al. 1996). The consumerist society of the Western, developed world

serves as the archetype which developing countries look toward to emulate. In terms of development in St. Lucia, the mass tourism model has been attractive to the government because it fits with prevailing development practice that emphasizes the pursuit of short term profit and providing jobs for the local people. Whether or not this type of development respects local culture, the integrity of nature, and the progression of local people in terms of education, social equity, and quality of life is doubtful, and this research is based on the premise that it is crucial to question the benefits and costs of such conventional forms of development (Aronsson, 2007).

1.5 WHY THE STUDY IS IMPORTANT

This research investigates the feasibility of designating the northeast coast of St. Lucia as a Biosphere Reserve as one possible approach to sustainable development especially with regard to biodiversity conservation, tourism, and rural livelihoods. The dry forest is understudied in St. Lucia as are the concepts of sustainable development. The investigation of this study can highlight the sustainability deficiencies that could potentially hinder a Biosphere Reserve designation. There are 13 politically independent Anglophone islands in the Caribbean (including both the Greater and Lesser Antilles) and there exist no Biosphere Reserves on these islands. These islands are previous British and French colonies that are now developing nations; third world countries that rely on tourism as their chief source of economic revenue (Heileman, 2007). Despite this, there is little identifiable indication that this form of development is sustainable especially with regards to the mass tourism model. A Biosphere Reserve can serve as an opportunity to explore and implement principles of sustainable development as they pertain to the dry forest and other important ecosystems. Lessons learnt can be shared with the wider Caribbean in an attempt to contribute to achieving regional sustainability. Biosphere Reserves can also provide an alternative paradigm of progress that harmonizes development with conservation and respects social and cultural values (UNESCO 1996a).

1.6 RESEARCH QUESTIONS

Would a Biosphere Reserve be a feasible concept of sustainable development on the northeast coast of St. Lucia? What are the major challenges that can hinder the establishment of a Biosphere Reserve? What are some existing attributes of the northeast coast that would make it feasible to establish a Biosphere Reserve?

How can tourism achieve economic sustainability on the northeast coast? How can tourism as the major economic development tool become more sustainable in terms of conservation, socio-cultural acceptance, equity, and sufficiency and opportunity for all?

1.7 ORGANIZATION OF THESIS

The thesis is organized to include an introduction, the case study context, a literature review, the methodology, results, discussion, conclusion, and recommendations. Chapter 2, the Case Study Context, describes St. Lucia with regard to its economy, the political ecology of the island, the way in which land is used and developed and the important ecosystems and communities on the northeast coast that were part of the study. Chapter 3, the literature review describes in significant detail the various factors that pertain to sustainable development within the context of small island development states (SIDS) and addresses the development models of SIDS, tourism, sustainable development, Biosphere Reserves, and environmental impact assessment. The chapter also describes the conceptual framework through which the results are analyzed. Chapter 4 describes the methodological approaches of ethnography, interviews and surveys as well as the limitations that the methods may have had for the research. Chapter 5 discusses the results compiled from the community and tourist surveys, one-on-one interviews, and participant and direct observation. Chapter 6, the discussion, describes the conceptual framework of the combined sustainability assessment criteria and the ecosystem-based approach. The results are then discussed within this conceptual framework which highlights many flaws hindering the sustainable development of the country. These are further discussed in chapter 7, where the conceptual framework analyses the potential and challenges sustainable development and a Biosphere Reserve and proposes ways in which to overcome these challenges in order to achieve gains towards sustainable development and potentially become more eligible for a Biosphere Reserve designation. The chapter concludes by addressing the research questions and outlining issues that need to be addressed in further research.

CHAPTER 2- CASE STUDY CONTEXT

This section of the literature review will focus on the case study of St. Lucia, a small island developing state with limited natural resources and the desire to grow economically (Ashe 2005).

2.1 SAINT LUCIA

At 616 km^2, Saint Lucia is a very small island located in the Eastern Caribbean. Of volcanic origin, Saint Lucia is very mountainous with very little flat land and limited land suitable for agriculture (Wilkinson 2003). Human settlements are situated along the coast and in the valleys and the west coast in much more populated than the east (Renard 2001). It is bordered on the east by the Atlantic Ocean and west by the Caribbean Sea. It is south of Martinique, northwest of Barbados, northeast of St. Vincent and the Grenadines. The island experiences a tropical climate that is largely influenced by sea winds and northeast trade winds (Government of Saint Lucia 2010). Saint Lucia experiences two seasons, the dry and rainy season. Rainfall varies from 1500 mm to 1750 mm annually on the north and south coasts and averages about 4000 mm in the rainforest which is located in the interior of the island (Government of Saint Lucia 2010).

A former colony, Saint Lucia was one of the many destinations within the Caribbean settled by European explorers eager to make Saint Lucia a trading post during the 17th century. They encountered fierce opposition from the native peoples of that region, the Caribs. The defeat of the Caribs rendered the island accessible to whoever could colonize it and was sought after by the British and French as a desirable site to further develop the slave-based sugar industry. Both sides fought fourteen times for possession of the island which culminated in the British acquiring the island in 1815 (U.S. Department of State 2010).

St. Lucia, a former British colony gained its independence in 1979 but had made gains towards self-governance since the 1920s when a 1924 constitution established the island's first form of representative government (U.S. Department of State 2010). There could now be a minority elected to the formerly all-nominated legislative council. Universal adult suffrage was realized in 1951 and elected members of the legislative council now made up the majority; Ministerial government was introduced in 1956. Full independence was preceded by a form of cooperation between the United Kingdom and St. Lucia, associated statehood, where the island gained full control of internal self-government while external affairs and defence fell under the

jurisdiction of the United Kingdom. Other Caribbean islands participating in associated statehood included small island states of the Eastern Caribbean: Dominica, Grenada, St. Vincent, Antigua, St. Kitts, Nevis, and Anguilla. Regional cooperation also characterized this period where attempts at uniting the islands resulted in the creation of two federations which both failed prior to the implementation of associated statehood. This period of associated statehood in St. Lucia began in 1969 and ended 10 years later with St. Lucia achieving its independence (U.S. Department of State 2010). Today regional integration and cooperation is still achieved through bodies such as the Caribbean Community and Common Market (CARICOM), the CARICOM single market and economy, the East Caribbean Common Market (ECCM), the Organization of Eastern Caribbean States (OECS), and the Regional Security System (RSS) (U.S. Department of State 2010).

St. Lucia subscribes to the Westminster style of parliamentary democracy. Power resides with the Prime Minister and the cabinet which presents parliamentary majority (U.S. Department of State 2010). The bicameral parliament constitutes a 17-member house of Assembly; all are elected by universal adult suffrage for 5 year terms. The senate, which consists of 11 members, is appointed by the Governor General and the judiciary system is independent of parliament. It consists of district courts and a high court, the Eastern Caribbean Court of Appeals, and the Judicial Committee of the Privy Council in London (U.S. Department of State 2010). The two dominant parties in St. Lucia are the St. Lucia Labour Party and the United Workers Party; both parties have been in power at various points in time since independence in 1979 and the island is currently being governed by the United Worker's Party (U.S. Department of State 2010).

2.2 ECONOMY OF ST. LUCIA

The 1960s marked an historic time for the economy of St. Lucia when sugar production was replaced by banana farming. Not only was banana production less labour intensive than sugar production, it allowed both small and large farmers, including women, to participate (Gender and Trade 2010). The 1960s to the early 1990s proved to be very financially profitable for the island as a result of banana production. Unfortunately, the early 1990s was marked by serious threats to the banana industry as a result of the increasing competition from larger Latin America countries and the erosion of preferential treatment from the European Union. Latin American plantations are much larger and more mechanized than Caribbean plantations thus enabling them to enjoy economies of scale that allow them to produce bananas at a cheaper rate.

Caribbean farmers, until the 1990s, had been very fortunate to be included in the Lomé Convention, a trade and aid agreement between the European Community and the African, Caribbean, and Pacific (ACP) countries that allowed products from those countries to enter the European community without duty. The European Development fund was established to disseminate financial aid for development as well as to compensate for market fluctuations impacting agricultural and mineral products from the ACP countries. The expiration of the Lome Convention in 2000 was followed by the Cotonou agreement which protected farmers of the ACP countries from the full force of globalization by guaranteeing set export prices and amounts until 2008 (Ahmed 2001). The erosion of these agreements has had devastating effects on the banana industry of many small islands. Agricultural products from small islands are not produced in high enough quantities that allow them to compete on the open market and thus many farmers have been forced out of this collapsing industry with limited alternatives for employment (Commonwealth 2010).

The banana industry, over the past two decades, has declined slowly yet precipitously leading to a substantial increase in poverty in St. Lucia which was estimated at 24% in 1995 (Renard 2001). The tourism sector on the other hand, which began in the 1950s, has become vital to the economy of the island (U.S. Department of State 2010). Modern tourism began with chartered tours and the construction of large hotels and much has not changed in terms of accommodations as about 60% of accommodation is provided by large all-inclusive hotels (Renard 2001). Smaller properties are however starting to make a greater presence on the tourism scene. Cruise ships are also another major facet of St. Lucia tourism with cruise ship arrivals increasing steadily over time and peaking at close to half a million arrivals in 2001 (St. Lucia Tourism Statistics 2004). The September 11th air attacks of 2001 on New York City in the United States affected overall visitor arrival due to the widespread fear of travel and those numbers declined in the years following (Jules 2005).

The single most lucrative foreign investment in the island is Hess Oil's petroleum storage and trans-shipment terminal, however foreign investment in tourism is abundant (U.S. Department of State 2010). Tourism has established itself as the most important sector within the St. Lucian economy, contributing to 48% of the GDP and providing over 12000 tourism-related jobs (U.S. Department of State 2010). The government of St. Lucia is focusing on economic development and where international relations are concerned, for greater cooperation in trade relations and

investment (U.S. Department of State 2010). Foreign investment is therefore heavily sought after and welcomed into the country.

2.3 POLITICAL ECOLOGY PERSPECTIVES ON TOURISM IN ST. LUCIA

The inter-disciplinary field of political ecology examines the political forces behind environmental management, access, and transformation (Robbin 2004). The important issues of equity and sustainability are addressed, yet ecology and environmental science can define the way in which these issues are evaluated through attempting to reconcile the human and non-human aspects of environmental change. Robbins (2004) asserts in the introduction of his book that the fate of the natural world is undoubtedly determined by political forces and human industry however, allowing for greater awareness, sensitivity, and comprehension of the natural forces of non-human elements is essential for better politics and ethics.

Bryant and Bailey (1997:1) speak of the emerging theory of Third World Political Ecology in the 1980s as a "reflection of the pressing need for an analytical approach integrating environmental and political understanding in a context of intensifying environmental problems in the Third World". Political ecology, in engaging environmental change, can thus be used to further comprehend tourism development in tropical island countries (Gosling 2003a). Gosling (2003b) reiterates the dilemma of small island developing states (SIDS) where small, ecologically fragile and vulnerable islands are often highly dependent on external forces for economic development. This economic development often comes in the form of tourism, and the related foreign direct investment and foreign exchange earnings. The challenge lies in achieving the intensely-sought after development while maintaining ecological integrity and satisfying the array of actors who have a stake in development and in the environmental integrity of their island. These development struggles, through the lens of political ecology, are analyzed as conflicts over access and entitlement to environmental resources that are directly linked to systems of economic and political control (Gosling 2003b).

In St. Lucia, as aforementioned, tourism is the chief engine of growth for the economy and is heavily encouraged and promoted by the St. Lucia government. Tourism is the most accessible industry for St. Lucia as it can easily capitalize on already existing assets; beaches, forests, beautiful scenery, clement weather conditions, rich history and culture (Jules 2005). There also exist many possibilities for linkages with traditional economies such as agriculture, fisheries and manufacturing (Jules 2005). The potential of tourism for uplifting the economy is enormous and

this has been recognized by the government for a long time; which is reflected in Tourism Planning legislation. The Hotel Aids Ordinance of 1959 which targeted hotels and guest accommodations allowed for a seven-year income tax holiday and duty free importation of materials and equipment for construction (Wilkinson 2003). The 1996 Tourism Incentives Act reiterates the same benefits and allows for income tax holiday for a hotel or tourism product for up to 15 years (Tourism Incentives Act 1996). The boom in tourism, despite it being concentrated geographically, has ramifications for the entire island in terms of stresses on the natural environment such as coast line degradation, and overwhelming the already limited infrastructure. Considerations for supplying potable water and providing adequate sewage facilities are exceedingly important as the island has always struggled with water shortages and the sewage treatment facilities are substandard and inadequate. Land use is also another issue that needs to be rectified where the lack of a land use plan coupled with the increasing amounts of tourism, residential, and commercial developments coming on stream will eventually lead to greater degradation of environmentally and historically sensitive lands and habitats as this phenomena is not new to the island (Keith Nichols pers. comm. 2009).

As the St. Lucian landscape becomes a more tourism-centric one, the need for proper tourism and land use planning is absolutely necessary and has been recognized by authorities for over 3 decades. The 1970s brought increased infrastructure development and high growth in urban and sub-urban regions of the island which spurred concern over proper management of urban areas and long term planning. The 1971 Land Development Act, which was implemented to increase planning control, was solely to interpose as a temporary legislative tool while a planning act was being developed. The Land Planning and Development Act though developed, was never approved and therefore could not be implemented. Eventually a Central Planning Unit was formed within the Ministry of Planning, yet the National Plan created by the unit was never formally adopted by the Government. While the National Plan recognized many negative impacts of the growing tourism industry such as socio-economic imbalances, seasonality, and vulnerability of the industry to the economies of countries from which tourists came, the Government became resolute in promoting and supporting the growth of tourism by making the most of the natural resources, climate, and scenic beauty of the island (Wilkinson 2003). Despite the heavy promotion of tourism, the government felt the need to define the type of tourism that the island would engage in. In 1977 the government spoke of protecting environmental attractions, creating linkages between tourism and other sectors, making sure that employment was stable, and promoting smaller hotels and guest houses as opposed to the larger, luxury, all-inclusive resorts (Wilkinson 2003).

Despite these ambitions to try to create a type of tourism that paid attention to socio-economic and environmental concerns, the trend in the 1980s went completely against these plans as little progress was made in the way of tourism policy and planning (Wilkinson 2003). Yet the St. Lucia Tourist Board, a statutory body, developed a Green Tourism marketing theme in 1990 that would promote a sustainable form of tourism and thereby attract environmentally conscious tourists. This form of tourism would be characterized by decreasing the leakages of a tourism industry characterized largely by foreign investment, by increasing linkages between tourism and other sectors, increasing social and economic benefits and preserving historical attractions.

The Ministry of Tourism sought to put forth a National Tourism Policy which would parallel many of the concepts of the "Green Tourism" marketing strategy, the national policy yet again failed to be formalized and implemented by the government. The policy also recognized the threat that the industry posed if allowed to develop in a haphazard fashion. The policy was therefore bound by constraints within which tourism would be encouraged to expand. The principles of the policy were compatible with sustainable tourism such that all members of the St. Lucia society should participate in and benefit from the industry in order to increase local ownership and management of the industry with time; that the right of the St. Lucian people to enjoy the scenic and other natural resources be maintained; and that the protection of the physical and social environment be of paramount importance amidst the planning and development of the tourism industry (Wilkinson 2003). It is also interesting to note that the policy had been created in response to the World Bank criticisms about the direction in which the tourism industry was moving. The World Bank concerns called attention to the need to increase local employment and to address potential negatives such as foreign exchange leakage, seasonality, training, and weak links between tourism and the agricultural sector (Wilkinson 2003). The policy was however was never formally approved and thus never adopted by the government.

The year 1992 was marked by a renewed commitment to the proper planning of the tourism industry as well as allowing it to take precedence as the main engine of economic growth for the country. The tourism portfolio was transferred from the Ministry of Trade, Industry, and Tourism to the Ministry of Tourism, Public Utilities, Civil Aviation, and National Mobilization where it would be the main focus (Wilkinson 2003). Today, there exists a Ministry governing solely the Tourism and Civil Aviation portfolios; showing the unrelenting increase in significance that the industry holds. In 1992, the Prime Minister at the time, asserting the importance of a tourism sector that would uphold environmental integrity, placed a moratorium on large-scale development

of hotels on the island until a full-scale economic impact study of the tourism had been completed. The study was never undertaken and the moratorium was quietly discarded. The year 1997 however brought with it a change of administration and renewed efforts at properly managing the tourism sector. There were attempts at a regional approach to developing a more sustainable tourism; headed by the Organization of Eastern Caribbean States (OECS). A Sustainable Tourism Strategy was developed that aimed at fulfilling sustainable development requirements: economically-sustainable growth, environmental protection, and cultural integrity (Wilkinson 2003). The St. Lucia Heritage Tourism Programme was initiated in 1998 in order to diversify and decentralize the tourism product and benefits, to incorporate participation by rural communities. Thus while there are gains towards spreading the benefits of tourism more equally and integrating once-neglected communities into the tourism sector, there are still major concerns over the environmental impacts and no serious gains towards regulating and mitigating the environmental effects of the industry. Despite the lack of enforced policies, efforts are unrelenting in trying to create a policy that will guide the future of tourism. In 2001 the government formed the Development Cooperation and Programme Planning Division within the Ministry of Planning, Development, Environment, and Housing. The mission of that division is "to foster sustainable improvement in the quality of life of all St. Lucians, through effective integrated planning, coordination, implementation and monitoring of physical/spatial, technological, economic, environmental, and social development activities" (Wilkinson 2003) and one of the objectives is to develop a National Land Policy, which in 2010 was finally approved by cabinet (Government of St. Lucia 2010).

Government concern over the direction of the tourism industry dates back to the late 1970's where this concern was expressed as many failed attempts to implement policy and laws governing the sustainable development of the sector. Despite this legacy of attempting to reconcile the environmental and social components with the economic viability of the sector, the present day tourism industry, according to Wilkinson (2003 pp. 94) can still be characterized by "rapid change, foreign investment and foreign control, large scale hotels that are often all-inclusive resorts, tax incentives, and significant cruise ship activity". The environmental concerns have been realized and the resultant environmental degradation has elicited worry and has led many to warn against more damage and advocate for better environmental management. Most individuals voicing their opinions for greater environmental protection often cite poor land use planning and the lack of proper policies and an integrated system of planning as having contributed to worsening environmental problems (Bishnu Tulsie, pers. comm. 2009). And in spite of the proclaimed desires

throughout the years for a sustainable tourism that is defined as integrating more local participants, protecting natural resources and promoting the culture, the direction of tourism is still questionable. While there have been efforts to create heritage tourism, there is evidence of environmental transformation and degradation such as altering the character of many beaches, destruction of wetlands and mangroves, and the construction of hotels in areas of high scenic value (Keith Nichols, pers. comm. 2009). Social impacts also exist as many locals feel alienation from beaches and other areas that they once frequented freely, and human resource development is not on par with the physical development of the island which can account for the high rates of uneducated and untrained individuals in the work force (Gregor Williams pers. comm. 2009).

Attempting to compete internationally while trying to maintain the island's natural, cultural, and human resources has become an exceedingly difficult challenge and the island has often resorted to the high-density mass tourism route for economic development while the ideal aspiration has been for low-density, environmentally friendly and socio-culturally acceptable tourism. So there seems to be a disconnect between the relevant authorities who have the power to implement acts, laws or plans with the technocrats who prepare those plans and who are involved in research as well as with civil society and the general public who have concerns about the environmental toll and the overall direction of the tourism sector.

2.4 EMPLOYMENT IN ST. LUCIA

The unemployment rate in St. Lucia from 2006 is 15.7 %. The labour force from 2004 to 2006 fluctuated between roughly 80,000 to 90,000 people although much of work force is uneducated (St. Catherine 2007, Wilkinson 2003). Wage earners include those employees involved in production, construction, installation, maintenance operations, including clerks, warehouse and delivery staff, security staff, and official maids. Salaried employees are all other employees including those in administration, managing directors, professional and technical staff, and supervisory workers above the level of administrative and clerical workers (St. Lucia Government Statistics 2003).

Salaried workers in the major industries in St. Lucia earn a fair monthly salary that ranges from approximately EC $1800 (CAD $680) for women in the wholesale and retail industry and EC $1980 (CAD $750) for men (St. Lucia Government Statistics 2003). Employees in the electricity, water supply, and gas industry earn monthly salaries of EC $5100 (CAD $1940) for men and $4300

(CAD $1630) for women. These figures quoted the highest and lowest paying industries in St. Lucia, however, employees in the manufacturing, education, tourism (hotel and restaurants), transportation and communication industries earn between EC $2000 (CAD $750) and $3000 (CAD $1100) (St. Lucia Government Statistics 2003).

Wage earners in the wholesale and retail industry earn roughly EC $820 (CAD $320) per month while workers in the gas, water supply, electricity and construction industries earn approximately EC$1820 (CAD $707) per month. Wage earners in tourism (hotel and restaurants) manufacturing, education, health and social work earn roughly $1000 (CAD $388) a month (St. Lucia Government Statistics 2003).

The newly elected President of the St. Lucia Chamber of Commerce, Chester Hinkson, however criticized wages in St. Lucia as being insufficient to allow individuals to maintain a decent standard of living and was quoted as saying during his first speech as president:

> "We cannot pay workers EC $200 or $250 (CAD $75 to $95) per fortnight when they spend 50 to 60 percent on transport cost. It is economically prudent to establish a minimum wage system where we pay a fair wage in keeping with inflation and cost of living" (George 2010).

2.5 LAND USE AND TENURE

St. Lucia, being of volcanic origin is mountainous with very rugged terrain in many parts while there are also arable, flat lands located mostly in alluvial valleys and supplied by rivers sourced from the mountains.

A study conducted in the 1980s by the Organization of American States, described St. Lucia as a "fundamentally village society" where farm families who lived in the urban centres of Castries and Vieux Fort in the North and South respectively would walk to their land daily. Though quite old, the study is a comprehensive study of St. Lucia that continues to provide useful information. Much of the rural population lived within close proximity to the urban centres where they found employment while urban families often had rural farm land which was used to supplement their food requirements (General Secretariat of OAS 1986). This organizational structure of land use and settlements evolved around St. Lucia's colonial history of specializing in export agriculture. The society was therefore strongly agrarian at its core, as evinced by numerous communities that were established primarily to serve plantations and estates. This has obviously changed immensely over

the past 25 years, due to the decline in agriculture and the growth of the service sector and rural to urban migration has resulted in overpopulation of city centres.

The agricultural and colonial history, diversification of the economy, and the dominance of the tourism sector have resulted in complex land tenure and land use arrangements. The French land tenure system imparted upon the island deemed that all heirs would participate in the property rights of deceased ancestors (General Secretariat of OAS 1986). This succession law made it so that landholdings would become more fragmented as time went on, an undesirable result that coupled with vague deeds to land and lack of documentation showing land ownership, made farmers working the land unwilling to invest (General Secretariat of OAS 1986). Farmers who did own land were divided into two groups based on the amount of land owned and the location of the land, there were few property owners who owned very large tracts of land located primarily in the flat, alluvial plains and many farmers who owned much smaller tracts of land that were located on less desirable plots such as hill sides (General Secretariat of OAS 1986).

Quoting the 1974 agricultural land census concerning the total 72001 acres of total land in holdings: "55 Large holdings (50 acres and over) control 42034 acres (58.5% of total land in holdings), while the 9640 small holdings (0.1 acre to 10 acres) control 17272 acres of land (24% of total land in holdings) and the 674 medium-size holdings (50 to 500 acres) control 12695 acres (17.6 percent of the total land in holdings)". In terms of numbers of holdings, small holdings are the most significant as they constitute 92.4% of the total number of holdings in 1973 but in terms of the amount of land in holdings, the large holdings are more significant, controlling 58.4% of the total amount of land in holdings (General Secretariat of OAS 1986).

These figures have changed from the 1970s to present day, reflecting the drastic change in the economic structure from a predominantly agriculturally driven economy to one heavily dependent on tourism. The 2007 agricultural census spoke of the trends and changes in the scope and structure of agriculture in the country. It showed the decrease in holdings of large tracts of land due to dividing and selling large estates to various individuals as well as transferring these estates to the Government (Agricultural Census 2007).

Major findings included the decrease in number and size of holdings. The total amount of land in holdings in 1961 was 72001 acres, in 1996 land in holdings had decreased to 51,328 acres, and in 2007 land in holdings were furthered reduced to 30,204 acres (Agricultural Census 2007). Decrease in agricultural land holdings was so drastic because the majority of holdings lost were large estates of over 100 acres. The agricultural census states that over 70% of farms operating more than 100 acres in 1996 no longer existed in 2007 (Agricultural Census 2007). There was

however a very slight increase in the number of farms with small holdings of less than an acre. The presence of small holdings continues to characterize the agricultural landscape where as there is greater distribution of the land; in 1974 82% of holdings with less than 5 acres owned 14% of the total land in holdings and 0.2% of the larger holdings owned 37.3% of the land. The figures have shown a reversal as the 2007 census recorded 82% of small holdings to own 33% of total land while 0.2% of larger holdings owning 18% of total land in agricultural holdings (Agricultural Census 2007).

2.6 ECOSYSTEMS ON THE EAST COAST: DRY FOREST AND MANGROVES

The Holdridge Life Zones data set is a mode of classification for the world's tropical vegetation zones which are based primarily on climate; the rationale being that the distribution of global vegetation patterns is highly correlated with climate as climate partly determines soil characteristics and water availability (Leemans 1990). The indicators used to determine these classifications are temperature, mean annual precipitation, humidity, as well as elevation (Leemans 1990). The Environmental Impact Assessment (EIA) conducted on the Louvet Beach Resort and Marina Development, which is located on the northeast coast and is one of the larger estates in that region containing dry forest, used the Holdridge Life Zones data set to classify the vegetation in that area.

Based on the Holdridge Life Zones data set, Louvet was identified as ranging from tropical dry forest to tropical very dry forest along the coast and headlands, to tropical moist forest in the upper flat lands (Heholt 2009). The Louvet estate has been relatively undisturbed for a number of decades which has allowed re-growth of large expanses of secondary dry forests and scrubland along the sloping landscape while the flat lands have been used for coconut plantations and the grazing of livestock. The classification of the vegetation within the Louvet estate can be extended to that of Grande Anse, the estate located further north with considerable dry forest, which has also remained undeveloped for many decades and has undergone many of the same activities as Louvet such as grazing and sugar cane, copra, and banana agriculture.

As compared to other tropical ecosystems such as savannas and rainforests neo-tropical dry forests have been neglected in the academic literature (Murphy, 1986). Tropical dry forests are biodiversity "hotspots" as they house an abundance of biodiversity yet are subject to anthropogenic threats such as climate change, habitat fragmentation, human population density, and conversion to

cropland (Miles, 2006). Dry forests it would seem should be accorded high priority for protection and conservation, yet this is not the case. In fact, a series of regional assessments conducted by the World Wildlife Fund to inform the global status of conservation and the distribution of eco-regions found that the 10 subtropical dry forest zones identified were all considered as "Critical/ Endangered", the most threatened status from three wide classifications considered (Miles, 2006).

Defining dry forests based on vegetation type is quite complicated as dry forests vary in the proportion of vegetation types present and may even fade completely into other vegetation types such as wet forests, savannahs, and woodlands (Miles, 2006). A multitude of different classifications of tropical dry forests suggests discordance in the academic literature as different regions ascribe to their own classification; there is therefore no standard definition of tropical dry forests (Miles, 2006). A very simple definition however describes tropical dry forests as "occurring in tropical regions characterized by pronounced seasonality in rainfall distribution, resulting in several months of drought" (Miles, 2006). This definition does not speak to vegetation type, a severely lacking requirement for a robust definition. Yet personal accounts from researchers, scientists, forestry officers, and a conservationist working directly in the dry forest of St. Lucia can be assembled to achieve a reasonable description of the dry forest.

Dry forests have been categorized based on different criteria and as the name suggests is often characterized by the amount of rainfall. The Assistant Chief Forestry Officer described rainfall as being the dominant characteristic of the dry forests, receiving 1500 to 2400 mm of annual rainfall (Lyndon John pers. comm. May 2010). Hansen (2008: 5) claimed that "the only clear unifying climactic characteristic of these ecosystems is the strong seasonality of rainfall distribution, where a period of extended drought is harsh enough to induce water coping strategies in the regions vegetation". Hansen went on to explain that a 2 to 3 month period of drought could alter the structure and composition of rainforest ecosystems (Hansen 2008). A conservationist described the dominant characteristic of dry forest to be elevation but also described the dry forest as being composed of various ecosystem types including coastal forest, xeric forest, scrub forest, taller canopy forest as well as riparian forest (Matthew Morton per. comm. July 2009). Hansen (2008) concurred by stating that many researchers did recognize the dry forest as being very diverse, ranging from tall forests to cactus scrub, the reason being the varying formations found within dry forest bio-climactic regions generating environmental gradations rather than distinct ecosystems.

Regardless of the lack of consensus over the actual definition and characterization of tropical dry forests, there is sufficient evidence to support its marginalization in terms of conservation and protection. Tropical dry forests are important for rare and endemic species as well as providers of ecosystem services (Sanchez, 2005). A huge difference between dry forests and moist or rain forests is that dry forests are a source of goods and services while moist/rain forests are of little economic value (Sanchez, 2005). Dry forests are also located on prime land for agriculture and ecotourism development and are particularly impacted by human population density (Sanchez, 2005). The lack of conservation is as a result of development exploits targeting the dry forest as a first resort and the ignorance of ecosystem services provided.

In St. Lucia, the dry forest is perceived by many to be scrub land with very little productivity and use (Toussaint, 2006). This is reflected in the fact that out of the 7,496 hectares of protected forests on the island, only 259 hectares is tropical dry forest (Toussaint, 2006). Whereas the tropical rainforest is located on the island's interior, the dry forest is found on the north east coast, coinciding with the highest human population density on the island. The infrastructural developments within that area are widespread and include agricultural, industrial, and tourism developments (Toussaint, 2006).

Apart from housing many endemic species including plants, birds, and reptiles, the dry forest affords protection from flooding to low-lying areas and preserves the quality of the coastal waters as it prevents erosion (Toussaint, 2006). Rural livelihoods including broom-making, mauby bark harvesting, and honey production are directly dependent on the dry forest. The dry forest is also very important for less economically advanced members of society who still rely on wood as a form of fuel for cooking (Toussaint, 2006).

Mangroves

Mangroves are wetlands found in saline coastal habitats of the tropical and sub-tropical regions. Mangroves can occur in estuaries or on the open coastline, however in St. Lucia; mangroves are mostly estuarine and occur mainly on the east coast of the island (FAO 2005). The biological diversity of these mangroves is not very high, as only 5 species of mangroves are present on the island. Uses of mangroves include charcoal production, timber harvesting fuel, and fishing. Mangroves are important ecologically for coastal protection as they collect and filter rainwater run-off that can damage reefs and sea grass meadows, they serve as spawning grounds for reef fish and lobsters, and they provide nesting grounds for birds (FAO 2007, Pattulo 2005). The gnarled

formation of the roots of the mangrove trees help to hold the land in place while also providing defence against storms, sea surge, and land erosion (Pattulo 2005). Despite these vital functions, there are historically, attitudes and actions towards mangroves that do not necessarily value their worth (Lugo 1974). St. Lucians view mangroves as unhealthy sites which lead to detrimental activities towards mangroves such as waste disposal, land reclamation, and as sources of fodder for livestock. Fortunately the government has recognized the value of protecting mangroves as they affect the fishing and shellfish industries and are habitat for birds, some of which are endemic. The government of St. Lucia has therefore designated all mangroves as marine reserves (FAO 2007).

2.7 ECOSYSTEM SERVICES

The benefits obtained by people from ecosystems are termed ecosystem services (Millennium Ecosystem Assessment 2005). The functions of these services range from biological to cultural and include provisioning, regulating, cultural, and supporting services. Provisioning services are obtained directly from the ecosystem and include food, fibre, fuel, genetic resources, biochemicals, natural medicines, and fresh water. Ecosystem processes confer regulating services such as air quality regulation, climate regulation, erosion regulation, water purification and waste treatment, pollination, and natural hazard regulation. Cultural services are "nonmaterial benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences" including cultural diversity, spiritual and religious values, knowledge systems, inspiration, aesthetic values, sense of place and recreation (Millennium Ecosystem Assessment 2005). Supporting services are fundamental to all other ecosystem services, without them ecosystem services would not exist. These services are characterized as occurring over a very long period of time and having indirect and long terms effects of man; they include soil formation, photosynthesis, and nutrient and water cycling (Millennium Ecosystem Assessment 2005).

Assigning value to ecosystem services may seem absurd especially in light of the fact that there is no market for them; they are free. Yet value is assigned to materials derived from natural sources (Costanza et al. 1998). If value is only given to the economic services obtained from the natural environment yet the natural environment forms the basis upon which human beings survive then there exists a serious dissonance between that which is valued (financial capital and material wealth) and that which is necessary for human existence (environmental integrity). Costanza et al. (1998 pp. 68) posit that "even with narrow and imperfect conventional economic methods, the aggregate value of these services was in the same order of magnitude of the global

Gross National Product (GNP)". There is therefore the need to start viewing ecosystem services gained from intact ecosystems with the same respect as economic services gained from natural sources.

The second Chief Forestry Officer with the Department of Forestry, in his article "Saving our Dry Forest for Sustainable Development" spoke of the relative integrity of the dry forest based in different regions of the island. Whereas the Northeast Coast, including the estates of Grande Anse and Louvet, were relatively undisturbed, urban settlements in the Gros Islet district had significantly affected the dry forest in terms of deforestation. The article also spoke of ecosystem health and the protection of the economy as important functions of the dry forest. The dry forest contributes to soil retention and thus protects coastal waters supporting the fishing industry as well as tourism (Toussaint 2006). The biological diversity is also important where the dry forest is concerned as many bird species and reptile species inhabit the dry forest; in fact the dry forest is the only habitat for the St. Lucia Wren, the St. Lucia Nightjar, the St. Lucia Racer, the St. Lucia Whiptail Lizard, the St. Lucia viper colloquially known as the Fer-de-lance, and the White Breasted Thrasher (Toussaint 2006).

In terms of economic benefits, the dry forest contains various plants that are used by local people in supporting their livelihoods. The Latanye palm is used to make brooms that are sold to supplement many families' incomes and the handle of these brooms is obtained from trees found in the dry forest. For families who may not have a stove or who need an additional source of fuel, the dry forest can provide timber products for such a use. There is a small honey production industry in St. Lucia and the dry forest is important for bee pasture as it contains various plants with flowers that are visited by the bees (Toussaint 2006).

2.8 LOCATION OF CASE STUDY

The east coast of St. Lucia is bordered by the Atlantic Ocean, and whereas the south east is developed mostly with residential settlements, the northeast coast is relatively undeveloped. As can be seen from the land use map of the northeast coast (see Map 3), the areas closest to the Atlantic Ocean are mostly undisturbed forests or vegetation. This can in part be attributed to the large expanses of privately owned estates occupying much of the northeast coast; estates such as Grande Anse and Anse Louvet (see Map 4). The northeast coast however does contain many communities which are separated from the coast by the vegetation. The five communities at the

focus of this research are Au Leon, Boguis, Des Barras, La Borne, and Lumiere/La Pelle (see Fig. 5 NE coast communities).

Au Leon is a dense residential settlement situated on a hillside and overlooking many inland mountains in the island. It has a population of roughly 1630 people and is the closest community to the Anse Louvet estate with the majority of the work force in agriculture or fisheries. (St. Lucia Statistics Department 2001). The work force consists of about 500 people. About 15% of the community has no formal education. About 90% of the people live in an undivided, private house and 80% of the dwellings are owned by its occupants.

Boguis is the community closet to the Marquis estate and is found in the district of Babonneau. It is located further inland than the other communities studied. It is an agricultural community as most people work on the Marquis estate and the surrounding areas. The population of the community is approximately 900 people, the work force is about 300 people and 10% of the population is uneducated (St. Lucia Statistics Department 2001). Despite its traditional agricultural roots, many people find employment in the private and public sectors of urban centres of Castries and Gros Islet (St. Lucia Statistics Department 2001). 95% of the occupants live in an undivided private house, 92% of the dwellings in the community are owned, and the frequency of owned freehold land is 92%.

Des Barras is the closest community to the Grand Anse estate; it is located at the midway point of the La Sorciere Mountain, an important water catchment area. The community is located where the rainforest vegetation of La Sorciere transitions to dry forest vegetation. The community slopes down towards the dry forest and relatively undisturbed dry forest continues down to flatter plains along the coast. The population of Des Barras according to the 2003 census is about 330 people, 14% of which are uneducated (St. Lucia Statistics Department 2001). The labour force consists of about 83 individuals, and while most individuals engage in gardening and agriculture, most of them farm in order to supplement to their main income. 97% of the occupants live in an undivided private house, and 93% of the dwellings in the community are owned. The frequency of owned freehold land is 51% and 36% of individuals who use and work the land are able to do so because they have obtained permission from the land owner (St. Lucia Statistics Department 2001).

La Borne and **Dauphin** are two small communities located within very close proximity to one another, because of their close distance, they are considered as one community for the purposes of the research. They are the most northerly communities in this research. La Borne and Dauphin are

very agriculturally inclined and many families farm and vegetables and fresh produce that is sold to the nearby larger communities. La Borne and Dauphin are situated on historically significant ground, as the Dauphin beach contains petroglyphs from the Amerindian era and the Dauphin beach was the first port in St. Lucia. The combined population of the two communities is 607. 20% of the population is uneducated and the labour force consists of 208 individuals. 83% of dwellings within the two communities are owned and 58% of households occupy a private house while 24% of dwellings occupy a part of a private house and about 15% of households live in an apartment (St. Lucia Statistics Department 2001).

Lumiere and **La Pelle** are two very small communities that are the most southerly situated of the communities in this study. Lumiere is located very close to the coast and is separated from the beach by a mangrove where many community members hunt for crabs. Lumiere and La Pelle are very rural and underdeveloped with little in the way of infrastructure and community development; according to the St. Lucia 2001 census, 65% of the La Pelle population lives below the poverty line. 96% of the households are undivided private houses, and in Lumiere 86% of those homes are owned however, 96% of those households however are squatters. While the detailed occupation information for La Pelle, is unavailable, more general statistic reveal that while 51% of the labour force is employed, 7% are unemployed, and 33% are not active (St. Lucia Statistics Department 2001).

Table 1. Population and Housing Census Results for 5 Communities.

	Au Leon pop. (%)	Boguis pop. (%)	Des Barras pop. (%)	La Borne & Dauphin pop. (%)	Lumiere [1](%)
Occupation					
Agriculture and fisheries	46	17	15	16	52
Trade workers	18	14	14	24	17

[1] Information unavailable for La Pelle

Sales persons	11	10	8	10	12.5
Manufacturing labourers	3			6	2
Drivers and Mobile plant operators	3	10	8	4	2
Teaching Professionals	-	4	-	1	2
Clerks (office and customer service)	-	5	-	8	2
Personal and protective service workers	-	14	13	13	-
Sales and services elementary occupations	-	26	17	5	6
Other	19	-	25	4	5
Water Source					Lumiere [2]
Publicly piped to dwelling	44	45	4.2	34	46
Obtained from outside the dwelling e.g. stand pipe, well, tank	46	44	61	21	46
Private catchment (e.g. rain water)	-	4.8	15	4.5	2
Private, piped into dwelling	-	2	4.1	1.7	2
Other/Unstated				4	4
Toilet Facilities					Lumiere and La Pelle
Flushed toilet linked to septic tank	27	20.5	3	29	7
Flushed toilet linked to sewer	-	5.4	12.3	10	1
Pit Latrine	30	63.4	75	55	64
Nothing	33	10.7		1	22
Not Stated			9.6	5	6

[2] Information for La Pelle unavailable

Lighting for household					Lumiere & La Pelle
Kerosene	3	4	2.7	3.4	10
Gas	-	-	-	2.8	-
Publicly supplied electricity	85	86	85	79	63
Private generator	5	0.8	-	2.8	1
None				2.3	2
Unstated/other	6	8	12	11	25
Fuel for cooking					
Coal	2.6	5.5	2.7	10	11
Wood	3.5	11	6.8	10	18
Gas Oven	90	80	75.4	74	70
Kerosene				0.5	-
Unstated				5.6	1
Garbage Disposal					Lumiere[3]
Garbage Truck	90	77	72.6	77	68
Burn	4	17.4	13.7	15	20
Bury	1	-	-		-
Dump on land	2.6	2.6	1.4	1	12
Dump in river, sea, or pond	-	0.4	1.4		-
Unstated				7	

(Source: St. Lucia Government Statistics Department 2001).

These statistics are very good indicators of the level of development in these communities. While many people work outside of the community in the city centres in such occupations that would classify them as wage earners, the communities are still highly involved in agriculture, especially in Au Leon which is located very close to the Mabouya valley, a heavily cultivated area. Education levels are low as is the standard of living. The fact that such a large percentage of those communities still use pit latrines as their primary toilet facility and close to half of the population obtains their source of water from outside the home in tanks or wells is an indication of a sub standard living conditions. Most people however do have gas ovens in order to cook their food

[3] Information unavailable for La Pelle

while a minority of the population still resorts to wood and coal for their fuel needs. And while most households are lit with electricity provided by the quasi-governmental electricity company, a small minority has other means to provide light for their households. It is obvious that these communities are in dire need of development with regard to infrastructure as well as economic development. Many people are simply too poor to provide the appropriate accommodations for their households and one reason for this may be the lack of employment opportunities stemming from low levels of education.

2.9 LARGE ESTATES ON NORTHEAST COAST WITH SIGNIFICANT DRY FOREST

Marquis Estate

Marquis estate was historically an 18th century mill but more recently became a banana plantation. Marquis Estate which occupies the northeast coast of the Marquis River Valley comprised of 2550 acres: 930 acres was in crops, 550 acres in natural forest, and 1070 acres considered as scrub land. The estate was owned by Lord Waltston of Newton and during the 1980s he started selling off parts of the estate to the estate workers and their families. After 1981 about 1000 acres were sold in divided portions ranging from 3 to 23 acres (General Secretariat of OAS, 1986). Today parts of the estate have been further divided into small plots and are owned by several small farmers, while a larger portion of the estate is owned by a wealthy St. Lucian family. However, 525 acres of the estate were sold which included land from farmers as well as from the prominent St. Lucian family. These 525 acres were sold to an international property investment company: Harlequin Property (Soraya Skeete, pers. comm. 2009). The plans for Marquis by Harlequin Property include an 18 hole golf course, a casino, The Marquis Estate Resort, an equestrian centre, a polo field, and a spa.

Louvet Estate

Louvet is an old plantation estate that has been derelict for many years now, the last owners before being bought by its current owners, Beachfront properties, were a German family who operated 5 guest houses, two swimming pools and farmed the estate. The estate provided jobs for people for the neighbouring communities of Des Barras and Aux Lyons; however when the owner died all operations ceased and the estate became inactive (Heholt 2009). The inaccessibility to the estate due to the road conditions has allowed for the re-growth of much of the natural environment including the dry forest. Louvet beach is an important egg-laying site of the St. Lucian iguana and it

is one of the two known iguana-laying sites on the island while the surrounding dry forest is an important habitat for the iguana.

Grande Anse (based on the accounts by Verena Lawaetz as well as personal accounts)

Grande Anse is a large estate of approximately 1628.4 acres of undeveloped land with a 1.25 mile long beach. It is geographically stunning as it is contoured by three mountain ridges all facing the Atlantic Ocean and thus giving rise to two valleys. Three rivers run through the property and form two lagoons on Grande Anse beach while one empties into the Atlantic Ocean.

The property was acquired in the early 1960s by a German family. During that time it was a copra plantation, continued by the new owner until about the 1980s. Prior to being a copra plantation, Grande Anse, like most other estates, began as a sugar plantation. Presently, there are no major activities taking place on the property and therefore much of the vegetation has re-grown to what is considered secondary dry forest. This re-grown vegetation of shrubs and dry forest is ideal for grazing livestock which is a common practice for the surrounding communities. The property is also vegetated with many coconut trees, from the copra era, as well as other fruit trees.

The Grande Anse beach is one of two nesting sites for the St. Lucia iguana as well as the leather back turtle. The Grande Anse beach is the most important nesting site for the leatherback turtle. Turtle watching is a popular tourist attraction and the closest community to Grande Anse, Des Barras, runs a community turtle watch group. Grande Anse has been on the market for many years but has never been sold due to many problems plaguing the estate: poaching of turtles, sand mining, top soil removal, and the degradation of the dry forest by neighbouring communities.

2.10 PROTECTED AREAS

The integrity of biodiversity is indispensable to a functioning biosphere that allows human beings the ability to support their livelihoods, reduce poverty, and improve the overall well-being of the human race (Stoll-Kleeman and Job 2008). Biodiversity must therefore be protected from the anthropogenic activities that threaten it, and thus the importance of designating protected areas. Protected areas are implemented to safeguard diminishing species and habitats through the management of various conservation objectives; the primary goal being biodiversity conservation (O'Riardan and Stoll-Kleeman 2001; Stoll-Kleeman and Job 2008).

While the chief purpose is to preserve biodiversity, areas that require protection are often linked to communities and form part of a larger, more complex socio-ecological system. The debate that has thus ensued for the past decade is whether people or ecology should take precedence in biodiversity conservation (O'Riardan and Stoll-Kleeman 2001). The question of excluding people for the purposes of biodiversity conservation or achieving conservation through a community-based approach can be answered by assessing the effectiveness of strictly protected natural areas that eliminates that social element (Sinclair et al 2000). The "ecology" first perspective reflects the colonial legacy of the top-down management approaches that have often failed local people through strict and inflexible natural resource management policies (O'Riardan and Stoll-Kleeman 2001). National parks with the sole objective of biodiversity protection are often termed 'paper parks' because their conservation objectives and goals are never realized. The challenges that these parks encounter are inadequate legislative, policy, and financial support coupled with an ineffective management plan (Stoll-Kleeman and Job 2008). The "people" first perspective espouses a harmonious relationship between ecosystem integrity and sustainable livelihoods of local people such that biodiversity contributes to local livelihoods that support the economic base and local management practices ensure the sustainable use of resources (O'Riardan and Stoll-Kleeman 2001).

Today extending protection to the larger socio-ecological system in which community members, land owners, and land users are implicated within the management framework is necessary for the sustainable management of biodiversity (O'Riardan and Stoll-Kleeman 2001; Stoll-Kleeman and Job 2008). Local consultation and participation are needed to ensure success in achieving conservation goals. Factors affecting biodiversity loss are often the illegal or unsustainable use of natural resources in order to support livelihoods (Sinclair et al 2000). These underlying social problems that negatively affect biodiversity must be addressed in order to overcome biodiversity loss. Therefore opportunities for livelihood support through local management of the protected area is an option, however the larger issues of poverty and illiteracy as well as the equitable division of natural resources must be addressed (Sinclair et al 2000). Management strategies must be flexible and must adopt a bottom-up approach so that local people understand and support management thereby making it more likely to succeed (O'Riardan and Stoll-Kleeman 2001). Community economic development initiatives, such as community-based tourism, are one of the most important components for biodiversity conservation so that economic revenue into the community reduces the pressures on the natural environment. Environmental education and sensitization must also be incorporated to foster knowledge sharing and also for

local people to develop a sense of pride in their environment and become more inclined to protecting biodiversity (Sinclair et al 2000). Governance structures must also be revisited in order to foster multi-stakeholder partnerships and to empower the local people; giving them greater control over the potential changes that outside interests may propose or desire (Sinclair et al 2000). Continued outside support is required in order to assist in times of crisis, such as natural disasters that may force people to deplete natural resources and to influence governance and decision making in the interests of local people (Sinclair et al 2000).

CHAPTER 3- LITERATURE REVIEW

This investigation addresses various issues that are pertinent to the Biosphere Reserve designation feasibility. The issues explored include sustainable development and the conceptual framework for the thesis, Biosphere Reserves, Small Island Developing States, mass tourism, golf tourism, sustainable tourism, and environmental impact assessments.

3.1 SUSTAINABLE DEVELOPMENT

Sustainability: the ability of present populations to meet their needs without compromising the ability of future generations to meet their own needs (WCED, 1987) has been its working definition for years. Yet it proposes far greater challenges than which can be derived from this simple definition. Development has meant economic growth, which has translated directly to progress. Yet, the dire situation of worldwide environmental degradation and poverty has spurred a new sustainability ethic that recognizes factors that are not amenable to financial assessment such as human wellbeing, equity, social justice, and integrity of ecosystems (Agyeman et al 2002). Realizing the limited capacity of the planet to sustain human needs, the Brundtland Commission encouraged the harmonization of the various disciplines governing environment, development and society (Evans et al 1998). The Commission also recognized the importance of linking the natural environment with development such that development would now proceed in such a manner as to protect and preserve stocks of natural capital while creating greater opportunities for human beings to improve their well-being, especially the poor (Evans et al. 1998, Gibson et al., 2002). Reducing damage and degradation to ecological systems while improving the well-being of human beings by securing greater capital is an immense challenge that has a plethora of implications for other aspects of society including political and economic equity, technology, efficiency of energy and natural resources, human, and social capital (Gibson et al 2002 and Robinson 2004).

Sustainable development has thus come to signify the interdependence and interconnectedness of core disciplines that must be addressed equally in pursuit of this concept; the pillars of sustainable development therefore include ecological, social, economic, cultural, and political elements. While the pillars have been divided into two; ecological and socio-economic, three; ecological, economic, and social, and five; the aforementioned five factors, the emphasis remains on the interdependency of human well being and biophysical systems (Gibson et al 2002). The three-pillar approach, the most popular of the three, has been heavily critiqued; Robinson

(2004) for example noted its vagueness as the term often signifies different meanings to different people; its hypocrisy; the use of sustainability terminology by businesses and government have been used to promote unsustainable activities and its paradoxical nature - it nurtures fallacies such that by simply becoming more efficient, increasing the well-being of all human-beings without exceeding the physical limits of the planet is possible. Dawe and Ryan (2003) critique it for the flawed allocation of the environment as one of the pillars upholding sustainable development rather than as a separate, more significant entity upon which everything is dependent and without acknowledgement of this concept "we will see little progress being made in moving ourselves toward sustainable use of the ecosystems that support humanity and all other life on Earth" (Dawe and Ryan 2003).

Sustainable development is a brilliant concept because in its essence it proposes the possibility for finding solutions to the great, intractable problems of our time; poverty, social injustice, and environmental degradation (Gibson, 2005). The slippery part of this endeavour is that the solutions to some of these problems hinder the resolution of others (Gibson, 2005). Poverty reduction necessitates the creation of more financial capital through resource use yet tackling environmental degradation often involves the abasement of natural resource use (Robinson 2004). This apparent paradox of sustainable development has lead to intense arguments and controversy surrounding the definition of sustainable development to the point where arguments have polarized various academics, groups, and institutions to one of two sides. Varying conceptions around the theme of natural capital stock are very controversial where two sides of the sustainability concept have emerged; weak and strong sustainability. The weak sustainability proponents endorse the substitutability principle where all capital, including stocks of natural capital must be utilized to achieve greater human welfare. The strong sustainability side argues that sustainability requires constant stocks of natural capital because of the irreplaceability of environmental resources (Hay 2002). Whereas the weak sustainability side condones the domination of nature in the name of development and human welfare, the strong side believes in the intrinsic right of nature to exist and that it should not be endangered or depleted but rather maintained in order to ensure the future well being of coming generations (Jabareen 2008).

And while there are other conceptions of sustainable development, the core principles are often drawn from the pillars of sustainable development. The Gibson Sustainability Assessment (2005) addresses the sustainability concept differently from the pillar approach by stating principles of human behaviour and arrangements that need to change in order to achieve longevity of human well-being (Gibson et al 2002). These principles include socio-ecological system

integrity, livelihood sufficiency and opportunity, intra- and inter-generational equity, resource maintenance and efficiency, socio-ecological civility and democratic governance, and precaution and adaptation (Gibson et al 2005). Other sustainable development concepts include integrative management, natural capital stock, and eco-form, the sustainable design of urban space (Jabareen 2008). The World Conservation Strategy's Principles of Sustainability lists, among the various axioms aimed at preserving biological wealth, principles espousing the importance of equity, the use of policy, and the maintenance of cultural values towards sustainable development (Evans et al 1998).

The conceptual framework for this thesis draws primarily on the pillars of sustainable development because of its simplicity and its adaptability within policy and the planning processes (see below). Its weaknesses include the aforementioned critiques of vagueness, hypocrisy, and being a paradoxical concept (Robinson 2004). Attempting to assimilate fragmented concepts into an integrative approach is difficult as the pillar principle with the separate elements are often understood, outside of the academic literature, as elements that are distinct and compete with one another, notably the economic and ecological pillars (Gibson et al 2002). Literature notes that greater attention should be paid to the overlaps and the interconnectedness between the pillars in studies which make use of them, in order to avoid reinforcing the tendency to regard the pillars as separate entities (Kemp et al 2005).

It is worth noting that the term sustainable development is relative referring far more to process than to clearly defined outcomes. Rather than being a fixed state, sustainable development is a constantly evolving paradigm of resource use, institutional change, and technological advancements that must be in harmony with both the needs of today and that of future generations (Aronsson, 2000).

3.2 THE CONCEPTUAL FRAMEWORK OF THE THESIS

For the purposes of this thesis, the three-pillar model of sustainable development is employed as the conceptual framework which includes the ecological, social, and economic dimensions of sustainable development where politics and culture are categorized under the social element. The pillar concept signifies equality among the elements that are represented by the pillars such that each one should be regarded with the same importance. In order to do this, it is imperative that, in addition to regarding each element equally, the elements are regarded as being interconnected such that achieving sustainable development would mean the effective integration

of these elements (Kemp et al 2005). The pillars of sustainable development require that ecological systems are maintained and protected, and that more people can access opportunities to free them from hunger and poverty (Kemp et al 2005). Yet sustainable development requires more than this; while the interdependencies and interconnections of the pillar model of sustainable development are not explicitly stated, they have been derived from the implications of the interconnected nature of environmental integrity, economic viability, and social welfare. Other sustainability concepts such as Gibson's Sustainability assessment are taken into account as they offer important practical steps towards sustainable development and help to make conception of sustainable development less vague and more explicit, they include socio-ecological integrity, socio-ecological civility and democratic governance, precaution and adaptation, livelihood sufficiency and opportunity, intra- and inter-generational equity, resource maintenance and efficiency, and immediate and long term integration. Therefore further requirements for sustainable development include technological innovation, greater opportunities for decision-making, equity among and between generations, public engagement, precaution and adaptation, and more interrelated institutional structures and processes of planning (Kemp et al 2005).

The integration of the many facets of sustainable development inevitably leads to compromises and trade-offs in which there are "winners and losers" (Kemp et al 2005). However, while there are sacrifices that must be made, the primary objective must be to ensure a long-term overall positive contribution to sustainable development and to ensure that the intertwined nature of the economic, social and ecological dimensions of sustainable development are understood and ways are found to contribute positively to all of them (Kemp et al 2005; Gibson et al 2005)

While the three pillar approach has its weakness of being difficult to integrate and ignoring institutional aspects, concepts such as the Gibson sustainability assessment criteria can be used to bolster the three pillar approach as well as address its inadequacies. Gibson's criteria (2005) speak of mutually reinforcing gains and integration; components of great importance for sustainable development. The criteria as determined by Gibson et al (2005), suggests aspects of this development paradigm that must be embraced in order to accomplish such a shift. Sustainable development is therefore the product of decision making from the local to the global level and requires clearly defined criteria to which the decision making processes can be upheld (Gibson et al 2005). The concepts of integrative management and integration (Jabareen, 2008) are included to bolster these sustainability requirements.

Limitations of the Gibson et al (2005) sustainability criteria are that the requirements for mutually reinforcing benefits and positive results in all areas may be too loft a goal to attain. And while expecting that trade-offs will occur, a tolerable or measurable or amount has not been defined (Gibson et al 2005). The sustainability requirements have only been presented in a general format with no practical experience bolstering their validity, thus research and the application of these principles is crucial to establish as practical criteria to meet sustainability requirements (Gibson et al 2005).

Socio-ecological Integrity

The biophysical environment is the foundation upon which life can be sustained thus the quality of human life depends directly on the integrity of ecological systems. Very few places on earth remain untouched; human beings interact with their environment, changing it to suit their needs thus creating socio-ecological systems of integrated social and biophysical realms (Gibson et al 2005). It is therefore in the best interest of human beings to create socio-ecological systems that can allow a decent quality of life for human beings by recognizing the complexity of such systems. Complex socio-ecological systems are dynamic, unpredictable, and interconnected to other systems at various scales. Understanding these characteristics of the system within which society is embedded requires human beings to organize and undertake activities that will preserve the function of the system in order to continue benefitting from the goods and services produced by the system as well as reducing stresses that may change those vital functions (Gibson et al 2005).

Resource Maintenance and Efficiency

Limited human, institutional, and financial capital to manage natural resources and ecosystems sustainably in the face of growing demographic and economic pressures poses an enormous challenge to sustainable development. There is therefore a significant need to develop more efficient means of using resources which would include employing caution in the use of natural resources, being less wasteful consumers of energy and materials, and utilizing proper management practices for the removing, disposing, and processing of waste (Gibson 2005).

Advances in industrial ecology, eco-efficiency, and dematerialization provide ways to more efficient ways for improving well-being while being less impactful on the environment (Robinson 2004). And designing human systems to be more compatible with ecological systems is another way to curb environmental consequences (Robinson 2004). The aim is to reduce environmental damage per unit of economic activity (Robinson 2004).

However, even with substantial efficiency gains that result in lessening environmental impacts due to economic activity, there is still much to be desired in the way of sustainable development. Efficiency strategies can require complex political and technical transformations that are not necessarily feasible within a society whose expectations and practices remain the same i.e. demanding consumption and production (Gibson 2005). And while efficiency gains are important, their significance can easily be lost if the goal of being efficient is to engage in greater production and consumption and the limits of the biophysical world are not respected (Gibson 2005 and Robinson 2004). Technological advances resulting in greater efficiency is not a solution to sustainable development. Greater attention must be paid to the deeper issues of opportunity and equity such that everyone should be able to secure a sustainable livelihood (Robinson 2004).

Livelihood Sufficiency and Opportunity

Economic sustainability would be described by Gibson (2005) as livelihood sufficiency and opportunity where "everyone and every community has enough for a decent life and opportunities to seek improvements in ways that do not compromise future generations possibilities' for sufficiency and opportunity". The Brundtland Commission defined sustainability as the resolution of ecological integrity and human development, that ecological preservation was a requirement for human well being. However human welfare goes beyond ecological integrity as goods and services are a precondition for the well being of a society. The foundation of a socio-ecological system depends on both environmental health as well as access to services, resources, and opportunity. Yet, access to resources, services, and material security often comes at the price of the damaging biophysical systems (Gibson, 2005). Defining the needs of future generations to meet their sufficiency and opportunity demands is impossible; however it is clear that preserving the biophysical system and ecological functions are crucial to ensuring intergenerational equity. The tension therefore exists between the present generations' needs to provide sufficiency through economic growth and reduction in stocks of natural capital and in preserving this natural capital for future generations to create their own opportunities and achieve sufficiency.

Gibson (2005) reasoned that opportunity and sufficiency must be addressed within a specific context. Therefore in situations characterized by limited opportunity and insufficiency, the gains should be towards providing greater opportunity and sufficiency as well as identifying prospects for long term sustainability. Where opportunity and sufficiency abounds, there should be a shift from defining well being through gaining more material wealth to well being characterized by other meaningful but non material gains.

Intra and Inter Generational Equity

Equity is a very important part of sustainability because "environmental quality is inextricably linked to that of human equality" (Agyeman et al 2002). There is evidence that greater power inequality leads to environmental degradation; "Globally, countries with more equal income distribution, greater civil liberties, political rights and higher literacy levels tend to have higher environmental quality than those with less equal income distributions, fewer rights, civil liberties, and lower levels of literacy" (Agyeman et al 2002). Lack of social equity and opportunities for economic gain, are conditions that compel people to degrade the environment by using unsustainable practices in order to support themselves and their families (Jabareen 2008). Intra-generational equity is not only the fair acquisition and allocation of resources and opportunities but it also addressed the wider questions of public participation and empowerment where gaps in political rights, literacy, and civil liberties between the rich and the poor must be narrowed (Agyeman et al 2002).

The equity concept of sustainability goes beyond the fairness in allocation of resources to individuals in this present time. Intergenerational equity is a significant consideration in sustainability as decisions made concerning the use of natural resources must be made with future generations in mind. Therefore the use of our resources should be sustainable so that future generations can use those same resources in the creation of wellbeing that is equal or better to that of the present (Jabareen 2008).

Socio-Ecological Civility and Governance

While government signifies formal structures and institutions that prevail over society to guide, control, and manage, governance encompasses the formal governmental structures as well as the informal arrangements present in society that contribute to the political economy (Kemp et al 2005). Governance seeks less to control or manage and more to coordinate social involvement, interaction, and engagement in collective decision-making (Kemp et al 2005). Quasi- and non-governmental entities are becoming increasingly more powerful as they share a greater responsibility in determining how governance is exercised; making decision-making more participatory and deliberative (Kemp et al 2005).

Good governance is a requirement for sustainability, and it encompasses four elements of government, the market, customary practice and deliberate choice (Gibson 2005). These four components are individually important and play a part in the well being of society and are therefore

drawn upon collectively to inform decision making. The importance of government is such that it is more or less representative of the desires of the people and seen as most capable of advancing and defending prospects for the common good. Where government has failed is in losing the confidence of the people as competent planners and managers (Gibson 2005). The market is clearly an integral and essential structure of any complex society in responding automatically to demands, yet it has failed in placing value on goods and services that are free and has no means of catering to those who do not have the ability to pay for goods and services. Where the combination of these two components is inadequate there is the customary civility and deliberate choice of citizens (Gibson 2005).

As government and market forces have proven to be limited, citizen-based contributions of morality and societal norms of behaviour have facilitated trade and community relations (Gibson 2005). The failures of government and the market have therefore highlighted the need to strengthen participatory decision making and the assertion of non-governmental and non-market groups in holding a larger stake in decision making processes and building of stronger communities (Gibson 2005). It is therefore essential to cultivate more approaches and methods for deliberation and decision-making; thereby involving relevant interests, actors, and communities to shape their future (Robinson 2004). The implication of citizen action and societal values in the spheres of governance can thus lead to greater transparency and accountability, and embarking on a path of development that includes citizens, their ideas, and involvement as opposed to development where the people are passive bystanders.

Responses to market or government failures have incited the re-emergence of ties to local culture as well as recognition of the importance of healthy socio-ecological systems. Equity is another emergent theme that community-based and community-driven groups express importance in defending. Therefore the inclusion of a multitude of actors within the realm of governance is a foundation upon which to base a healthy and secure society.

Precaution and Adaptation

"Respect uncertainty, avoid even poorly understood risks of serious or irreversible damage to the foundations for sustainability, plan to learn, design for surprise and manage for adaptation". (Gibson et al 2005: 111). Uncertainty is always an important element to consider within both the sustainability and developmental spheres. Ecological systems are complex, unpredictable, and dynamic and thus the interactions between various systems and human interventions can often

lead to unexpected trajectories of these systems. The uncertainties of biophysical systems translate to unavoidable risks being encountered (Gibson et al 2005). As important as rigorous, scientific inquiry is for decision making, it does have its limitations in that it cannot always predict outcomes. Confronting uncertainty therefore cannot rely solely on what the correct choice may be but also on what the fair choice may entail. This involves two things: public participation and applying the precautionary principle (Gibson et al 2005). Where uncertainty abounds and scientific analysis does not yield any clarity, then choices based on judgment and the perceptions of people is what prevails. Within a sustainable society however, the power deferential that exists between authority figures such as government officials and the laymen population need be effaced in the name of civility and democracy. Decision making necessitates public engagement so that the outcome represents the desires of the majority and the consequences can be shared equally (Gibson et al 2005).

The precautionary principle simply states "the willingness to act on incomplete but suggestive indications of significant risk to social and ecological systems that are crucial for sustainability" (Gibson et al 2005). The precautionary approach promotes prudence through undertaking activities and plans that are accompanied by a sundry of strategies aimed at flexibility, reversibility, monitoring, and alternative means of support in the event of failure (Gibson et al 2005). These approaches, through observation and experience, facilitate learning which further reinforces ways to deal with uncertainty. These approaches also entail the input of the public to inform decision making; a process that requires an engaged and informed citizenry whereby society can learn and adjust to complexity and uncertainty (Gibson et al 2005).

Integration

One of the major critiques of the pillar-model of sustainable development is that while it espouses the mutual interdependence of the pillars it has been widely interpreted as having distinct entities that are addressed separately (Lehtonen 2004). Furthermore, distinguishing social from economic objectives reinforces the premise that the economy is devoid of human and social elements and is thus treated as such (Lehtonen 2004). Gibson et al (2005) posit the importance of addressing individual sustainability requirements as well as their interconnectedness because changes in one area are bound to influence other areas. And while advancement in one area can lead to mutually reinforcing benefits in other areas, there are instances where conflicts and trade-offs will occur (Gibson et al 2005). Integration however requires that advancements towards

sustainable development produce net progress that is mutually reinforcing and avoid significant negative consequences (Gibson et al 2005).

Jabareen (2008) acknowledges the separation of economic, ecological, and social factors at the management, planning, and policy levels and that management systems integrating these factors are necessary within a sustainable development framework. Decision making needs to be restructured in order to place environmental and developmental concerns at the forefront of the economic and political spheres (Jabareen 2008). Change towards sustainable development necessitates the involvement of governmental and non-governmental entities such that partnerships are formed between the government, private sector, local authorities, quasi- and non-governmental organizations and national plans, laws, and objectives become aligned with the requirements of sustainable development (Jabareen 2008).

3.3 BIOSPHERE RESERVES

The United Nations Educational, Scientific, and Cultural Organization (UNESCO) launched the Man and the Biosphere (MAB) Programme in 1971, although discussions had been ongoing already for several years (Jaegar 2005). The Programme was established with the aim of reconciling nature conservation with economic development priorities. MAB was established to tackle the inherent complexities of such a concept. As commitment to sustainable development emerged out of growing awareness of the precarious trajectory that development was taking, the MAB Programme accommodated this need for increasing knowledge. Thereupon, the Biosphere Reserve concept was born; an important element of the MAB Programme, Biosphere Reserves would serve as government nominated and UNESCO designated "laboratories" where MAB concepts would be implemented, assessed, honed and improved upon (UNESCO 2000).

The Biosphere Reserve concept was actually developed before the launching of the MAB programme in 1970, and initially had been included in one of the Programme's thematic project "Conservation of Natural Areas and of Genetic Material they contain". The governing body of MAB, the International Coordinating Council (ICC) however decided that human uses of the reserves should have a greater focus and play a greater role. This subsequently brought together a Task Force in 1974 consisting of UNESCO, the World Conservation Union (IUCN), the United Nations Environment Programme (UNEP), and the Food and Agriculture Organization (FAO), that developed criteria and guidelines for the selection and establishment of Biosphere Reserves. The Task Force therefore outlined, along with ecosystem conservation, research, and education as

primary objectives of Biosphere Reserves. By 1976, the World Network of Biosphere Reserves (WNBR) was created, including 208 designated Biosphere Reserves by 1981 and 440 by the year 2003 (Jaegar 2005).

3.3.1 FUNCTIONS AND ZONING OF BIOSPHERE RESERVES

The "First International Biosphere Reserve Congress" held in Minsk, Belarus in 1983 lead to an "Action Plan for Biosphere Reserves". This action plan implemented the three complementary functions of the Biosphere Reserve; conservation, development, and a logistic function including research, education, and training (Mehring and Stoll-Kleeman 2010). The conservation function contributes to the conservation of landscapes, ecosystems, species, and genetic variation. The development function cultivates human and economic development that is both culturally and ecologically sustainable and the logistic function encompasses demonstration projects, environmental training and education, "research and monitoring related to local, regional, national, and global issues of conservation and sustainable development" (UNESCO 1996b pp. 16).

The Congress introduced the zoning of Biosphere Reserves to physically delineate three sectors of the Biosphere Reserve. Corresponding functions accompany these zones; the core zone must be legally protected and is allocated to its long-term protection as set out by the conservation objectives of the Biosphere Reserve; they include biodiversity conservation, monitoring minimally disturbed ecosystems, and embarking on-destructive research (UNESCO, 1996a). The buffer zone consists of activities attuned to the conservation requirements of the core zone such as environmental education, recreation, and ecotourism (Francis and Munro 1994). The transition zone or the 'zone of cooperation' permits and encourages sustainable development, resource management and activities such as agriculture, human settlements, and other uses implicating many actors such as local communities, scientists, cultural groups, civil society, economic interests, and other stakeholders (Francis and Munro 1994; UNESCO 1996a; UNESCO 1996b). The transition zones are areas important for the pursuit of sustainable development where change that embraces biodiversity conservation, traditional ecological knowledge, and effective and appropriate resource management is sought (UNESCO 2000).

The action plan further stipulated that human involvement would represent a component of a Biosphere Reserve and therefore the participation of governmental and non-governmental institutions, civil society actors, and community members would advance the Biosphere Reserve

concept from a purely scientific position to one that merged environmental and social factors (UNESCO 1996a).

3.3.2 SEVILLE STRATEGY FOR BIOSPHERE RESERVES

Having been a product of the 1995 "International Conference of Biosphere Reserves", the Seville Strategy for Biosphere Reserves reflected the changing role of Biosphere Reserves from the 1984 "Action Plan for Biosphere Reserve". Promoting the objectives of the 1993 "Convention on Biodiversity" held in Rio de Janeiro; conservation of biological diversity, sustainable use of its components, and fair and equitable sharing of benefits arising from the utilization of genetic resources (UNESCO, 1996a), Biosphere Reserves have embraced an integrative approach towards management, development, and conservation. They have also evolved to incorporate greater multi-stakeholder cooperation and involvement in decision making as a means of achieving conservation goals and economic development that respects cultural sensitivity. The vision for the 21st century with respect to Biosphere Reserves is that people living and working within them will engage in a more balanced relationship with nature but will also contribute to society through sustainable development and thus will provide a tangible paradigm of sustainability that can be replicated and improved upon for the future (UNESCO 1996a).

The Seville Strategy, although based in principle on the objectives of the "Convention on Biological Diversity", outlines four practical goals towards the creation of effective, functioning Biosphere Reserves (UNESCO 1996a).

Goal 1 states "Using Biosphere Reserves to Conserve Natural and Cultural Diversity" and proposes to achieve this through integrating Biosphere Reserves into conservation planning as strategies for biodiversity conservation and sustainable use. The linkage of Biosphere Reserves with other protected areas can improve overall biodiversity conservation as well as providing a reservoir for wild type species of cultivated and domesticated species and rehabilitation and reintroduction sites of at risk species (UNESCO 1996a).

Goal 2 states "Utilizing Biosphere Reserves as Models of Land Management and Models of Approaches to Sustainable Development". The objectives of this goal entail acquiring the support and participation of local people through the provision of economic benefits, conflict resolution, and enabling multi-stakeholder participation in decision making (UNESCO, 1996a). Local people can become more involved in the case where Biosphere Reserves extend into areas that contribute

to sustaining their livelihoods (e.g. rural and peri-urban areas). Factors that lead to environmental degradation should be identified and steps taken to mitigate them. Also, the natural resources, products, and services of the Biosphere Reserve should be assessed in order to promote environmentally sound and economically viable opportunities for local people. The zones of the Biosphere Reserve will require coordination and hence mechanisms must be put in place to ensure that there is better harmonization and interaction between the zones, such as, identifying incompatibilities between the conservation and sustainable use function and working towards maintaining that balance (UNESCO, 1996a). Regional planning is another gateway that Biosphere Reserve can use in order to influence land use planning strategies towards sustainable and ecologically sensitive land use.

Goal 3 states "Use Biosphere Reserves for Research, Monitoring, Education, and Training" (UNESCO, 1996a). This goal is aimed at understanding the relationship between human beings and the natural world within the reserve. The Biosphere Reserve will therefore serve as a "laboratory" to conduct socio-economic research, and will be used to address issues such as biodiversity, desertification, water cycles, ethno-biology, and global change (UNESCO, 1996a). Networking of such research can be used to promote regional and inter-regional coordination of information sharing and learning which would lead to the implementation of new and innovative ideas in the economic, ecological, and social spheres. The Biosphere Reserve also has potential as monitoring sites for international programs dealing with terrestrial and marine observing systems, global change, biodiversity, and forest health. As rigorous scientific activity will be taking place within the reserve, there can also be the adoption of internationally recognized protocol for the classification of flora and fauna which would greatly facilitate inter-regional research networking (UNESCO, 1996a). Another objective to fulfil this goal would be an education and public awareness component to encourage and promote the involvement and participation of local people within the Biosphere Reserve. Also, new communication methods of disseminating information within and between Biosphere Reserves would be developed; this information would encompass sustainable living as practiced within the reserve, and would be directed at the media, school curricula, and the public at large (UNESCO, 1996a). The Biosphere Reserve must be managed and will therefore need managers and specialists to ensure that the different functions of the Biosphere Reserve are represented and integrated. The reserve can therefore serve to bolster international training opportunities and programs. These can offer managers and specialists the training required for monitoring programs, analyzing and studying socio-cultural conditions, conflict resolution, and managing resources cooperatively within a socio-ecological context (UNESCO, 1996a).

The fourth goal states "Implement the Biosphere Reserve concept" and achieving this requires integrating the three functions of Biosphere Reserves (UNESCO, 1996a). This goal must be targeted from as many aspects as there are components of a Biosphere Reserve; which means that there is a wide array. Education of local people and engaging their participation in order to define zones and manage boundaries, the organization of information dissemination mechanisms on the plans, goals, strategies, and management of Biosphere Reserves, providing case studies of functioning (more advanced) Biosphere Reserves, providing information on how to manage Biosphere Reserve, how to engage local participation, and conflict resolution techniques are all elements of the functional capacity of reserves that must be addressed (UNESCO, 1996a). An implementation policy or plan coupled with the appropriate authority or mechanism to ensure execution is necessary. Private sector initiatives must also be engaged so that they follow sustainability criteria of environmental sensitivity and socio-cultural appropriateness (UNESCO, 1996).

Another objective towards the goal of implementing Biosphere Reserves is to reinforce the world network of Biosphere Reserves (UNESCO, 1996a). Strengthening the world network of Biosphere Reserves as put forth by the Statutory Framework of the World Network of Biosphere Reserves, would "enhance the effectiveness of individual Biosphere Reserves while strengthening the common understanding, communication, and cooperation at regional and international levels" (UNESCO, 1996b). As recommended by the Seville Strategy, this could be achieved at the international levels by providing the necessary resources for the implementation of the statutory framework, facilitating periodic review which would lead to more effective functioning of reserves, providing support for the functioning of the advisory committee for Biosphere Reserve, and fostering greater communication, networking and information exchange among reserves (UNESCO, 1996a).

3.3.3 THE STATUTORY FRAMEWORK OF THE WORLD NETWORK OF BIOSPHERE RESERVES

The framework describes the basic supporting structure of Biosphere Reserves as it relates to setting guidelines, defining criteria for designation, outlining the designation procedure, articulating requirements for adequate publicity of reserves and participation in the network. The framework also addresses the need for bureaucracy in that Biosphere Reserves should be subject to periodic reviews and be held accountable to the International Coordinating Council (ICC) of MAB (UNESCO, 1996a). The role of UNESCO is also outlined in the framework and it states that UNESCO

shall act as the Secretariat of the Network that maintains responsibility for the functioning and promotion of the network. UNESCO shall assist in bridging individual Biosphere Reserves and experts through communication and in maintaining an information database of Biosphere Reserves that is widely accessible and can be networked with other initiatives. UNESCO can provide monetary aid to the reserves through bilateral and multi-lateral sources and is also responsible for keeping individual reserves updated on objectives and descriptive details through regularly distributed publications (UNESCO, 1996b).

3.3.4 THE CURRENT STATE OF BIOSPHERE RESERVES IN THE CARIBBEAN AND LATIN AMERICA

Latin America and the Caribbean encompass three main geographic regions: Central America including Mexico; the insular Caribbean; and the Latin American continent. These regions are characterized by mountain ranges (the Andes), deserts, broad highlands, coastal lowlands, extensive wetlands, grassy plains, a sundry of forest types, volcanic islands, and important coral reef formations (Jaegar, 2005). These regions can be further broken down into five major terrestrial ecosystem types: tropical broadleaf forests; conifer/temperate broadleaf forests; grasslands/savannas/shrub lands; xeric formations and mangroves. The biodiversity in these regions is highly significant and seven of the twenty-five world-wide biodiversity hotspots are found in Latin America and the Caribbean, with 25% of the world's forest cover being located in this region (Jaegar, 2005).

The rich biological diversity and natural resources are not immune to development and suffer from environmental degradation as a result of rising populations deepening inequities of incomes, insufficient land-use planning, and natural resource exploitation. The complexity of these problems is such that they are inextricably connected to socio-economic, cultural, and political issues where causation and effect are not easily discerned from one another (Jaegar, 2005).

Protected areas have therefore been implemented as a means to combat environmental degradation that is adversely affecting the natural capital stock of this region (Jaegar, 2005). Interestingly, studies have found a direct correlation between protected natural areas and the presence of marginalized groups such as indigenous people and local people who use the land and its resources to sustain themselves. The mere delineation of an area to be protected is therefore insufficient in conservation attempts as cultural diversity impacts very heavily on such areas. An integrated approach is therefore needed where the scope is widened to incorporate socio-cultural

and political factors; and thus the MAB programme of Biosphere Reserves that attempts to coordinate conservation with development that is ecological and socio-culturally sustainable.

It is clear that there are many levels at which things must progress for MAB to realize the goals set out for it by UNESCO and these include better communication strategies through better communication strategies, better management of language barriers, greater allocation of human and financial resources to national MAB committees, a broader range of stakeholders composing the national MAB committees, and better access to information through information databases and clearing house mechanisms (Jaegar, 2005).

In Latin America and the Caribbean, as of 2003 there are approximately 70 Biosphere Reserves, 4 of which are US-American and French jurisdictions (Jaegar, 2005). While South America is currently leading with the number of Biosphere Reserves at 40 and Central America and Mexico with 23, the insular Caribbean is severely underrepresented with the combined Cuban and the Dominican Republic Biosphere Reserves totalling at seven and none representing the politically independent Lesser Antillean Bio-geographical province (Jaegar, 2005). The Statutory Framework of the WNBR states that "Biosphere Reserves should encompass a mosaic of ecological systems representative of major bio-geographical region, including a gradation of human interventions" (The Statutory Framework of the World Network of Biosphere Reserves, UNESCO, 1996). Yet 13 out of the 47 bio-geographical regions have not been represented and although three quarters of the bio-geographical regions are covered, there are conspicuous gaps that need to be filled (Jaegar, 2005). Coupled with the lack of representativeness is also the dire need for experimentation; the potential for Biosphere Reserves as valuable instruments for the practical approach to sustainability has been recognized, but more so academically (Stanvliet and Parnell, 2006). There is therefore a need to test this concept (Stanvliet and Parnell, 2006) but more importantly there lacks an important overview on the functioning, strengths, weaknesses, and lessons learned from Biosphere Reserves implemented under the MAB programme especially as it pertains to Latin American and the Caribbean (Jaegar, 2005).

3.3.5 THE FUNCTIONING OF BIOSPHERE RESERVES

Challenges

Biosphere Reserves were born out of the need for reconciling conservation with sustainable development. The conventional approach to conservation focused narrowly on one

objective—biodiversity, ecosystem protection and preservation. Yet, newly defined concepts of sustainability married conservation with sustainable economic development. And although Biosphere Reserve designation meant to embody the three aforementioned functions, in reality many Biosphere Reserves only fulfilled that conservation objective. The challenge was therefore to translate the well-sounding integrative concepts into practical implementation on the ground. The need to address this issue prompted the 1995 "International Conference on Biosphere Reserves" in Seville, Spain and marked a cornerstone event in the evolution of the Biosphere Reserve concept. The purpose was to examine the 1984 action plan and to reflect upon the future role of Biosphere Reserves. With such great input (400 experts from over 100 countries), the products of the conference included two key documents; the Statutory Framework on the World Network of Biosphere Reserves and the Seville Strategy for Biosphere Reserves, that illustrated how the Biosphere Reserve concept has evolved in parallel with the philosophy of sustainability and the broader discussion on conservation and development. An excerpt pertinently capturing this philosophy as taken from the Seville Strategy; "Rather than forming islands in a world increasingly affected by severe human impacts, they can become theatres for reconciling people and nature; they can bring knowledge of the past to the needs of the future; and they can demonstrate how to overcome the problems of the sectoral nature of our institutions; in short, "Biosphere Reserves are much more that just protected areas" (UNESCO 1996a).

The follow up conference 5 years later in Pamplona, Spain, was geared towards assessing the implementation of the Seville Strategy and recognizing and addressing emergent problems and priorities. Out of this meeting, as acknowledged by the MAB Secretary at the time, were improvements that had to be made to the existing Biosphere Reserve framework. These included greater visibility and networking, greater use of learning and research environments, better integration with regional planning and local economies, better evaluation methods, and deeper affiliations with multi-lateral environmental agreements (UNESCO 1996a).

Biosphere Reserves propose a complex mission of integrating various concepts within one approach towards sustainable development. Vietta and Stoll-Kleeman (2008) point out the challenges of reconciling biodiversity conservation of the core areas with sustainable development of the buffer and transition zones; adequately responding to local conditions while fulfilling long term needs and opportunities have proved challenging due to a lack of organizational capacities (Vietta and Stoll-Kleeman 2008). Research conducted on a Malagasy Biosphere Reserve outlined the factors influencing failures and successes in the effective management of the Biosphere Reserve.

One of the challenges to the integrated management of Biosphere Reserves is the lack of equitable sharing of benefits. If the well being of people is not addressed then people are more likely to use natural resources unsustainably (Vietta and Stoll-Kleeman 2008). Illegal activities and subsistence agriculture are often what people turn to in order to supplement their income which places significant pressures on natural resources. Low levels of education are also what forces people into subsistence farming as they are severely limited in their choice of occupation and being uneducated also affects how people treat the environment around them thus highlighting the importance of providing information to local people.

Achieving such gains towards the integrated management of ameliorating the well-being of people as well as reducing pressures on ecological systems requires a decent level of organizational capacity for target formulation and implementation of objectives (Vietta and Stoll-Kleeman 2008). Responsibilities need to be delineated and designated for tasks to be undertaken and completed successfully and a certain level of accountability is also required. Leadership is also a key qualification that persons fully involved in a Biosphere Reserve must possess (Stoll-Kleeman 2007). Biosphere Reserves are frequently under-funded, thus affecting the extent to which organizational capacities can be expressed (Mow et al 2003; Vietta and Stoll-Kleeman 2008). With little funding, organizational capacities are often exhausted resulting in high employee turn-over due to low salaries and lack of motivation. Other challenges include limited leadership capabilities and resources (Vietta and Stoll-Kleeman 2008).

In the Caribbean and Latin America, although the MAB programme is well-known, its functions remain vague as access to this information is limited by language barriers and uncoordinated correspondence (Jaegar, 2005). Furthermore, the MAB programme and Biosphere Reserves have been perceived as centralized and lacking transparency and as a result MAB has not been recognized as having an identifiable association with conservation and development (Jaegar, 2005). Altering its current perception will require establishing a regional programme, created upon the networking of various partnerships and alliances in Latin America and the Caribbean. From this platform, MAB can work to recreate an identity for itself that clearly reflects its role and priorities. Much consideration and effort must be put into effective communication strategies (Jaegar, 2005). MAB can serve a unique role by coordinating communication between disciplines and sectors in the field of conservation and development, yet feedback from the Caribbean and Latin America has confirmed the limited capacity to which MAB has not fulfilled that purpose (Jaegar, 2005). There are certain countries however, such as Mexico and Brazil, where the intended

purpose of MAB, through the national MAB committees has been realized. In Mexico, MAB is very closely affiliated with the National Institute for Ecology and has influenced conservation legislation and policies; in particular Biosphere Reserves and aspects of the Seville Strategy have been included in national legislation (Jaegar, 2005).

Other challenges that prevent the MAB programme from playing the role set out for it by UNESCO within Latin America and the Caribbean are the limited financial and human resources allocated to this programme. In addition is the fact that the National Committees representing MAB tend to be underrepresented in certain domains such as non-governmental organizations (NGO's), academia, and representatives of local and indigenous groups (Jaegar, 2005). An explicit function of the MAB programme is to facilitate communication, coordination, and decision-making among a diverse range of stakeholders; it is therefore counterproductive to maintain committees with such a limited scope in terms of perspectives and interests.

3.3.6 SUSTAINABLE DEVELOPMENT WITHIN A BIOSPHERE RESERVE

Biosphere Reserves serve as possible models for sustainable development; as they uphold the aforementioned sustainability criteria through their designated functions of economic viability that respects social equity and cultural elements, and biodiversity conservation. The Biosphere Reserve also has a logistic function through research, environmental education, demonstration sites and training (UNESCO 1996a). Locating tourism within models of sustainable development has important implications for St. Lucia and the wider Caribbean, including its sustainability or lack thereof and the mass tourism phenomenon.

A Biosphere Reserve has a significant ecological function in that it requires the conservation of landscapes, ecosystems, species and genetic variation through appropriate zoning. Regions of decreasing human intervention represent zones with varying degrees of important ecological features. Core zones are areas of conservation through legal instruments with minimal human activity; contiguous buffer zone have increased amounts of human activity such as recreation, ecotourism, environmental education, although it is less than that of the transition zone which includes the full range of human activities such as settlements, agriculture, economic development, and tourism.

Ecological integrity is a major focal point in all sustainability frameworks. Jabareen (2008) and Gibson (2005) express the importance of maintaining stocks of natural capital for the present

and future generations. Natural capital stock includes the capacity of natural systems to absorb and process pollution from anthropogenic sources, non-renewable resources such as minerals and renewable resources such as food crops and water (Jabareen 2008).

The Ecosystem Approach

The ecosystem approach was adopted by the Convention of Biological Diversity as a primary framework for action. The ecosystem approach also shares philosophies with the Biosphere Reserve concept; balancing conservation and sustainable development in a socio-culturally equitable manner (UNESCO 2000).

While the ecosystem approach acknowledges the importance of applying scientific methodologies to understanding ecological systems, processes, and interactions with the surrounding environment, it acknowledges with equal importance that human beings are an intricate part of ecosystems (UNESCO 2000). The ecosystem approach also recognizes that ecosystems are complex systems exhibiting unpredictable change and varying levels of resilience; the ability to absorb disturbance without changing structure or function (Walker and Salt 2006). Socio-ecological systems possess resilience and uncertainty; hence the management of natural resources must be approached as a complex system of interacting human-nature systems that are dynamic and capable of shifting alternating steady states (Walker and Salt 2006). Alternating from one steady state to the next may not necessarily be in the best interest of human beings whose welfare may depend on the resources obtained from an ecosystem operating at a particular steady state (Taylor 2004). The most suitable approach would therefore be to enhance the system's ability to remain in the desired steady state as opposed to conventional management techniques of strict control over prescribed boundaries (Taylor 2008). The adaptive management approach; responding to unforeseen changes through learning and adjusting approaches, takes into account the dynamic nature of ecosystems and acknowledges the limitations of human beings in having complete knowledge or understanding of them (UNESCO 2000).

UNESCO (2000) speaks of the 12 principles of the ecosystem approach (Table 1) along with 5 operational guidelines for the application of the principles that were established by the Convention on Biological Diversity. The principles espouse an integrated approach to resource management where the rights and interests of all stakeholders must be recognized and taken into account and where both biological and cultural diversity are fundamental to the ecosystem approach (UNESCO 2000). The management of socio-ecological systems should be decentralized

to lower levels in order to foster greater efficiency and equity. Due to the complex and unpredictable nature of socio-ecological systems, management activities need to be carefully assessed and anticipate consequences for other ecosystems, and make appropriate changes to the organizational structure of institutions that are involved in decision making (UNESCO 2000). The influence of economics on ecosystem management must be acknowledged and changed. Natural systems are undervalued; the economy must reflect the true value of these systems by preventing the use of incentives and subsidies optimized for singular purposes which diminish their resilience and diversity. Incentives should be used rather, to promote diversity and sustainability and responsibility for environmental degradation should be assumed by the agents of such destruction (UNESCO 2000). The integrity of ecological systems and processes must be maintained for biological diversity conservation and sustainability, the maintenance of ecosystems can only be accomplished by respecting and adhering to the natural limits to which ecosystems function and planning for long term conservation. The management of a socio-ecological system must be recognized as a complex system and be prepared to adapt to and learn from unpredictable change (UNESCO 2000). Instead of designating ecological components as either protected or unprotected, a more flexible approach should be assumed such that a balance exists between use, integration, and conservation. The ecosystem approach should encompass all of the pertinent stakeholders in order to have the requisite expertise present, as well all different forms of knowledge and information should be welcome in order to develop effective management strategies, this ranges from scientific and empirical knowledge to indigenous and local knowledge (UNESCO 2000).

The 5 operational guidelines for applying these principles includes striving for a better understanding of ecosystem processes, interactions, and functions in order to gain a greater appreciation of ecosystem resilience and the effects and cause of biodiversity loss and habitat fragmentation (UNESCO 2000). Where information is lacking, management practices must still continue, thus the importance of the ecosystem approach of adaptive management.

The benefits obtained from socio-ecological systems should be optimized in such a manner as to allow the functions providing such benefits to be conserved while maintaining the benefits to the stakeholders responsible for their management. These stakeholders must understand how to manage biological diversity within ecosystems therefore capacity building is required as well as valuing ecosystem goods and services appropriately and preventing the use of incentives used to do the opposite (UNESCO 2000).

The practice of adaptive management must be embraced because it recognizes the dynamic and uncertain nature of socio-ecological systems. Adaptive management assumes a learning role so that methodologies of management and monitoring are adapted and adjusted according to the outcome of such practices (UNESCO 2000). Adaptive management takes into account social and cultural diversity as factors affecting uncertainty and remains flexible in policy design and implementation. Monitoring is an extremely important part of adaptive management as it provides key information for progressing to more effective management strategies (UNESCO 2000).

Management should be carried out at the appropriate scale which often signifies decentralization of management to the local level. Success can only be achieved at the local level if managers can assume power through appropriate legislative frameworks and possess the capacity to actualize effective action. Decision making processes must be designed to involve all relevant stakeholders and where necessary higher levels of management be incorporated (UNESCO 2000).

A multitude of sectors are involved with biodiversity and ecosystems including fisheries, forestry, agriculture, local economic development, and others. An ecosystem approach promotes cross-sectoral communication and cooperation among the various sectors where information and experiences are shared in order to have a more integrated approach to socio-ecological system management (UNESCO 2000).

3.4 SMALL ISLAND DEVELOPING STATES

Small Island Developing States (SIDS) have been referred to as "Beautiful but Costly". They are small islands located in the regions of Latin America and the Caribbean, Africa, and Asia and the Pacific. These islands are the ones to which North American and European tourists flock for vacations during the winter time. They are low-lying, tropical countries that posses similar inherent characteristics that making them economically and ecologically vulnerable.

Their inherent characteristics make them economically very vulnerable; many of the SIDS are also considered as Least Developing Countries. They are small in size and population, insular, susceptible to natural disasters and highly dependent on international trade. Their small physical size results in them having limited resource endowments and consequently their high import content makes them heavily reliant on international trade, with their economic vulnerability being directly linked to the lack of influence on the terms of trade (United Nations 1994).

Vulnerability is defined as the likelihood of incurring damage or injury due to external forces, the reciprocal of vulnerability is resilience it is the capacity of a system to absorb disturbance yet still retain its structure and ability to function (Walker and Salt, 2006). Economic vulnerability of SIDS include lack of economies of scale, small domestic markets, lack of natural resources with resulting high import content, the concentration on a few key exports resulting in an economy that lacks diversity, inability to influence international trade and uncertainties in supply due to insularity with the associated high costs (Fairburn, 2007).

3.4.1 MIRAB MODEL

The second half of the 20th century welcomed a profusion of countries into sovereignty, many of them being small or micro states (Baldachinno 1993). The newly independent states, largely former colonies that had once relied extensively on their colonial patrons, were now given the opportunity to define a vision for their future via the construction of appropriate strategies to achieve that vision. The developmental paradigms assumed by these small developing countries, many of them SIDS, however did not reflect the peculiarities characteristic of these small, remote, post colonial developing states. Smallness has in fact seemed to be an advantage with small developing countries ranking higher than larger developing countries in terms of per capita GNP, higher school enrolment, lower mortality rates, and receiving more aid on softer terms (Baldachinno 1993). Where the development of SIDS has failed is in actualizing deliberate, authentically and locally derived objectives to guide a path towards development that has been defined internally based on indigenous interests, perceptions and problems (Baldachinno 1993). SIDS therefore donned previously constructed westernised concepts of development, fine tuning to allow for their inherent differences, and inevitably creating systems where their inherent vulnerabilities would be magnified. It must also be recognized that the ability to choose a development strategy is difficult, compounded by problems previously mentioned such as diseconomies of scale and limited human resources, development has often been a product of circumstances, exploiting available opportunities while attempting to dodge or abate potential problems (Baldachinno 1993).

The Migration, Remittances, Aid, and Bureaucracy (MIRAB) model was based on the observation of islands in the Pacific in an attempt to explain post colonial, post-independence modern economic development (Bertram 2004b). Many SIDS enjoy high standards of living and lack the extreme poverty that is characteristic of large, land locked, developing countries such as those in Sub Saharan Africa, Latin America and South Asia. SIDS have taken advantage of their

ability to solicit largesse from the international community through various forms of aid, remittances from over-seas migrant residents, dividends, government budgetary subventions, interest earnings, and social welfare payments. Remittances from overseas resident migrants has been shown to be a strategic microeconomic family plan, seen especially in the Pacific islands where all family members engage in arrangements aimed at economic growth by investing in the migration of some family members with the expectation that remittances ensue once the migrant has been established overseas (Bertram, 1999). Migration is therefore seen as a solution to poverty by improving the standards of living of both the family members who migrate and the ones who remain in their home country (Connell and Brown 2005). The significance of remittances surpasses the economic situation at the level of the household to affect the national economy by providing greater employment in construction and the service sector and by contributing to the alleviation of balance of payments (Connell and Brown 2005). Although the information presented on remittances is specific to the islands of the Pacific, migration, as a major determinant of demography, is very important to many of the SIDS as it is often a result of uneven social and economic development (Connell and Brown 2005), a pervasive phenomenon in SIDS.

Coupled with aid as leading sectors in the country's economic development is bureaucracy, a non-tradable product where its main role is to administer the implementation of infrastructure and the payment of public sector salaries (Bertram, 2004b). Infrastructure investments were provided by colonial powers and kept in operation by post colonial aid. Despite these infrastructural investments contributing to the promotion of physical and cultural welfare of residents, this type of bureaucracy is highly unproductive as far as economic viability is concerned. Assets established to help SIDS compete in the international market in terms of goods are highly underutilized and the viability of commercial export production is heavily subsidized (Read 2001).

Capitalizing upon their strategic locations, investment potential, fishing rights, tax differentials, and tourist products to secure economic growth, the MIRAB model derides the sovereignty of these states as their economic growth can hardly be defined as autonomous (Baldachino 2004). Yet the argument is that as long as the aid keeps flowing, regardless of its form, then it is a sustainable, albeit unorthodox, development strategy.

3.4.2 PROFIT MODEL

The PROFIT model (People, Resources, Overseas Engagement, Finance, Transportation) describes an alternative model that explains the development seen in SIDS, it differs from the MIRAB model not by the main components that define it but rather by the degree to which these

components play a role in development. Remittances, migration, and bureaucracy can describe all contemporary societies, however the extent to which these components plays a role is important (Baldachino, 2004). The PROFIT development paradigm relies a lot less on these elements and seeks to go beyond the MIRAB model in terms of growth and development. As eloquently put by Baldachino (2004 pp.13) "The first relegates the MIRAB territory to a regime of subsidy, of aid with dignity, of consumer-led growth without development, of seeking the responsibility for economic benefits in exogenous, extra-territorial policy fora. The second -when successful – is a jurisdictional or constitutional tool, an endogenous instrument for public policy which local "governing wits" can usually transform into economic prosperity".

Despite the divergence in theories between MIRAB and PROFIT, an economy can shift from one to the other or assume elements pertaining to both models (Baldachino 2004). The differences between MIRAB and PROFIT in terms of a local jurisdictional autonomy are such that PROFIT embarks upon a wiser immigration and cyclical migration policy of its people (Bertram 2004b). PROFIT countries capitalize on their jurisdictional autonomy and as a result have strong financial management where activities such as offshore banking and tax havens are held, a stark contrast to the MIRAB model (Bertram 2004b). Another distinguishing feature of the PROFIT model is tourism. Tourism, a sector embraced by many SIDS, has afforded SIDS with long term comparative advantage that has allowed them to emerge from the MIRAB mode of development (Baldachino 2004). Small island tourist economies (SITE) can be regarded as a sub set of the PROFIT model (Oberst and McElroy 2007).

3.4.3 SITE MODEL

Small Island Tourism Economies (SITE) are a sub-group of PROFIT economies as they harness the resourcefulness of their jurisdiction and create domestic policies to restructure their economy away from colonial agriculture (McSorley and McElroy 2007). SITE countries rely on tourism for a large percentage of their economic revenue and use tourism as an engine for economic growth; relying on foreign direct investment, foreign exchange earnings, and high visitor arrivals. SITE differ from MIRAB by number of tourist arrivals, tourism infrastructure and amenities but they also outperform MIRAB socially, demographically, and economically (Oberst and McElroy 2007). In terms of employment, SITE are better able employ a larger percentage of the work force because of the dynamic private sector, the diversity of opportunities in the service industry, as well as the related spin off activities (Oberst and McElroy 2007).

The SITE model therefore presents a viable alternative to the MIRAB model as tourism does propose a sensible route to achieving socio-economic modernization. There are however negative socio-environmental outcomes that can result from small islands being saturated with tourists and the related infrastructure and amenities as well as degradation of ecologically and culturally significant landscapes. Although the sustainability of tourism in SIDS is often questionable as social and environmental concerns are not always properly addressed, tourism in SIDS is a success leading to positive economic growth impinging positively on socio-economic factors; a result of aggressive endogenous policy for tourism promotion (McElroy 2006).

In comparison to the MIRAB model, the SITE model is indeed more resilient, for the same reasons that the PROFIT model was more resilient than MIRAB, and including the fact that SIDS are more resilient to changes in tourist demand than to changes in foreign demand for commodities, another important reason for restructuring the economies of SIDS away from colonial agriculture (Encontre 1999). SIDS also capitalize on their insularity for attracting tourists who find the remoteness of SIDS rather desirable (Encontre 1999). Tourism however, is not a panacea for the economic development of SIDS for new problems arise such as environmental degradation, the perpetuation of the colonial legacy of servitude, and the aggressive pursuit of tourism as a growth engine that may result in an extremely specialized and fragile economy.

The small physical size of SIDS means that there are competing uses for the limited land resources and therefore environmentally sensitive as well as culturally and/or historically significant landscapes are often compromised for implementing tourism infrastructure. This can lead to social unrest as well as affect important resources such as water and other ecosystem services. The degradation of a country's ecological resources can make that country more vulnerable to external shocks such as natural disasters but can also reduce a country's economic resilience because natural resources are an important feature affecting the success of tourism.

The Black Servility theory, arising mainly from experiences in the Caribbean, refers to the dominance of white North American or European tourists who are served by darker skinned locals when vacationing in the Caribbean, is an adequate description of how the colonial legacy of slavery and servitude is perpetuated by the tourism industry (Hernandez et al. 1998) There are implications for the social development of the people as the majority of the work force is comprised of tourism related employment and this also raises pertinent questions, such as who are the main beneficiaries of tourism, the people or the foreign investors? And who bears the cost of environmental degradation from the tourism industry?

Given that tourism is a tremendously viable option for the economic development of SIDS, its resilience is important for maintaining economic growth and development, and therefore sustainability within the tourism sector is extremely important. Many SIDS grapple with the sustainability of tourism as it is often at odds with economic viability. However, if an economy must be resilient it must be able to persist into the long term as well as mutually reinforce other elements upon which it depends; such as socio-cultural and environmental elements.

3.5 TOURISM

Mathieson and Wall (1982) defined tourism as "the temporary movement of persons to destinations outside the normal home and workplace, the activities undertaken during the stay, and the facilities created to cater for the need of tourists". Aronsson (2000) further adds that there must be a journey back to home base and this period of time spent at the destination must be no more than a year but greater than 24 hours. Money spent at the destination must not have been earned there and the purpose for travel includes recreation, holidays, sport, business, meeting, conventions, study, visiting relatives or friends, fulfilment of mission work and religious reasons (Aronsson, 2000).

Tourism has grown exponentially from its post war inception in the 1950's until present (Brohman, 1996). Statistics place international tourist arrivals in the 1950's at 25.3 million and increasing to 528 million by 1994, with an estimated 1.6 billion arrivals by 2010 (WTO, 1994). The financial growth is also staggering with expenditures swelling from U S $2.1 billion in 1950 to U S $254.8 billion in 1994 (Brohman, 1996). Tourism, particularly international tourism, represents an extremely significant growth sector and is disputed to be the world's third leading industry after oil and vehicle production with a 12% of the GNP (Brohman, 1996).

Tourism has been a major force in shaping the economies of developing countries, has contributed significantly to the growth of these economies, and has facilitated engagement in the global market while gaining benefits from foreign exchange (Brohman, 1996). The overall production and employment within host countries have grown and are attributed to tourism and foreign trade (Brohman, 1996). Balance of trade and external accounts have tended towards more favourable standing thereby creating greater macroeconomic stability within the country which leads to more advantageous ratings in international financial markets and hence better opportunities for the attainment of foreign loans and investment capital (Brohman, 1996). Foreign exchange gained through tourism can contribute to the importation of goods and hence positively

impact production within the local economy (Brohman, 1996). In the event that tourism creates links with other local economies, there can be positive gains made towards the diversification of the economy especially for economies that depend on a narrow array of export goods (Brohman, 1996).

Tourism stimulated rapid growth and aforementioned has had many positive impacts, yet literature has shown that without the coupling of this growth with other non-economic factors (social, cultural, and environmental), then this growth is unsustainable. Defined within the context of sustainability, this growth has not led to progress that although can be measured in quantitative, economic terms, has severely neglected to induce progress in these other areas and has even been of disservice to them.

3.5.1 LIFE CYCLE OF TOURISM

Small Island Tourist Economies (SITE) with populations of fewer than 500 000 are the most fragile economies because of their limited natural resources and their extremely high dependence on tourism (de Albuerqueque and McElroy 1992). Tourism as aforementioned has greatly benefitted these economies in terms of economic growth, increased employment opportunities for the people, and improved infrastructure. Yet maintaining the fine balance between acquiring the positive economic benefits from the industry while protecting and preserving the natural resources and catering to human resource development is precarious though crucial. The foundation upon which tourism is built includes enticing the potential visitor by offering man-made, natural, cultural, and historical attractions, providing adequate facilities for the visitor once they arrive, and maintaining the appeal of the destination over time to continue attracting visitors. The tourism product, changes as it becomes more successful and assumes different stages along this continuum of change that attracts different types of clientele and needs to provide varying attractions for the continuity of the industry. The tourism product will evolve from phase to phase eventually reaching a critical level that can lead to the decline of the industry or can result in its rejuvenation.

Butler (2006) proposed a *tourist area cycle of evolution* based on a product cycle concept that is characterised by the initial slow sales of the product, a subsequent rapid growth rate, stabilization and then eventual decline (Butler 2006).

In tourism, the initial stage is that of exploration where small numbers of adventuresome tourists are attracted to areas for their unique natural and cultural features. Tourism amenities are under developed or non-existent thus tourists use local facilities which results in high tourist to

local interaction. The physical and social environments remain unchanged and the presence of tourists is insignificant to the economy.

The involvement stage follows; once visitation becomes more regular and the tourist numbers increase, locals become more involved by providing facilities and amenities for the visitors. Whereas the exploration stage was characterized by insufficient organization and the haphazard visitation of tourists, the involvement stage presents some semblance of a tourism market with the onset of advertising to target potential, organized travel arrangements and accommodations, and an emergent tourism season (Butler 2006). Social changes are observed in the local residents who are directly involved with the tourists in terms of providing accommodations and assisting in travel arrangements.

The development stage emerges as a result of heavy tourism promotion and advertising to a tourism market is clearly delineated. Local involvement and control of development decreases precipitously as external entities replace modest, locally provided facilities with larger, more sophisticated amenities (Butler 2006). Natural and cultural attractions are developed in order to be marketed and man-made attractions such as casinos, golf courses, and marinas displace natural, cultural, and historical resources as attractions. The physical environment is noticeably different which may impact on social factors as the local population may not necessarily accept those changes (Butler 2006). Policy governing tourism is developed and there is national planning of tourism. The number of tourists visiting the area has increased dramatically to the point of being equal to or exceeding the local population, and the type of tourist has changed from the few adventurous visitors seeking authentic and novel experiences to the more common and numerous tourists that are attracted to well-known, well-serviced, and easily accessible locations.

The consolidation stage has begun when the increase in the rate of tourist numbers declines. The total number of tourists is still on the rise and this total is greater than the local resident population. The economy is heavily dependent on the tourism sector; with marketing and advertising strategies attempting to reach a wider segment of the population and extend the busy season. Main franchises and chains are present although new developments are few. Local resident feelings of alienation increase especially as people do not see the benefits of the industry and are restricted in their activities (Butler 2006).

The stagnation stage is the peak of tourism activity before either eventual decline or rejuvenation. During this period, visitor numbers are at the maximum and the capacity of

amenities, infrastructure, and utilities is exceeded with resultant negative impacts on environmental and social factors. Economic problems also ensue. Efforts have increased considerably to retain visitor numbers and there is high dependence on repeat visitation. Natural and cultural attractions have long been supplanted by man-made or artificial attractions and according to Butler (2006) "the resort image becomes divorced from its geographic region". The type of tourist attracted to such a place is the organized mass tourist, who buys a pre-packaged vacation and has very little decisions to make concerning their experience of the destination; "familiarity is at a maximum while novelty at a minimum" (William 2004).

The next phase can go either one of two ways, into a decline or rejuvenation stage. The decline stage would be characterised by tourists no longer considering the destination as attractive as they once did, the number of visitors would decrease as the destination is unable to compete with other, more desirable destinations. The area eventually moves away from tourism and tourist facilities replaced by structures unrelated to tourism while local residents become more involved as they are able to purchase old tourist facilities at markedly lower prices. These facilities are often converted to non-tourism related activities such as condominiums and retirement homes. The area ultimately loses its tourism function (Butler 2006). On the other hand, the tourism cycle may enter the rejuvenation stage if the attractions upon which tourism is based are changed completely. This can be achieved by either including man-made attractions such as a casino or to rediscover and develop the natural resources of the area. In time however, unless the attractions are extremely unique, locations most often lose their appeal and thus their competitiveness (Butler 2006).

de Albuquerque and Mc Elroy (1992) utilize Butler's (2006) tourism area life cycle to group small-island Caribbean states into three broad categories that reflect their degree of dependence on tourism. The three categories include emergence or initial discovery which is akin to the exploration and involvement stage. These Stage 1 islands are experience low per capita visitor expenditure and attract the intrepid tourist seeking modest accommodations and authentic experiences. Visitors often stay for extended periods of time, many of which are West Indian emigrants returning to the Caribbean for the winter months. Islands exhibiting this stage include Dominica, Saba and St. Eustatius, Monsterrat, St. Maarten, and St. Vincent and the Grenadines (de Albuquerque and Mc Elroy 1992). The transition or intermediate stage which can be compared to the development stage of the life cycle, exhibits extremely rapid growth and expansion in terms of increase in visitor numbers and the construction of hotels and other associated amenities (de Albuquerque and Mc Elroy 1992). These islands exhibit high seasonal variation and a higher ration

of North American visitors who prefer short stays in large scale facilities. These islands include Grenada, St. Kitts, Anguilla, St. Lucia, Martinique, Guadeloupe, Antigua and Barbuda, and the British dependent territories (de Albuquerque and Mc Elroy 1992). The mass-market mature destination which can be likened to the consolidation and stagnation stages (de Albuquerque and Mc Elroy 1992) are the most tourist-penetrated islands and include long-standing Caribbean destinations such as Barbados, the Bahamas, Bermuda, Aruba, St. Maarten, Curacao, and the U.S. Virgin Islands. They are easily characterised by crowding, heavily built up tourist infrastructure and amenities, and their mass-market orientation (de Albuquerque and Mc Elroy 1992).

3.5.2 MASS TOURISM

There are various types of tourism that are often linked to the purpose of travel as well as the way in which the place of destination is managed. Some common forms include mass tourism, eco-tourism, nature or adventure tourism, and niche tourism. Mass tourism is worth mentioning in detail as it possibly represents the most environmentally significant type of tourism that exists as well as the form of tourism characterizing this industry in many SIDS. It is characterized in general by the movement of tourists from the Northern, temperate, and more developed countries to the Southern, tropical, and lesser developed countries (Aronsson, 2000). Large numbers of people visit host countries at accommodations designed for mass production and consumption, where these accommodations are often international chain hotels and restaurants (de Albuquerque and Mc Elroy 1992). Mass tourism is also characterized by visitors who stay for a short period of time, and engage in activities such as recreation and touring. These numbers of visitors however often exceed that of the local population which can lead to crowding that will alter the experience of the tourist as well as displease the local residents (de Albuquerque and Mc Elroy 1992). An unfortunate characteristic of mass-tourism is the displacement of natural, historical, and cultural attractions by man-made or artificial attractions such as casinos, duty-free shopping, and golf courses (de Albuquerque and Mc Elroy 1992). Resource competition between visitors and residents ensue while the local cultural identity and the local participation in the industry declines (de Albuquerque and Mc Elroy 1992).

From a local perspective, because mass tourism is large scale and marketed towards as wide a range of potential tourists as possible, the environmental and social costs are extremely high. The downfall of mass marketing, where the market segment differences are completely ignored in an attempt to maximize product exposure and subsequent sales, is the “boom and bust”

cycle (Jamieson, 2006). This cycle is characterized by high levels of demand leading to oversupply and consequently inefficient use and waste (Jamieson, 2006). This is perfectly exhibited in the mass tourism of tropical countries where large infrastructure is built to accommodate peak season demand. The building and maintenance of these facilities in terms of materials and services is enormous, environmental degradation is often significant and the economic stability is precarious as the industry oscillates between high and low seasonality (Jamieson, 2006).

Despite providing foreign exchange earnings and much needed employment for local people, tourism has the capacity to negatively affect the social fabric and ecological integrity of a place. Tourism therefore must be managed with the intent to be sustainable and to contribute to sustainable development if the preservation of a region as both a destination and a community is valued. The effects of mass tourism as previously described imply the unsustainable nature of mass tourism as a model of development for a country.

3.5.3 GOLF TOURISM

Golf is a tremendously popular sport played and enjoyed by many around the world. Golf differs from other popular sports such as basketball, soccer, football, and hockey. It is also considered a leisure activity and has established its place in the tourism market as a marquee attraction for many destinations including the Bahamas, Thailand, Dubai, and Spain (Palmer 2004). While many tourism destinations have taken advantage of the popularity of the sport to promote their country and to compete internationally, there are many concerns about the impacts of golf courses on the environment, especially in third world countries (Palmer 2004).

Golf tourism is a well-established international niche market that caters to over 60 million golfers world-wide. Interest in the sport is on the rise as it is heavily promoted in the media and is being taken up more and more by the elites of societies (Palmer 2004). Tourist destinations aiming to capitalize on the growing popularity of the sport therefore seek to develop a niche market as part of their tourism package. The advantages of becoming a golfing destination can mean reducing seasonal variation of tourism by extending the high season as tourists would be attracted to a destination to play when the weather does not permit in their own country (Palmer 2004, Markwick 1999). Derelict or degraded land can be developed into a golf course thus converting land that is difficult to develop to a more profitable landscape (Palmer 2004). Golf courses can diversify the tourism product of a country thereby offering a greater variety of recreation for

visitors and thus increasing visitor arrival numbers. Direct and indirect job creation are also important advantages (Palmer 2004).

The advantages are equally matched by disadvantages and hence the growing controversy and opposition to golf course developments (Palmer 2004). While some believe that golf courses can provide green space for wildlife and space available for recreation, others find it very difficult to justify appropriating such large expanses of land for recreation that may have been ecologically sensitive. As well, sequestering large expanses of land that may have been more suitable for agriculture is another contention (Warnken et al 2001). The most significant cause for concern however, seems to be the enormous amounts of water resources that must be appropriated to maintain golf courses. Pattulo (2005) states that Barbados uses 600 000 gallons of water per course per day while Warnken et al (2001) speak of the detrimental fertilisers used to keep courses looking lush and green for tourists. Golf courses often use dangerous herbicides to promote the growth of weed-free grass that will please the golfer (Palmer 2004). And while many small island tourist economies are always trying to diversify, due to international competition, they may feel pressure to diversify towards golf tourism as they have few developable resources (Markwick 2000).

Controversy and opposition also stem from the environmental management of golf courses. Despite the known potentially devastating effects of golf courses on the environment, many countries have made claims of improper planning and management of golf courses. The Barbados National Trust and the Caribbean Conservation Association heavily criticized the Royal Westmoreland Golf and Country Club for developing a 27-hole golf course without conducting an environmental assessment (Pattulo 2005). These civil society groups claimed that it was the lack of political will rather than insufficient environmental laws that lead to this outcome. The facts are that golf tourism is a lucrative business, according to a Barbados Tourism website, *Totally Barbados* (http://www.totallybarbados.com/barbados/About_Barbados/). Barbados is attempting to grow as a golf tourism destination; the popularity of the sport has lead to the creation of its own niche within the tourism product. The national Jamaican newspaper, the Jamaica Gleaner, reported in 2008 that golfing visitors brought more than US $200 million to the economy, without even being an established golfing destination. The newspaper further stated that Jamaica needed to be more aggressive in exploiting this niche in order to reap as many benefits as possible, not only because of the growing popularity of the sport but also to attract a certain tourist profile. The Gleaner claimed that golf tourists often spend exceedingly more money on the island than a typical visitor, who is

more likely to become a repeat visitor, develop business liaisons, and invest in the country (Hutchinson 2008). Golf tourism is therefore the newest boost to the economy that most SIDS are looking to capitalize upon.

3.5.3 TOURISM IN THE CARIBBEAN

The Caribbean represents a melting pot of cultures, races, ethnicities, and languages that have assimilated over centuries through battles between European superpowers over the colonies, the severe marginalization and even extermination of Amerindians, the displacement of millions of Africans during the slave trade, the migration of East Asians as indentured servants, and the degradation and disappearance of ancient cultures replaced by the emergence of hybrid cultures. The richness of the Caribbean islands in terms of biophysical conditions and natural resources enabled the sugar, bananas, copra, and coffee industry to thrive and the resultant wealth of these superpowers can be largely attributed to such exploits.

The former colonies continued to be affiliated with their European colonizers beyond the plantation era, with the colonies assuming the language, culture, social and political structures or semblances thereof of their past conquerors. The latter half of the 20th century however underwent many changes as many of these colonies gained their political independence and their economic mainstay, agriculture, slowly decline as globalization and trade liberalization had effected many changes that posed serious challenges to agricultural viability (McElroy, 2004 and Belal, 2001). Confined by their comparatively small physical sizes, Caribbean states were unable to engage in economy of scale practices and were therefore incapable of competing on the global market as the cost of production of their agricultural goods surpassed the world prices by as much as three fold (Belal, 2001). These small island states (in particular the past British colonies) had previously benefited from preferential treatment in the European market under the Lome Convention. Yet litigations from the United States and its allies brought before the World Trade Organization (WTO), drastically changed the face of agriculture in the region as these small islands states were forced to compete on a level playing field with the rest of the world (Belal, 2001). This inability to compete lead to the downfall of agriculture and subsequently tourism took over as the major foreign exchange earner in the Caribbean (McElroy, 2004).

Many different factors, including the proximity of North America to the Caribbean, access to foreign investments for tourist infrastructure and amenities, the openness of the market permitting the importation of goods necessary to cater to the requirements of first world tourists, the financial

aid obtained for the building of roads, airports, docks, and the advent of jet technology combined with relatively low cost packaged vacations all culminated to create a tourism industry that has transformed the Caribbean region (McElroy, 2004).

Tourism in the Caribbean is characterised primarily by the sea, sand, and sun (3S) tourism which predominates as coastal developments (Weaver, 1998). This 3S orientated-market comprises of the stay over-beach resort product and excursionist-based cruise ship product. Being one of the world's most tourism-intensive regions, many islands of the Caribbean such as Antigua and Barbuda, St. Kitts and Nevis, and St. Lucia depend extensively on tourism for close to half of their gross national product (Weaver, 1998).

While past agricultural use was concentrated inland and lead to environmental degradation on the island's interior, conversely, tourism is concentrated on the coastal zones but is likewise contributing negatively to environmental impacts such as coral reef degradation due to diving, hotel effluents, and boating activities (Weaver, 1998, McElroy, 2004). Forests and watersheds have been damaged as a result of the hotels, condominiums, and road works taking place on steep slopes, directly causing erosion and silting. Activities directly related to the tourism industry such as sewage dumping from cruise ships and hotels, the sinking of mangrove forests and salt ponds for hotel, marina and infrastructure development, and yacht anchoring are adversely affecting reef systems, endemic species, and wetlands (Weaver, 1998).

Socio-cultural and economic impacts bear heavily upon the islands. The culture of the region differs drastically from that of tourists visiting and this often leads to cultural clashes based primarily on socio-economic status and race (Aronson, 2000). With the racial predominance of the Caribbean being Negroid and that of the tourists from the developed countries being Caucasian, the black servility theory is very relevant where tourism presents an accommodating manner from locals (in a position of subservience) to the customer (in a position of prestige) and slowly infiltrates the Caribbean with the metropolitan's views surrounding race relations and thereby creates a "climate of dependency" (Fenell, 2006). The Caribbean and the countries from which tourists originate also display disparate economic rank where despite the Caribbean being more economically disadvantaged, the economic gains return to the developed world through the international companies that own and operate the tourism development within the industry (Aronson, 2000 and Weaver, 1998). McElroy explains this phenomenon as the "colonial tradition of high-volume, low-value added monocultural exports" influencing island governments to favour and

facilitate this form of economic revenue through tax incentives while establishing a new type of monoculture; mass tourism (McElroy, 2004).

3.5.4 SUSTAINABLE TOURISM

In order to investigate sustainable tourism, there must be a clear working definition. According to Wall (1997), though the goal of prolonging a viable tourism industry indefinitely is important, it is equally as important, if not more so, to ensure that the industry conforms to the principles of sustainability. Sustainable tourism must be defined within the context of sustainable development; contributing to the resilience of socio-ecological systems where innovation and interdisciplinarity among different domains and groups of people lead to increased opportunities for economic development, cultural enhancement, and environmental integrity.

Butler (1993) however has made that distinction between sustainable tourism and sustainable development within the context of tourism, where sustainable tourism is "tourism which is in a form which can maintain its viability in an area for an indefinite period of time" and sustainable development within the context of tourism as "tourism which is developed and maintained in an area such as a community in such a manner and at such a scale that it remains viable over an indefinite period and does not degrade or alter the environment (human and physical) in which it exists to such a degree that it prohibits the successful development and wellbeing of other activities and processes" (Butler, 1993).

According to Wall (1997) "if tourism is to contribute to sustainable development it must be economically viable, ecologically sensitive, and culturally appropriate. Yet, the growth trajectory of tourism, as depicted by both Butler (2006) and de Albuquerque and Mc Elroy (1992), is such that for any tourism destination, irrespective of its current stage in the cycle, the ultimate outcome is a mass-market model of tourism. And this is characterised by high density and high levels of tourist penetration, little local involvement and participation, and most importantly degraded and polluted natural resources and the breached capacity of these regions to provide basic necessities such as potable water for locals and visitors as well as processing waste. The most penetrated of destinations are the ones experiencing significant ecosystem alterations and negative impacts such as coral reef damage, the obliteration of mangroves, loss of biodiversity, increasing power and water shortages, marine pollution, overcrowding, land-use conflicts, real-estate inflation, increased social tensions, and declining visitor satisfaction and enjoyment of the destination (de Albuquerque and Mc Elroy 1992). The question of sustainability is ultimately a question of ecological integrity

and carrying capacity as the viability of the tourism industry depends on the integrity of the natural resources and their capacity to provide essential services.

Within the context of small island states, de Albuquerque and Mc Elroy (1992), outline two reasons why the mass tourism model is incompatible with small island tourism. Large-scale, international tourism that is profit-driven and focussed extensively on increasing visitor numbers is immensely resource-intensive which, in a place of limited natural resources and fragile terrestrial and coastal ecosystems leads to exceeding carrying capacity and ultimately environmental degradation. The cost-benefit analysis of the tourism industry is still unclear, while the short-term benefits include much needed foreign exchange earnings and employment opportunities for the people, there are long run costs that accumulate slowly over time, they are not as easily quantifiable and become evident only after major infrastructure and large scale construction projects have been completed (de Albuquerque and Mc Elroy 1992).

de Albuquerque and Mc Elroy (1992) assert that policy action must be taken in devising a sustainable tourism plan. Tourism planning must be a national priority and must involve the wider economic sphere. As well, decision making regarding tourism must be forward-thinking such that short term benefits are weighed against long term costs. Decision-making must also allow for local participation and public involvement; important aspects that must be integrated into tourism planning so that locals are included in the decisions concerning use of natural resources (de Albuquerque and Mc Elroy 1992). In an effort to salvage islands from the potentially devastating effects of mass-tourism, interventions can be applied that consist of environmental restoration, maintaining current visitor densities as opposed to increasing them, and finding newer, less detrimental ways of increasing tourist expenditure. de Albuquerque and Mc Elroy (1992) also suggest focussing on quality rather than quantity as a tourism strategy to ensure longevity of the industry as well as the resources that underpin it. A tourism approach that focuses on quality would promote local goods and services so that tourists are exposed to and consume these products as opposed to imported goods. The approach would develop untapped natural, historical, and cultural resources as attractions for tourists as opposed to man-made attractions. Rather than targeting the mass market the tourism strategy would target niche tourists who enjoy specific activities that the island can provide such as sports and nature tourism. Thus tourists would be attracted to the authentic experience and spend longer in the destination. There must also be firm policies and law protecting fragile ecosystems, landscape, and seascapes from development and thus preserving these resources for the future (de Albuquerque and Mc Elroy 1992)

Community-Based Tourism

Community participation is often promoted as an essential component of sustainable tourism that entails placing the local community in a position of empowerment where tourism planning and implementation is concerned (Okazaki 2008, Mitchell and Reid 2001). This form of tourism allows the local community to be directly involved in the decision-making processes which gives the people direct control over their socio-economic situation thus socio-economic benefits would be high and equally dispersed throughout the community. The characteristics of this community centred and community integrated tourism include: "a broad-based and open democratic structure, equitable and efficient decision-making processes, a high degree of individual participation and influence in decision-making, and a high amount of local ownership" (Mitchell and Reid 2001 pp. 114). The integration of the community within tourism where community members become subject of development opposes the conventional development of tourism that is driven by the government, the industry and various other stakeholders who do not regard local inhabitants as equal participants, thus relegating their role as objects of tourism development (Okazaki 2008, Mitchell and Reid 2001). However, integrating the local community in the tourism projects provides essential fundamentals for creating a form of tourism that will procure long term benefits for both the community and the industry (Okazaki 2008). The exclusion of local communities who have obvious interests in the well-being of their communities often results in the despoliation of their communities which then is no longer suitable as a viable tourism product (Mitchell and Reid 2001). The involvement of locals is therefore paramount; local issues and local feelings towards tourism affect directly the tourist experience, it is therefore in the best interest of the industry to maintain harmonious relations with the locals by creating ways for the residents to benefit (Okazaki 2008). Tourism depends heavily on the natural, infrastructural, and cultural assets of a community therefore, in order to tap into these assets for the benefits of the industry, the stewards of these assets, the local community, must be included to adequately and appropriately use those assets (Okazaki 2008).

Mitchell and Reid (2001) propose a framework for assessing the integration of small rural communities in tourism in order to explore public participation, community unity, power relationships, the awareness of tourism opportunities, planning processes for tourism (Mitchell and Reid 2001). The framework addresses three concepts that represent the stages of integration for community-based tourism; integration, planning and impacts.

An integrated community within the tourism industry would exhibit community unity, community awareness, and equitable power distribution. Community unity refers to the feelings of solidarity among community members that would compel them to forgo personal benefit for the welfare of others (Mitchell and Reid 2001). Community awareness speaks of the awareness of community members on various levels. Community members must understand the implications and impacts of proposed projects in order to be adequately equipped to negotiate the terms of the project. On a deeper psychological level, community awareness requires that people become conscious of forces that may oppress them, which is the only way that marginalized people can become empowered (Mitchell and Reid 2001). Power distribution simply pertains to the level and the type of control that local people have in the development of a tourism product where collective social action can influence change in imposed institutional arrangements (Mitchell and Reid 2001).

The tourism planning process within a community is normally conceptualized by a developer, entrepreneur, or the government which often times lead to a very simplistic plan that fails to take into account the other stakeholder perspectives, especially those of the community residents (Mitchell and Reid 2001). Ideally, the planning process should be initiated with all actors who have a stake in the development (Mitchell and Reid 2001). Public participation is crucial in this process as it can influence greatly a project through consensus building and participatory exercises while its absence can result in unstructured and ill-advised plans. Consensus building can lead to greater understanding of the project. In this way community members can negotiate on the type and extent of the project while also ensuring the benefits to themselves and their communities (Mitchell and Raid 2001).

There are several barriers to a participatory approach; apart from its time-consuming nature, public participation must overcome lack of education, business inexperience, insufficient monetary funds, and conflicting interests in order to be effective (Okazaki 2008). Residents require skills and resources in order to be effective participants yet the source of these materials are often government and other stakeholders who do not value the contribution of local residents while residents themselves are also unaware of what is required of them in order to be effective participants (Okazaki 2008). Public participation therefore necessitates redistribution of power; according to the ladder of citizen participation (Fig. 1), there are degrees to which a community can be involved and various stages of public participation must be achieved before power is redistributed (Okazaki 2008). Thus, community members must be informed of their rights, responsibilities, and options and they must also be given opportunities to express their opinions

through consultation (Okazaki 2008). Informing, consultation, and placation; growing influence of public opinions, however do not represent citizen power and are referred to as tokenism. However, partnership, delegated power, and citizen control are the degrees of citizen power the vary from citizens being able to negotiate with other stakeholders in planning and decision making to citizens assuming full control over policy and management (Okazaki 2008).

The evaluation of the impacts on socio-cultural, environmental, and cultural factors assesses the success of integrating the community in tourism planning where successful integration should result in increased economic benefits for all (Mitchell and Raid 2001). The goal would be to avoid leakages out of the industry, as is experienced in other forms of tourism, and enhance the multiplier effect. The indicators of successful integration would include employment, type of employment, revenues, ownership, cost-benefit analyses, perceptions and attitudes of the local residents towards the industry measured over time, and level of community and individual participation (Mitchell and Raid 2001).

3.5 ENVIRONMENTAL IMPACT ASSESSMENT

Principle 17 of the Rio Declaration on Environment and Development states that "environmental impact assessment (EIA) should be used as a national instrument in undertaking 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" (Rio Declaration 1992). Environmental impact assessments originated in 1970 in the United States when the National Environmental Policy Act was legislated. Worldwide, other countries, especially the industrialized ones, followed suit and today the EIA is a leading environmental management tool (Noble 2010).

The Global Conference on the Sustainable Development of Small Island Developing States held in 1994, produced a report referred to as the Barbados Programme of Action. Within it, all participating states declared their commitment to abiding by and implementing the principles set out by the Rio Declaration on Environment and Development, Agenda 21, and the Statement of Principles for the Global Consensus on the Management, Conservation, and Sustainable Development of all types of Forests (United Nations, 1994). After having outlined the specific challenges impacting SIDS, the Barbados Program of Action discusses an in depth action framework necessary for building resilience of SIDS. In addressing land resource issues, the 7th point under the National Action, Policies, and Measures section states "Increase attention to national physical

planning in both urban and rural environments, focusing on training to strengthen physical planning offices, including the use of environmental impact assessments and other decision-making tools" (United Nations 1994).

Environmental impact assessments are studies conducted to identify, evaluate, and mitigate the environmental, social, and other effects of a major development project before important decisions and commitments are made regarding the project (Noble 2010). The chief function of an EIA is to enable the deliberate consideration of environmental factors in planning and decision-making in order to make decisions that will result in actions leading to sustainable development (Noble 2010). EIAs ensure that unforeseen impacts are addressed early on in the planning and designing phase of a specified project and that measures and alternatives are employed to mitigate potential negative impacts (Gobin 2001). EIAs can also identify or create positive impacts and optimize these positive impacts of a development (Noble 2010). The decision making process with regards to a development project is buttressed by an EIA as it allows for more informed decision making (Noble 2010).

The EIA can be viewed as a process following systematic steps that encompass basic elements such as stakeholder discussions, public review, scoping procedures which includes identifying the key issues, the existing condition of the ecological an social environments, and post-project evaluations including monitoring and follow-up (Noble 2010).

An environmental impact assessment is initiated by the proponent of the project, however various actors who have a stake in the development are involved; these actors include project developers, investors, planners, politicians, regulators, engineers, civil society groups, and residents living in close proximity to the development (Gobin 2001). Planners, regulators and engineers are often involved in the beginning stages to ensure that the EIA is focused on identifying and mitigating major impacts and ideally, all stakeholders are involved in the decision making process.

The environmental impact assessment can be viewed as a tool in which to employ precaution as well as due diligence by identifying the potential negative impacts that development projects may cause and by putting in place the necessary measures to prevent such occurrences. EIAs can also result in cost savings for the proponent, redistribute power such that nations have more control over development and prevent environmental damage that would unfairly be borne by the nation (Gamman and McCreary 1988).

3.5.1 ENVIRONMENTAL IMPACT ASSESSMENT IN THE CARIBBEAN

Many of the reasons attributing to SIDS' vulnerabilities are the same that impinge on the effectiveness of EIAs in the Caribbean. Due to the limited capacity of small islands to support the environmental impacts of development, the lack of implementing environmentally sound mitigation and preventative measures can wreak both economic and environmental havoc on small islands such that the resultant pollution and destruction of terrestrial and marine resources requires expensive remediation measures that place further stress on the nation and may also dissuade future potential investors from investing in the country (Gamman and McCreary 1988). Small islands have similar natural resource issues such as limited fresh water supply that is increasingly under pressure due to growing populations, beach erosion that is often exacerbated by sand mining, fisheries depletion, and oil production and refining that can lead to the pollution of beaches and the destruction of marine life (Gamman and McCreary 1988). Environmental management in the Caribbean faces many challenges that diminish the value of the environmental impact assessment exercise. In the Caribbean, legislation governing sustainable development is often weak or absent as limited natural resources of a country are often not considered when developing environmental laws (Gamman and McCreary 1988).

While the goal of EIAs for sustainable development is a universal one, the philosophies, techniques, and processes associated with EIAs have been developed in industrialized countries. Thus the EIA model that is based on a developed country often does not reflect the technical, social, political, and economic forces that exist in developing countries (Brown and Jacobs 1996). The use of an EIA within this context therefore stands a high chance of being ineffective and unable to address the most salient concerns of the project. Adapting the EIA model to a developing country would entail altering standards, approaches, methods, and legislation such that the EIA becomes a tool within these developed countries that can more effectively bestow assistance in environmental management and decision making (Brown and Jacobs 1996). In fact the Barbados Programme of Action, a document produced from the 1994 Global Conference on the Sustainable Development of Small Island Developing States, recognizes this and states the need to "Develop appropriate national, provincial/state and local environmental regulations that reflect the needs and incorporate the principles of sustainability, create appropriate environmental standards and procedures, and ensure their integration into national planning instruments and development projects at an early stage in the design process, including specific legislation for appropriate

environmental impact assessment for both public and private sector development" (United Nations 1994: 39).

Public participation in SIDS is traditionally absent as the formal conduits for dialogue between the government and the public are either non-existent or severely underdeveloped. The participation of the public in EIAs and in the development process is therefore non-existent and this contributes to the difficulties in designing environmentally sound projects as local knowledge of the environment is unaccounted for (Gamman and McCreary 1988).

Other limitations of SIDS that challenge the effectiveness of EIAs are limited human and technical resources. Lack of such resources makes it very difficult because necessary expertise and experience is lacking while the implementation of measures may not be successful as there lacks man power for monitoring and follow-up (Gamman and McCreary 1988). There is a lack of information on natural and ecological systems due to limited research and this means that the information required for natural resource management is inadequate. Thus understanding and evaluating the potential effects of development on natural systems is dependent upon foreign consultants that often propose costly engineering remedies that do not necessarily solve a problem but rather displace it (Gamman and McCreary 1988).

According to Gobin (2001), a professor at the University of the West Indies who lectures on Environmental Impact Assessment, EIAs in the various Caribbean islands differ in terms of criteria, procedures, and legislation. While Belize, Guyana, Jamaica, and Trinidad and Tobago enacted environmental framework legislation which required EIAs to be submitted to regulatory development authorities for approval, EIAs in Barbados and the OECS countries are requested under the existing development control legislation (Toppin-Allahar 2000). While the Barbados Programme of Action encouraged each of the small islands to incorporate their various country-specific provisions into their environmental legislation, the Programme of Action also encouraged "the harmonization of environmental legislation and policies within and among small island developing states with a view to ensuring a high degree of environmental protection" (United Nations 1994). However, Toppin-Allahar (2000) does question the success of small island states in implementing effective EIA legislation as well as the harmonization of a regional EIA, "it does not appear that the countries in the region are learning from each other's experience or that a model Commonwealth Caribbean EIA process is emerging" (Toppin-Allahar 2000).

3.6 SUMMARY

The topics covered in this chapter and chapter 2 are a broad review of all of the main issues that this research encountered; the relationship between politics and the environment, the development path of small island states, tourism, and land use planning and environmental management as well as an in depth explanation of the concept of Biosphere Reserves. The conceptual framework which will be synthesized in the discussion, takes a political ecology approach, combining the sustainability assessment criteria with the ecosystem-based approach—as they relate to the 3 pillar model of sustainable development— in order to analyze the results within the concept of sustainable development as well as the requisite criteria for a Biosphere Reserve.

CHAPTER 4- METHODOLOGY

This research is an exploratory case study in which the primary research gained was garnered from the ideas, informed opinions, perspectives, and experiences of stakeholders who have interests within the dry forest region (Creswell 2003). Thus the methodology is both qualitative and inductive (Bryman et al 2009). Interviews and surveys were employed to establish the views of government officials from the various ministries. Insight into the perception of the dry forest by these authority figures was obtained, as well as possible future plans for its conservation. Civil society group and tour operator representatives were interviewed to establish their views on the dry forest and on tourism.

While the goal of quantitative research is to deduce from large, representative samples information that can be generalized to the population at large, qualitative research does not place the same emphasis on obtaining large samples but rather focuses on fewer samples while investigating in greater detail and depth (Onwuegbuzie and Leech 2007). Qualitative research therefore involves being deliberate in choosing sites and individuals partaking in the study. The ability to choose is thus beneficial to the researcher as this will enable her to better understand the implications of her research question as she has the liberty to investigate what she deems pertinent (Creswell 2003).

4.1 STRATEGIES OF QUALITATIVE RESEARCH: CASE STUDIES AND GROUNDED THEORY

This research combined a case study research approach and grounded theory. Case studies are often the favoured method for investigating "how" or "why" questions and involve investigating "contemporary phenomenon within some real-life context" (Yin 2003 p.1). A case study investigates an event, activity, process, or one or more individuals, elements over which the researcher has no control. The case, which is restricted to a specified amount of time and certain activities, involved the researcher delving into pertinent aspects using prescribed data collection procedures. A case study requires that the researcher investigate the case in depth and detail (Creswell 2003). The assumptions of grounded theory applied to this research are such that theories emerge from the data that has been assembled, evaluated, and analyzed (Bryman et al 2009). Contrary to the traditional notion of research where data collection is followed by data analysis, in grounded theory data collection and analysis advance simultaneously such that the

analysis of data influences subsequent events of data collection (Bryman et al 2009). Grounded theory also conceives of using tools such as theoretical saturation, where data is collected until it no longer contains novel information.

A case study relies on a diverse range of variables that are obtained from multiple sources of evidence ranging from documents and archival records to interviews, direct observations and physical artefacts (Yin, 2003). The field research aspect of this case study lasted for four months (May to August 2009) and employed interviews, surveys, participant observation, direct observation, documents, and archival records as the form of data collection. The advantage of employing a case study to acquire information is that it provides more detailed and richer information than can be attained through other exploratory methods (Neale et al. 2006).

4.2 ETHNOGRAPHY/PARTICIPANT OBSERVATION AND DIRECTION OBSERVATION

Within qualitative research, there exist numerous paradigms of inquiry that depend on the researcher's approach. Ethnography, which was used in this research, entails studying a society or culture by immersing themselves within it for a prolonged period of time (Creswell 2003).

An ethnographic approach was employed for this research where participant-observation and direct-observation were incorporated as part of the methodology with regards to the dry forest, communities within and affected by it, and forest-based livelihoods. Direct observation involved simply observing the communities and their characteristics in terms of settlements and people. Participant observation, which was fairly unstructured, entailed meeting with community members to experience various activities and recording the information gained. The researcher familiarized herself with activities associated with the dry forest such as bird and turtle watching, artisanal work, and recreation. These two methods of participant and direct observation were used to gain greater insight into the relationships of local communities with the dry forest and with tourism in its conventional form.

4.3 SAMPLING: PURPOSEFUL AND SYSTEMATIC

One of the marked differences between qualitative and quantitative research is the type of sampling used. Whereas quantitative research utilizes probability sampling over a wide sample size in order to deduce statistical inferences, qualitative research often utilizes purposeful sampling

for gathering information that will enable as profound an understanding of the case as possible (Sandelowsi 2000). Purposeful sampling is instrumental in the development of idiographic knowledge; the study of individual cases or events in depth and detail. This is in contrast to probability sampling where nomothetic knowledge is developed; studying samples to generalize information of a population (Sandelowski 2000). Qualitative research does not preclude the use of probability sampling as it can be used in conjunction with purposeful sampling in achieving meaningful results (Sandelowski 2000). For this research, purposeful sampling was used for interviews while randomized probability sampling was used for surveys.

4.3.1 PURPOSEFUL SAMPLING: INTERVIEWS

Interviews were conducted with 29 representatives from the various groups making up the potential stakeholders of a Biosphere Reserve: government officials, civil society, scientists, tour operators, environmental consultants, private land owners, and the private sector. These 29 interview participants were obtained through purposeful sampling. Purposeful sampling was the appropriate choice for organizing data collection method for this research as the information collected surrounded a specific study site (the dry forest and its environs), and the diversity of individuals and animals who had a stake in that site. In order to obtain participants from the stakeholder groups of civil society, government officials, environmental consultants, tour operators, and so on, two subcategories of purposeful sampling were used; maximum variation sampling and snowball sampling. Maximum variation sampling is where a broad array of individuals, groups, or settings is purposively chosen to partake and all or most types of individuals, groups, or settings are selected for the investigation (Onwuegbuzie and Leech 2007). Therefore individuals who represented the aforementioned stakeholder groups were all included as potential interviewees, however, other factors interfered such as the availability of such individuals, access to the contact information of said individuals, and the lack of knowledge in terms of representatives of the stakeholder groups who could partake in the interviewees. As a result of this latter challenge, snowball sampling was employed, thus, participants selected for the interviews were either asked or volunteered information indicating other possible candidates who could contribute pertinent information to the research (Onwuegbuzie and Leech 2007). Purposeful sampling was also utilized within the local communities in order to hold one-on-one interviews with individuals whose opinions and lifestyles were pertinent to the research such as turtle watch guides, artisans, and community action groups. Three community members were interviewed; one from La Borne and

two from Des Barras, and these community members spoke of their roles in the community regarding leadership, arts, and biodiversity conservation.

4.3.2 RANDOM SAMPLING: COMMUNITY AND TOURIST SURVEYS

The community and tourist surveys utilised two random sampling techniques: stratified random sampling and systematic random sampling. Stratified random sampling entails choosing from a population a sub-population or strata from which members are homogenous with respect to others within the specified strata but heterogeneous with respect to others outside of that stratum (Onwuegbuzie and Leech 2007). Within that stratum such as community members of the community of La Borne, or tourists at the Sandals Grande hotel, a random sample was selected to survey. A systematic random sampling technique where individuals are selected by choosing every k^{th} stratum member was employed when frequenting the communities for community members or the beach for tourists (Onwuegbuzie and Leech 2007). The researcher aimed to survey approximately 150 community members, that is, roughly 30 members from each community and between 80 to 100 tourists.

Within the communities, visits were made in the late afternoon and on weekends to ensure as many people were home as possible. The researcher surveyed individuals by visiting every other house encountered as she made her way around the community until she had surveyed 30 people in each of the 5 communities. At the hotels the researcher surveyed every other tourist encountered who was in a lounge chair until she had roughly 30 participants. To survey the cruise ship passengers, the researcher randomly chose tourists from the crowd of people frequenting duty free stores. The researcher aimed at alternating between male and female adult cruise ship passengers, tourists on lounge chairs and community members. In this way, members from the samples each had an equal chance of being selected.

A systematic sampling of 143 local community members and 87 tourists to conduct short surveys was performed in an effort to get more information from a wider range of individuals that reflected, more authentically, the opinions of the local people and of tourists.

4.4 DATA COLLECTION

Data Collection procedures entail demarcating the individuals and the study sites from which information will be gathered, the process of collecting information through the chosen data

collection methods and through secondary material, and recording the information that has been assembled (Creswell 2003).

The individuals and study sites were purposefully selected by attempting to garner representation from the potential stakeholder groups within a Biosphere Reserve along the northeast coast of the island. These stakeholders were identified through visiting, telephoning, or e-mailing representatives of government, civil society, and tour operators. Interviews were conducted with 29 individuals representing the stakeholder groups, these interviews lasted between half an hour to 1.5 hours, though most interviews were roughly an hour. The interviewees were presented with and asked to sign a consent form at the beginning of the interview (see Appendix 1). This form asked their permission to be audio recorded in person, to use anonymous quotations in any publication as well as to use direct quotations attributed to only the interviewee. All the questions posed were unstructured and open ended and intended to educe from the participants their opinions and perspectives. The interviews were recorded via digital audio recorder and later transcribed in a word document.

The surveys conducted were done in a more informal manner, and used verbal consent procedures. Potential participants were expressly asked beforehand whether or not they would be willing to partake in the survey for research purposes. The types of questions posed ranged structured to semi-structured; some questions needed a yes/no response while others allowed the respondents to express their views. Where respondents were able to speak freely, their responses were handled by recording them as one of several themes that the researcher has listed as possible answers to the question. Often times, new themes emerged as respondents answered with new ideas that the researcher had not foreseen. The researcher recorded the information herself on a survey form that was used for roughly ten respondents per form. About 3 survey forms were used per community in order to garner 30 respondents per community. The information was later recorded in an Excel spread sheet.

The local communities were identified and selected based on various criteria. They were all located within or in close proximity to the dry forest; those communities that seem to rely on the dry forest more heavily were targeted. Communities were selected so that a range of geographic locations and characteristics are represented as well as showing a willingness and keenness to participate. Identification of these communities was assisted by the forestry department. Figure 5 shows the settlements on the northeast of the island that include the 7 communities that were targeted for the study. It must be noted that La Borne and Dauphin are considered as one

community because their proximity and small populations; this is the same for the communities of Lumiere and La Pelle.

TABLE 2: CRITERIA USED TO DETERMINE THE SUITABILITY OF COMMUNITIES FOR RESEARCH

Communities	Criteria				
	Proximity to Dry forest (northeast coast)	Use of the dry Forest for supporting livelihoods	Willingness to participate	Proximity to the coast/beach	Distance from urban centres
Au Leon	Close (walking distance)	Yes (agriculture, recreation	willing	Driving distance	Very far (driving distance ~ 40 minutes)
Boguis	Far (driving distance)	Yes (agriculture)	willing	Driving distance	Fairly Close (driving distance ~ 25 minutes)
Des Barras	Close (walking distance)	Yes (agriculture, fuel, arts and crafts, recreation)	willing	Walking distance (through the dry forest)	Very Far (driving distance ~ 40 minutes)
La Borne/Daupin	Close (walking distance)	Yes (agriculture)	willing	Walking distance	Fairly Close (driving distance ~ 20 minutes)
Lumiere/La Pelle	Close (walking distance)	Yes (agriculture)	willing	Walking Distance	Very far (driving distance ~ 40 minutes)
Chassin	Very far	No	willing	Far	Close (driving

					distance ~ 20 minutes)
Garrand	Very far	No	willing	Far	(driving distance ~ 20 minutes)

Secondary data was also collected. Population and housing census results from 2001 (the most recent data available, St. Lucia Statistics Department 2001) on the five communities surveyed was obtained from the Government Statistics Department of St. Lucia. The information included population size, occupations of the individuals within that population, gender and age distributions, highest formal level of education, income group, type of dwelling the household occupied, sources of fresh water, type of toilet facilities, type of lighting, type of fuel used for cooking, and main methods of garbage disposal. Other types of secondary information acquired were obtained from interviewees who often offered brochures, pamphlets, or booklets with more information regarding the work done and services provided by their respective units/workplaces.

An ongoing literature review on key themes such as tourism, Biosphere Reserves, community development, sustainable livelihoods, small island developing states, and resource management laid the foundation for the subsequent data collected as well as informing the analysis of data. Information from the statistics department, laws, mandates, maps, plans, and other documents garnered from the various organizations were used. Maps of the northeast coast obtained from both the Ministry of Physical Planning and the Department of Forestry were used in order to present visually the northeast coast as a Biosphere Reserve. Photographs of the communities and the surrounding dry forest were taken for visual representation of the study site.

4.5 SUMMARY: INTERVIEWS AND SURVEYS

TABLE 3: LIST OF INTERVIEWS

Date	Post	Type of Stakeholder
July 7th, 2009	Head guide of Rainforest Sky Rides	Tour Operator
May 15th, 2009	Assistant Chief Forestry Officer/ Ministry of Agriculture Forestry and Fisheries – Department of Forestry	Government Official
August 21, 2009	Minister	Government Official

August 12th, 2009	Planner/Environmental Consultant	Environmental Consultant
August 3rd, 2009	Director of St. Lucia National Trust	Civil Society
June 4th, 2009	Chairman of DCA	Policy
June 9th, 2009	Chief Sustainable Development Officer	Government Official
May 22nd, 2009	Environmental Consultant	Environmental Consultant
May 28th, 32009	Senior Tourism Officer	Government Official
July 15th, 2009	St. Lucia Archaeological Society	Civil society
July 28th, 2009	Manager of Piton Management Area (World Heritage Site)	Civil Society
July 29th, 2009	Deputy Permanent Secretary of Physical Planning	Government Official
May 15th, 2009	Director of Small Enterprise Development Unit (SEDU) / Ministry of Commerce, Industry and Consumer Affairs	Government Official
May 14th, 2009	Acting Deputy Chief Planner/ Ministry of Planning	Government Official
July 9th, 2009	Head of Environmental and Sustainable Development Unit	Regional Institution directed by Governmental heads
May 30th, 2009	Chief Operations Officer of the Nardoni group of Companies (includes St Lucia Golf & Country Club, Cap Estate St. Lucia Limited, Raffles St. Lucia Limited and the Island Club Villas	Developer
May 26th, 2009	Sustainable Development Officer	Government Official
June 17th, 2009	Employee of the National Trust/ Responsible for OPAAL (Protected Areas and Associated Livelihoods Project)	Civil Society
August 19th, 2009	Tourism Officer	Regional Institution

		directed by Governmental heads
May 27th, 2009	Assistant Chief Forestry Officer	Government Official
May 29th, 2009	Director of Social Transformation	Government Official
July 6th, 2009	Eastern Caribbean Manager of Durell Wildlife Conservation Trust	Scientist
June 2nd, 2009	Director of Heritage Program	Government Official
July 6th, 2009	Minister of Physical Planning, Housing, and the Environment	Government Official
July 28th, 2009	Independent Botanist	Scientist
August 17th, 2009	Environmental Lawyer	Civil Society
June 2nd, 2009	Natural Resource Manager and Marine Biologist	Environmental Consultant
June 3rd, 2009	Representative for Harlequin Property (UK Property Investment Company)	Developer
July 13th, 2009	Manager of Heritas (Heritage Tourism Association of St. Lucia)	Tour Operator
May 7th, 2009	Environmental Consultant	Civil Society

TABLE 4: COMMUNITY SURVEYS

Communities	**Number of Community Members**	**Dates**
La Borne/Dauphin	29	July 31st and August 15th 2009
Des Barras	30	July 27th, 28th, August 1st and 2nd 2009
Boguis	30	August 20th, 21st and 22nd 2009
Aux Lyons	29	August 12th, 18th
Lumiere/La Pelle	25	July 16th

TABLE 5: TOURIST SURVEYS

Hotels	Number of Tourists	Dates
Sandals Halcyon	30	August 17th, 2009
Sandals Grande	29	August 19th, 2009
Pointe Seraphine (cruise ship port)	28	July 8th and 9th, 2009

TABLE 6: PARTICIPANT AND DIRECT OBSERVATION ACTIVITIES

Events	Location	Dates
Excursion through dry forest	Des Barras/Grande Anse	June 27th, 2009
Catching crabs	Lumiere	August 3rd, 2009
Community action groups (Interview)	La Borne	August 22nd, 2009
Turtle Watching (Interview)	Des Barras	August 2nd, 2009
Livelihood from dry forest (Interview)	Des Barras	July 25th, 2009

4.6 DATA ANALYSIS AND INTERPRETATION

The process of data analysis and interpretation entails preparing the raw data that has been collected. This raw data undergoes chosen methods of examination in order to interpret it into a meaningful synthesis of findings (Creswell 2003, Patton 1990). The voluminous amounts of data collected during the research phase must be reduced in order to extract meaning. The data must therefore be organized systematically to allow such a process. Thus the transcription of interviews, the input of survey information into spreadsheet format, and the compilation of field notes, documents, statistics, and pictures prepared an organized set of data for analysis. It is worth mentioning that revisiting the material gathered, such as reading interviews and field notes, is important. Notes taken in the midst of an interview, survey, or active observation may reveal important nuances that could never be obtained from analysis done at a later date and outside of the context within which the data was acquired (Patton 1990).

4.6.1 CODING AND THEME CREATION

The core of the analysis is the coding process. Transcripts and/or field notes after having been reviewed are broken down into component parts by giving labels to common themes (Bryman et al 2009). The use of NVIVO facilitated the process of generating themes and was thus a salient tool for reducing and processing the large volumes of data that were collected. The researcher's own experience and expertise play a pivotal role in this process as it is the researcher's interpretation of the data that decides the emergent themes, thus leading to the creation of a theory (Bryman et al 2009).

4.6.2 ANALYZING THE INTERVIEWS USING CODING AND THEME CREATION

The interview transcripts were imported into the computer qualitative software program, QSR NVIVO. The research database was large, with over 300 pages of transcripts produced from the interviews. The program made it possible to select relevant material within the transcripts that could be highlighted and saved as "nodes". These nodes were given labels such as "The Definition of the Sustainable Development" with corresponding explanations: "What the interviewees understood by the term". The node became a code that would encompass all of the perceived explanations of sustainable development by all 29 interview participants. Eventually other codes such as "Challenges to Sustainable Development in St. Lucia" emerged and hence would be grouped with the former node under the main tree node of "Sustainable Development". This program was therefore excellent at organizing the data through classification of themes that emerged over the course of the data collection, transcription, and analysis. Specific codes could be readily accessed by simply clicking on the desired node; there, all the information pertaining to that code from all 29 interviews could be viewed easily and thus further processed.

As the interviews were being conducted during the summer of 2009, themes emerged such as "The Importance of the Dry Forest", "Achieving Sustainable Development in St. Lucia", and "Modifications of the Tourism Industry to Provide Greater Benefits for the Island and its Inhabitants" among many others. The questions posed elicited responses from interviewees that pertained to various concepts surrounding development in St. Lucia, natural resource management, tourism, community development, public participation among others. The questions were constructed based on the criteria for designating a UNESCO Biosphere Reserve which is fundamentally a question of sustainable development.

The interview questions changed as the research period proceeded. Employing grounded theory, where analysis influences subsequent events of data collection, interview questions were often amended, deleted, or added to the list based on the feedback that the researcher gained from previous interviews as well as on how effective responses could contribute to answering research questions. Matthew Morton, a conservationist with Durell Wildlife Conservation Trust, who has experience conducting community surveys and public engagement exercises for the purposes of species conservation and protection was consulted. Advice on how to design questionnaires and surveys as well as how to ask questions in order to obtain desired responses were heeded and used to ameliorate the interview questions and surveys.

Once all the interviews were completed, subsequent study and reading of the interviews allowed the researcher to compile a more complete list of emergent themes. Excerpts from the interviews representing the various themes would be selected and categorized with excerpts from other interviews that pertained to the same theme. New themes were added to the list as the researcher analyzed the interviews for theme selection. The eventual outcome was a long list of themes, each one being represented by excerpts of quotes, ideas, and concepts presented by interviewees concerning those various themes. Once each theme was properly represented, the researcher was then able to organize the themes based on the opinions of the interviewees. Ideas or opinions that were repeated were recorded for both their content and frequency as well as opinions that countered the norm. While some themes had common or agreed opinions, other themes represented varying opinions reflecting stakeholder dissonance.

4.6.3 SURVEYS

The community and tourist surveys were imported into an Excel file where the responses were tabulated. The surveys differed from the interviews in that many more participants were involved with the surveys (230 community members and tourists) than with the interviews (29 interviewees). However the information provided by each survey participant was much less than that provided by the interview participants. Many of the survey questions were closed-ended or participants were asked to rank something on a scale of 1 to 10 whereas all the interview questions were open-ended and encouraged dialogue. Excel was therefore more favourable to use than NVIVO as the spreadsheet layout facilitated analyzing and tabulating the data.

The results were then reported as figures representing the opinions of the community members and tourists. Themes from the surveys therefore emerged based on the responses as well as the already established themes from the interviews.

4.7 RELIABILITY AND VALIDITY: ESTABLISHING SIGNIFICANCE OF RESULTS

Qualitative research by virtue of its inductive nature is also interpretive (Bryman et al 2009). Phenomena are sought to be explained through the interpretation of other individuals' perceptions, experiences, and opinions. The subjectivity of qualitative research has thus been a challenge in applying conventional measures of reliability and validity as some researchers do not feel that such measures bear any significance on their research (Bryman et al. 2009). Measures of reliability and validity have been employed nonetheless and are extremely important in order to demonstrate the analytical rigour and the duplicability of the research.

Various measures of reliability and validity were involved in the research in order to assure the credibility of the results, the analytical process by which the results were obtained, and the resultant conclusions and recommendations. The measures included external reliability; the extent to which a methodology can be reproduced by another researcher, the external validity; the extent to which the results can be generalized to the wider social population, and internal validity; the degree of congruence between the researcher's observations and the resultant theories established. External reliability and external validity play a minor role in qualitative research whereas internal validity is more important and is seen as a strength of qualitative research (Creswell 2003).

The internal validity of the research completed gauges the degree of authenticity and credibility incorporated into the methodology and analysis. The accuracy of the findings depends on the measures of internal validity and this can be achieved in many ways: triangulation, using rich description of research, establishing the bias of the researcher, presenting discordant or incongruous results that challenge the interpretation of the findings, and peer debriefing (Creswell 2003)

There are several modes of triangulation, this research employed *methods triangulation* by employing direct and participant observation, one-on-one interviews, and surveys. Each of those

methods is an important data collection procedure on its own but combined can work to reinforce findings as well as clarify misunderstandings by cross-checking (Bryman et al. 2009).

Detailed and descriptive accounts of observations and findings enable the reader to thoroughly grasp the researcher's perspective, to appreciate the settings, the mentality and the culture in which the research took place.

4.8 LIMITATIONS AND STRENGTHS

The issues of external validity and external reliability as aforementioned play minor roles in this case study. External reliability assumes that the conditions and variables characteristic of the social settings in which the study was conducted remain the same for subsequent studies. This is impossible within a social setting that is dynamic. However, various aspects of the study that are subject to the researcher's control must be kept static throughout the study period with documentation of and justifications for any changes such as with interview and survey questions. The role of the researcher within the social settings is important in attempting to replicate the research. In this particular study, the researcher introduced herself to the interviewees and survey participants as a student interested in the opinions and perceptions about various issues. The researcher attempted to remain neutral and non-threatening at all times, in the hopes of gaining the true opinions of the participants. The researcher therefore made it clear that she was not affiliated with any governmental agency and was solely investigating for the purpose of her studies. Within the communities the researcher often sat with community members on an informal basis to try to establish openness and trust with those individuals by initiating conversations unrelated to the research at hand but that would make the participants feel more comfortable. In attempting to replicate this research, a subsequent researcher must therefore try to assert themselves in the way that the first research did: in a non-threatening, friendly, familiar manner that would encourage participants to be responsive and honest.

It is important to state explicitly the biases of the researcher that are related to her values and personal interests about the research topic. As a St. Lucian who previously worked in the dry forest from an ecological aspect, the researcher has a tremendous amount of appreciation for the dry forest and its role in St. Lucia. The researcher therefore has a personal connection with certain aspects of the research. The researcher believes fervently in the importance of conserving parts of the dry forest that are crucial for habitats of various species, for rural livelihoods, and for ecosystem function. This personal connection was therefore a motivating force for conducting the research.

The process of analysis reveals patterns and themes that seek to make sense of the data obtained in the field. The researcher is an instrument in the research and thus her biases must be accounted for. In order to do this, it is important to acknowledge discordant or incongruous results that counter the findings as well as look for alternate patterns, themes or explanations. However, difficulties in supporting the alternative themes or explanations reinforces the validity of the original explanations generated by the analysis (Patton 1990)

As discussed above, the researcher's prior knowledge of the study site was both a strength, with respect to community access, trust building with participants and background knowledge, but also may have posed some limitations with respect to personal biases or participants, whose responses may have been affected by their perception of the researcher as an insider (St. Lucian), an outsider (coming from an educated and relatively privileged social class) or both.

The external validity, generalizing the findings to the wider population, is often a challenge for case studies in qualitative research. The interviewees are not necessarily meant to be representative of the entire population and communities on the northeast coast are not representative of communities all over the island. The small sample size and localized regions of data collection therefore make it difficult to apply the findings to other groups of individuals and other locations (Creswell 2003 and Bryman et al. 2009). Moreover, qualitative research serves not to produce generalizable information but rather provides an in depth understanding of an event or a small group of people (Bryman 2009).

Interviews and surveys are important sources of case study information because they can focus directly on the case study topic as the researcher "pursues a consistent line of inquiry" (Yin 2003 p.90). Case study interviews often consist of open-ended questions, thereby conferring upon the researcher the ability to ask of the interviewee their insights into certain occurrences which may encourage further inquiry. The open dialogue of these interviews also allows the researcher to obtain further evidence from the respondent in terms of recommending other suitable individuals to interviews as well as suggesting investigating specific documents or other organizations (Yin 2003). Surveys, designed as part of case study research, can provide quantitative information yet must be analyzed in relation to other sources of data and evidence. The disadvantages of interviews and surveys are improperly constructed questions that reflect the inherent biases of the researcher (Yin 2003). While the goal of interviews and surveys is to try to extract information in as objective a manner as possible, respondents may also be biased in their responses and may also

engage in reflexivity; matching their responses to what they believe the researcher wants to hear (Yin 2003).

Direct observation is very useful in supplying additional information about the topic being studied though a single researcher in the field may have limited capabilities to observe as comprehensively as possible in order to remain unbiased. Multiple observers should be employed in order to construct as objective an experience as possible (Yin 2003). The researcher worked primarily on her own during the research period and therefore recorded and collected information that only she had observed.

Participant observation, in this research entailed engaging casual social interactions with community members such as spending time with certain community members who had valuable information as well as joining members on various excursions such as treks through the dry forest, crab hunting. An important advantage of participant observation is gaining "insider" points of view that can help produce a more accurate portrayal of the case study phenomena (Yin 2003). The disadvantages of participant observation are the biases that may arise within the researcher as the researcher may have to assume positions or opinions of advocacy or support for the people with whom she is in contact and this may influence scientific rigor or validity (Yin 2003). Engaging with the community members and trying to understand their point of view, rather than contributing to the bias of the researcher, gave her a more robust understanding of all the dynamics at play with regard to the dry forest, development, and the desires of the community.

The limitations of this also research included time constraints imposed by the duration of the Master's thesis. The amount of time to collect the data is finite and though the researcher had a very good knowledge of the island, circumstances such as the unavailability of potential respondents and interviewees prevented the researcher from obtaining all the information that she deemed necessary. Difficulties were encountered in trying to engage community members in survey; some members did not always understand the questions asked of them. Participants, especially community members may not have fully expressed their opinions.

CHAPTER 5-RESULTS

The following discussion is based on the face-to-face interviews and surveys conducted with the actors identified as having a stake in a potential Biosphere Reserve. The interviews provided a wealth of information from which a myriad of themes emerged. All of the themes are somehow connected to the concept of sustainable development. Some themes have proven to be more pertinent than others in terms of challenges to designating a Biosphere Reserve. The interviews also produced other unanticipated themes that have an impact on the Biosphere Reserve designation. While anticipated themes included Biodiversity, Tourism, the Concept of Sustainable Development, the Dry Forest, Community Participation and Community Development, Governance and Civil Society, other unanticipated themes that proved to be equally important included the Environmental Impact Assessment Process in St. Lucia, the Process of Development in St. Lucia, Golf, Land Use Planning, Protected Areas, and Local Business in St. Lucia. These results are organized according to the three pillars of sustainable development, ecological, economic, and socio-cultural equity (Agyeman et al 2002). Categorized under each pillar are the emergent themes derived from the from the data analysis. Most of the main themes contain sub themes that reflect that various aspects of that particular theme. The interviews and surveys have been synthesized and condensed and correspond to the various themes.

5.1 ECOLOGICAL SUSTAINABILITY

5.1.1 MAIN THEME: CONSERVATION AND BIODIVERSITY

5.1.1.1 SUB THEME: THREATS TO BIODIVERSITY AND ECOSYSTEM INTEGRITY

Twenty respondents spoke to the potential threats facing biodiversity and the environment in St. Lucia. Threats to biodiversity and ecosystems were identified by four respondents as people who used the forest unsustainably or who utilized both the dry forest and rain forest for livelihood purposes that should not have been taking place for example, the use of the forest for charcoal production, agriculture by farmers or historical uses of the forest including the plantation of bananas. A private land owner of a large estate with extensive dry forest discussed the degradation of the forest and surrounding ecosystems by the neighbouring communities where destructive activities included turtle poaching, sand mining, deforestation, and the killing of iguanas and boa constrictors.

One respondent spoke to the work of the Forestry department as not doing enough to promote the dry forest as an important ecosystem and that most of the efforts went to promoting the rainforest because of its watershed function.

Information from the planning department was also very instructive as there are no legal instruments established to conserve the dry forest, therefore conservation concerns that arise during development within the dry forest are only addressed through an environmental impact assessment where referral agencies such as the Department of Forestry and Fisheries can influence the planning or the design of the development to mitigate negative impacts.

One respondent also pointed out that the survival of politicians necessitates meeting the demands of their electorate and living up to their promises; undertakings that would inevitably compromise the integrity of the environment for development and job creation.

The majority of respondents however spoke of large scale developments, mass clearing, golf course development, the building of infrastructure and the resulting fragmentation and decimation of habitats as the major threat to biodiversity and the environment. Respondents also spoke of the northeast coast as being the "last frontier" for development because the west coast is highly developed while the east coast is relatively underdeveloped. A tourism expert spoke of the historical trends of St. Lucia with regards to tourism and postulated that the natural resources of the island were threatened if development continued to proceed in the way that it had in the past; unplanned development in areas of rich biological diversity. Three respondents mentioned that many areas rich in biological diversity with high endemism are threatened because of not only their ecologically sensitive nature but also because of the way in which development proceeds: unplanned and lacking mitigation measures to address the negative impacts. Respondents mentioned dry forest, mangroves, and the coastal environment as threatened ecosystems. According to one respondent who works within the Ministry of tourism "*Well your notion of the dry forest is not compatible with large scale development, Louvet, Grande Anse and Marquis are all potential developments that will compromise the dry forest.*" Two respondents, both scientists, specified golf courses as being one of the main causes of major environmental damage for many reasons: the clear cutting of large expanses of land which endangers many floral species and the combination erosion of soil and fertilizer use that adversely affects the marine environment. A respondent also spoke of the displacement of fauna species (such as the indigenous pit viper and White Breasted Thrasher) from their habitats. This has implications for increased occurrences of

human and vehicle interactions with these animals which have significant adverse impacts on the population viability of these species.

The main threats to biodiversity and the viability of important ecosystems in St. Lucia were identified by most respondents as development associated with large scale clear cutting. Other reasons included the unsustainable use of the dry forest by individuals trying to earn their livelihood, the limitations of the planning system, the political climate, and the lack of education about the value of the dry forest.

5.1.1.2 SUB THEME: PROTECTING BIODIVERSITY AND ECOSYSTEMS

The identification of various threats to St. Lucian biodiversity especially with regards to the dry forest and the coastal ecosystems elicited responses from 10 interviewees on how the valuable ecosystems, landscapes, and species should be protected. Two respondents said that the land upon which sensitive ecosystems and species exist should be acquired by the government for sustainable management because there is no control with private ownership. The respondent also spoke of maintaining wild life corridors in the event of development to protect rare and endemic species, but that this could only be achieved with proper scientific study on investigating the critical land mass needed for species viability, zoning those areas, and ensuring continuity between the zones. Areas most suitable for growth and development could then be chosen. The zoning and protection of certain parts of the dry forest was echoed by another respondent as a solution to protecting St. Lucia's biodiversity.

Adjusting the carrying capacity of certain ecologically sensitive areas was another solution. The idea that conserving an area for economic gain was introduced by both a tourism expert and a scientist; if people see that there is a certain economic benefit attached to conserving a particular area then people will be more inclined to participate in protecting it. The scientist noted that one benefit of tourism was that care of the environment was driven more by the tourism industry than by local initiative. Another respondent talked about offering incentives to small enterprises within the tourism industry as these enterprises often have small environmental footprint, and this could do a lot to promote the use of environmentally friendly practices. A representative from the Ministry of Social Transformation stated that giving people greater opportunities to provide sustainable livelihoods for themselves without negatively impacting the environment is the way to approach the preservation of biodiversity. The individual went on to say that the need to overharvest forest products or use resources unsustainably would diminish if people had access to

sustainable livelihoods; the question of human survival must be dealt with first however, and this will positively impact biodiversity preservation.

A conservationist and environmental consultant both acknowledged the fact that because the dry forest is not legally protected it is of higher importance than the rainforest because it is much more threatened and therefore focus should be on realigning conservation efforts with the dry forest. The environmental consultant went on to say that the northeast coast was especially threatened because of ensuing physical development and that it was highly important to conserve sample of significant areas of dry forest in St. Lucia that are effectively . Two respondents agreed and both said categorically that the dry forest should be preserved in its natural state and should just be kept as a nature reserve.

Eighty seven tourists were then given a hypothetical scenario concerning the appeal of a hotel if it were not located directly on the beach in order to protect the habitat of an important species such as the leather back turtle. Forty percent of the tourists said that a hotel not situated along the beach front would be as appealing as one that was in order to help the species whereas 59 % tourists said that a hotel not on the beach simply would not be as appealing.

When asked what attributes about St. Lucia that tourists appreciated the most, 53% said that it was the beauty of the island which included the lush greenery, the beaches, and the climate. Seventeen percent of the tourists appreciated the hospitality, 13% said that it was a combination of the hospitality and the beauty, and 9% said that it was for the culture and hospitality. Other responses included the cuisine and the peacefulness.

Seventy nine tourists thought that it was important to place the preservation of biodiversity over the tourism industry while 9% of the tourists were ambiguous and 1% disagreed.

5.1.2 MAIN THEME: THE DRY FOREST

5.1.2.1 SUB THEME: EXPLANATION OF THE DRY FOREST

All 29 respondents were asked what they understood by the dry forest as an ecosystem, what they thought it's ecological and socio-economic significance to be, as well as how they perceived the future of the dry forest in light of all the development plans (see Map 2).

Seventeen respondents were able to respond to the question while 12 others did not know how to define the dry forest. Three respondents spoke of the dry forest in relation to the rainforest

as not having as much rainfall and as having flora and fauna species that were adapted to and only resided within the dry forest. One respondent admitted that there were a lot of resources within the dry forest that were unknown because they have not been discovered as yet as well as resources that were unique only to St. Lucia. Respondents mentioned the topography of the area in which dry forest is found and described the rugged and mountainous terrain on which dry forest plant species grow as well as the vegetation, describing it as sparsely populated, with smaller trees and shaped by the Atlantic wind forces. Respondents also spoke of the dry forest as not being as lush as the rainforest due the drier conditions and viewed the dry forest vegetation hardier and more resistant.

Respondents also spoke to the uniqueness of not only the dry forest but the entire area in terms of topography, ecology, geology and the nearby coastal and marine environment.

A Forestry officer gave a very detailed description of the dry forest:

"*For St. Lucia the dry forest is largely coastal woodlands, large coastal vegetation type ecosystem. That could be subdivided into very dry forest and then the tropical dry forest. In the very dry region you would find cacti and grasses along the coast but then you start getting into a region of rainfall that could get up to 2400 mm or so but the very dry region might get a rainfall of about 1500-1700 mm of rainfall. So it tends to be very low rainfall relatively speaking and it tends to be very windswept but the rainfall is the dominant characteristic. In terms of trees you would get a lot of white cedars, along the coast line sea grape trees, the crowns of trees tend to windswept and bent and the forest structure tends to be fairly short: about 10-15 feet in height.*

Generally you would have ephemeral streams so that means that the streams there would probably have water during the rainy season, during the dry season they are dry and you would have riparian vegetation along these streams and that is where the vegetation is more lush, close to the streams. From the wildlife side of things, there are species that specialize in the dry forest, more so on the northeast than the west coast. So we have the iguana, White Breasted Thrasher, St. Lucia house wren, St. Lucia Night Jar and these would tend to be specialists in the north east coast dry forest vegetation. It is also important for some of the migratory species, so you would have warblers. Some of the species also have a wider range of distribution, for e.g. the black finch can be found in the rainforest but it can be found in some reaches of the dry forest as well. The boa

constrictor, the Fer-de-Lanse (St. Lucian Pit Viper) can also expand into that range as well."

A conservationist described the dry forest as being defined largely by elevation and the individual also pointed to many different types of dry forest found on the island, with the northeast coast dry forest differing from that on the west coast. These types of forest included coastal forest, scrub forest, xeric forest, taller canopy forest, and riparian forest. This conservationist and another scientist both claimed that the dry forest was more predominant on the northeast coast.

Three respondents pointed to the fact that the dry forest on the northeast coast was secondary forest as much of the land in that area has been used for agriculture over the past two hundred years. A scientist within that group said that some of the dry forest was very degraded due to agriculture and clearing and if left untouched would grow to a much taller canopy height.

The 17 respondents who were able to speak knowledgeably about the dry forest gave a myriad of accounts that they believed applied to the dry forest. While the majority mentioned the endemic flora and fauna species that were associated with the dry forest, others talked about the topographical characteristics of the area in which dry forest was found such as the rugged terrain and the high elevation, as well as the climatic conditions of limited rainfall and high wind speeds. Most respondents did understand that the dry forest was coastal forest or found within close proximity to the coast.

Of the 143 community members, 36% described the dry forest as a habitat for wildlife such as snakes, iguanas, opossums, and birds while 15% described it as a place where people farmed or had gardens. Five percent described it as bush or scrub land, 5% described it as the place where the Latanye palm was found, 5% said that it was important for recreation, 5% said that it was a place where people reared animals, 5% of the people talked of the historical significance, 3% of the people described it as having an important watershed function, 3% said that it was a place that should be protected and 8 people did not know how to describe the dry forest.

Seventy one percent of the people used or knew someone who used the dry forest while 29% did not know anyone who used the dry forest or did not use the dry forest themselves. The 71% who used the dry forest or know someone who used the dry forest spoke of the ways in which it was used. Forty four percent of the respondents used it for agriculture and gardening, while 17% people used it for collecting timber or non timber forest products. Fifteen percent of the people either used it or know people who used the dry forest for hunting for various animals such as crabs,

opossums, and wild pigs. Twelve percent of the people used the dry forest for recreation and other uses not frequently mentioned included the work of forestry officers, cutting of trees for charcoal production and rearing animals.

Eighty seven tourists were also asked to rate the importance of St. Lucian forests in deciding their vacation destination. The majority of tourists rated the forests highly with 31% tourists rating it as a 10, 23% rating it as an 8, 21% giving it a 9 and, and 9% tourists giving it a 7. Ratings of 5 and 6 were given by 7% each. And 2% gave it ratings of 2 and 3.

5.1.2.2 SUB THEME: PERCEIVED ROLE AND IMPORTANCE OF THE DRY FOREST

The 17 individuals who were able to define the dry forest rated the dry forest as very important. Eleven respondents said that it was important because of the high biodiversity and endemism found within the dry forest. A few quotes demonstrate the importance that people place on the dry forest:

> "*I place high value there, particularly as I learnt that the dry forest in the area of your study is of higher biological diversity than that found in our tropical rainforest*" (Sustainable Development and Environment Officer, Ministry of Planning) and

> "*I am interested in the biodiversity in those areas and I would value it very highly in that respect, the biodiversity within the dry forest is just as high as within the wet forest and it's a different diversity, there are different species within the dry forest and there is also a high diversity of endemism, so speaking personally as a conservationist and biologist, I would value it very highly and I would say that it is just as important as the rainforest*" (Conservationist, Durell Wildlife Conservation Trust).

Seven respondents attributed its importance to the retention of soil cover, erosion control and protection of the marine environment while the same number talked about the livelihoods based on the dry forest such as broom, basket, charcoal making. One respondent stated that the dry forest acted as a buffer for the rain forest, an extremely important water catchment area and 2 respondents said that the dry forest acted as a buffer against storms and high winds that could adversely affect the interior of the island. Other opinions included the recreational and aesthetic value of the dry forest and 2 respondents spoke of the dry forest as being the patrimony of the St. Lucian people. One respondent said that the dry forest was an ecosystem that was not entirely understood and warranted more research for the sake of knowledge but also for potential herbal

medicines. Three respondents spoke of the uniqueness of the dry forest of the northeast coast in relation to other West Indian islands. While most islands are developed all along the coastline, the northeast coast represents a large portion of the coast that is not developed and that is unique geologically and topographically.

> "*It also very important because it represents Caribbean ecosystems that are under threat because it is not only that dry forest ecosystem but it is a succession from coastal formations all the way up*." (Environmental Consultant)

The majority of respondents respect the dry forest for its rich biodiversity, soil retention and erosion prevention, and the livelihoods that benefit from the forest products. Less common responses pertaining to its importance varied from its use as a storm buffer and protection of the rainforest, its topographical and ecological uniqueness, recreational and aesthetic value, and the patrimony of the dry forest.

Fifty two percent of the community members thought that the dry forest was very important, 35% said that it was important, 6% said that it was moderately important while 5% did not think that the dry forest was important. When asked why the respondents thought the dry forest was important, 18% said that it was a source of livelihoods for people, 17% said that it was important as a habitat for wildlife and 15% said that it was important for clean water. Six percent said that it was important for recreation, 4% people for its historical significance and 3% for its natural beauty. 8% of the people did not know why it was important. Ninety eight percent of the community members thought that the dry forest added to the natural beauty of the area while 2 % did not.

Eighty eight community members were asked about the use of the dry forest 40-50 years ago; two communities, Des Barras and Lumiere/La Pelle were not asked this question. Thirty five percent of the community members said that people during that time used the dry forest for agricultural purposes while 16% said that the dry forest was used for the production of charcoal, 4 % of the people said that the dry forest was used to collect wood for building homes and furniture, and 33% individuals did not know. Other less common answers were rearing animals, collecting water from a spring, recreation, and harvesting Latanye palms for broom making.

5.1.2.3 SUB THEME: PERCEPTIONS AND MISCONCEPTIONS OF THE DRY FOREST

Respondents spoke of their experiences as St. Lucians and how the St. Lucians perceived the

dry forest. An environmental consultant shared his views on how St. Lucians view the dry forest:

> "*I do know based on talking to certain people that we need to appreciate its role, and we have not been fully versed in the whole function of the dry forest and they do recognize it as part of the natural environment that should be either kept intact or at least managed as well as possible*." (Environmental Consultant).

> *"In my experience a lot of people do not see the dry forest as forest, they see it as scrub and something that they have no problem cutting down. So they do not see the value of the dry forest, from a public perception point of view."* (Sustainable Development and Environment Officer, Ministry of Planning).

The idea that green space and in particular dry forest is viewed as scrub or wasteland was a perception that many respondents had encountered either in their job capacity or as St. Lucians. Five respondents specifically spoke to the perceptions that St. Lucians in general have about such landscapes.

5.1.2.4 SUB THEME: FUTURE OF THE DRY FOREST

In light of all the proposed developments for the northeast coast, the dry forest can be deemed to be seriously under threat of clear cutting and destruction of animal habitats. Respondents were therefore asked what they presumed would be the future of the dry forest given the future plans for development along the northeast coast.

Six respondents said that if development proceeds in the way that it normally does, that is, not guided by strict policies, and lack of monitoring, then the dry forest will face severe decimation, and will be unrecognizable due to infrastructural, residential, and touristic development. All six respondents, after having stated the effects of development hastened to say that a management plan was needed in order conserve significant parts of the dry forest.

Eight respondents said that they envisioned damage of dry forest, loss of species, fragmentation of habitats, damage of marine life due to coastal developments, and severe consequences for turtles and iguanas. One respondent likened the future of the dry forest to the fate of St. Lucian mangrove stands that have been obliterated in the past thirty years in the name of development.

Two respondents specified that pollution was a major concern as many developments included golf courses and thus the erosion and fertilizer would runoff into the sea as well as affect neighbouring communities. Big hotels will also have lots of runoff and waste water draining directly into the sea and the water.

> "*The winds and the currents from the east or northeast will cause the waste to get to places like Castries and Vieux Fort from these eastern developments. That is another problem that people haven't really considered. I don't think that east coast developments will benefit us ecologically or economically*." (Historian, St. Lucia Archaeological and Historical Society)

Two respondents talked about the social implications that development on the northeast coast may have such as the alienation of people from beaches, and possible consequences resulting from changing a traditional small community to huge gated development. A planning officer not wanting to assume anything admitted to not knowing what would happen because of previous experiences where developments were proposed but were never realized.

All the respondents apart from the planning officer predicted a bleak future for the dry forest, the coastal environment, as well as the species residing in that region, if the developments proposed came to past. Many highlighted the need for integrating conservation and environmental concerns into these new developments as a means of protected that which they deemed important: biodiversity and ecosystem health.

5.1.2.5 SUB THEME: HOW TO PRESERVE THE DRY FOREST

Many respondents expressed concern over the future of the dry forest in light of upcoming development proposals. They volunteered their opinions on how the dry forest should be preserved through proper management and development. An environmental consultant spoke to a communal system of management that would integrate farming and other livelihood functions such harvesting timber forest products and charcoal generation with the knowledge of the Department of Forestry who would work with community members to promote the sustainable use of the dry forest. Enforcing the protection of certain areas of the dry forest would be another goal of this type of management where the implementation of zoning backed by political will would allow certain areas of the dry forest to remain untouched, allowed to regenerate, and permit particular extraction only under specific guidelines and guidance where the guidance comes from both the governmental and community level. The consultant went on the give the example of having methodologies for clearing land and construction within the dry forest. Therefore specific clearing under the

guidelines of the relevant government agency and community, based on information regarding land degeneration, sedimentation caused by rainfall events, impacts on the coastal environment and on communities would steer development away from these negative impacts. A planning officer talked about sensitisation and education of individuals within the tourism industry to environmental concerns and incorporating them into the way the operated. A member of a quasi-governmental organization spoke of the acquisition of land on the northeast coast by the government and vesting it within an NGO such as the St. Lucia National Trust. The individuals also expressed the need for research to determine the critical land mass to ensure species viability and well as buffer zones to ensure continuity of species habitat. A private land owner reiterated this idea of having areas assessed and designating those most necessary for conservation. The land owner spoke of doing a master plan for the entire east coast and designating areas for high, medium and low density development rather than the ad hoc development that she perceives goes on in St. Lucia.

5.1.3 MAIN THEME: PRECAUTIONARY PRINCIPLE

Many interviewees alluded to the lack of prior investigation and research before plans and decisions were made concerning development. Scientific research was often not the foundation upon which decisions were taken and thus the going ahead with development without the requisite information would require employing a certain amount of precaution.

An environmental lawyer and an environmental consultant both spoke about the importance of employing the precautionary principle in order to protect important landscapes and trying to learn and understand the ecosystems that exist there. The environmental consultant also mentioned trying to prepare for the worst case scenario and working from there to achieve development with the least impacts possible, an element that the consultant believed planning in St. Lucia requires.

The Chief Sustainable Development and Environment Officer from Physical Planning deemed an emphasis on best practices highly important because in the past people have tended to believe that the environment can absorb everything, however we are beginning to see signs of degradation when natural resources are not taken care of. The officer then expressed the need to being looking at environmental integrity as a foundation for everything that is done because those resources ultimately support life, civilization, and existence.

5.1.4 MAIN THEME: WESTIN LE PARADIS

The Westin Le Paradis development was a resort development of over 500 acres along the southeast coast of St. Lucia that began construction in late 2006. However because of loss of funding, the project has come to a standstill. Large expanses of land were cleared, some of which was the habitat of a bird endemic to St. Lucia, the White Breasted Thrasher. Due to the mass clearing of the site with no follow up mitigation measures as site development stopped, massive amounts of erosion and silting of the marine environment took place. Many respondents reference the Le Paradis development as an environmental disaster and as an example of complete disregard for the precautionary principle.

Eleven respondents made reference to the Le Paradis development without any prompting. Five of the respondents spoke of the failures that they perceived lead to the Le Paradis disaster including no mitigation measures put in place, an environmental impact assessment that was not thoroughly developed, and improper site clearance techniques. One of the five respondents asserted that those guiding principles for a development in St. Lucia would surely render the island susceptible to more environmental disasters if that ethos did not change. Four respondents spoke of the negative impacts of the dry forest in that region as well as on the habitats and the various species that inhabited them. Two respondents stated that the indiscriminate removal of vegetation resulted in the siltation of the beach and damage to that ecosystem while two other respondents claimed that this experience showcased a disregard for St. Lucia as part of an interconnected ecosystem. A respondent spoke of the promise of employment to the local people had been broken; public consultation with the neighbouring communities had had favourable results as the community members agreed to have the proposed development go forth with the understanding that they would be provided with jobs.

5.1.5 MAIN THEME: WATER

Eleven respondents showed concern for the water supply of the island with regard to development. Water supply is a sensitive issue as the water infrastructure is not adequate to service the entire island and with tourism placing pressure on the already resource, there is considerable concern over the future water supply to St. Lucians. An environmental consultant argued that resorts and tourism developments should have a bigger stake in the development and maintenance of the water infrastructure rather than being a large consumer, especially when they develop in areas that have already limited water supply. A Sustainable Development and

Environment officer spoke of large scale developments compromising the water resource and having serious implications for future water quality and quantity. This was further restated by an environmental consultant, a civil society member, a tourism expert, and a forestry officer who all expressed concern about the impacts on the regularity of water supply to communities in the event of large scale development such as a golf course and the water resources that need to be committed to them. A respondent commented that proper water research was necessary to better inform development decisions.

Two respondents both spoke about being cautious with water resource use in regard to climate change and variability. They emphasised that decisions should be made on a long term basis by taking into account the possibilities of severe water shortage due to climate change that can affect the watersheds and water catchment areas.

Two respondents also mentioned the issue of social justice where supplying water to a touristic development takes precedence over local communities.

A representative of the Ministry of Physical Planning did express concern over the water situation in St. Lucia although the individual did believe that a golf course was a very good facet of the tourism industry and that methods such as a desalination plant could be employed to resolve water shortage problems.

5.1.6 MAIN THEME: IMPORTANCE OF RESEARCH AS BASIS FOR DECISION MAKING

Ten respondents spoke of their views concerning the steps taken prior to making a decision concerning development.

Three respondents spoke of how important it is to quantify existing resources, to perform studies on the limitations of use in order to understand the resource that the island possesses and to understand the need for conservation. An environmental consultant said that considering the dry forest was threatened from a combination of types of development, there was a great need to identify, quantify, value, and manage our resources. Therefore managing those developments along the coastline would require developing research methodologies to look into those areas. A planner from the Ministry of Physical Planning reiterated these thoughts and was also looking forward to developing a sustainable land use plan based on the quantification and qualification of resource. The head of the Sustainable Development and Environment Section at OECS spoke of a back casting

study approach to managing resources where the population is extrapolated into the future. This is equated to the services and resources that the population will need at that time and then going backward to what the land resource is required to help service the population in terms of tourism, health, food security, land use, and others. A sustainable development and environment officer spoke of doing a carrying capacity study in order to see what type of tourism sector they can support from a utilities point of view. The Minister of Physical Planning spoke of the cost-benefit analysis approach in order to determine the benefits to the country.

The Chief Sustainable Development and Environment Officer in the Ministry of Physical Planning spoke critically of decision making in St. Lucia. The officer said that there was a great need to do correct research because historically decisions have been made in the absence of correct information although there is the danger of "*paralysis by analysis"* where lack of total information is not a reason for not acting. However, the officer reiterated that research is critical because the St. Lucian society is fraught with decision making that is sometimes based on someone else's experience or on casual expert judgement without the necessary research.

Two respondents spoke of research within the dry forest that would benefit society such as exploring the potential of dry forest plant as medicine.

5.2 SOCIO-CULTURAL SUSTAINABILITY

5.2.1 MAIN THEME: LAND USE

5.2.1.1 SUB THEME: LAND USE PLANNING IN ST. LUCIA

> "*Our politicians however see economic employment as that, the premier, the priority, and so they tend to put the pressure on your planning unit so that they would approve things that are fairly short sighted in terms of their design, in terms of their ambitions*."

This quote by a tourism officer reflects fairly adequately the way most respondents feel about the land use planning system in St. Lucia. The land use planning system in St. Lucia has been described by respondents as being short sighted, lacking a defined goal, and not operating within the confinements posed by such a small island.

A planning officer, after explaining that St. Lucian legislation makes provisions for land use plans, stated that St. Lucia currently did not have a land use plan but hastened to say that the

government was working on that. A Sustainable Development and Environment officer further added that because of this lack of a land use plan, concerns for development could only be expressed through the Environmental Impact Assessment. The officer explained a land use plan and the implementation process: land use plans designate areas for specific purposes such as residential, agricultural, commercial etc., they can be implemented and integrated in the Development Control Authority operations only when they are approved by both cabinet and parliament. Referral agencies such as the Sustainable Development and Environment Unit, the departments of Forestry and Fisheries have asked for these land use plans to be generated and made legal in order to have a stake in how lands in St. Lucia should be developed. The officer also mentioned that land use plans for some parts of the island had been developed in the past but were never implemented. Another respondent, a historian, spoke of the conflict between the Development Control Authority and the Ministry of Physical Planning. The respondent also spoke of a planning act that had been created for years but never implemented. Another respondent said that development control in St. Lucia was ineffective while an environmental consultant talked about planning in St. Lucia not being inclusive enough and not taking into account the small size of St. Lucia. One respondent from the Ministry of Social Transformation spoke of land as a valuable asset and that it was unfair that certain families owned tremendous amounts of land while others had nothing. The respondent believed that the land tenure situation in St. Lucia should be resolved based on the dysfunctionality of colonial system and make land available to the local population as a means increasing standard of living.

5.2.1.2 SUB THEME: BENEFITS AND IMPORTANCE OF LAND USE PLAN AND ZONING

Sixteen respondents weighed in about the importance of a land use plan in St. Lucia. An environmental consultant said that without a deliberate planning policy, lands in St. Lucia would be bought by whoever possessed enough money and would leave very little for the local population. Reiterating this point was a respondent who said that such a small country required a defined path and vision and a land use plan was one of the tools needed to support that vision. Four respondents also spoke of the small size of the island with regards to its limited resources and the increasing and competing demands on land use such as development, housing, and agriculture; demanding uses that could be reduced by a land use plan. Two respondents spoke of the hazards of unplanned development with regard to people squatting and building on land that does not belong to them and therefore not following building codes or receiving validation from the Ministry of Physical Planning, these individuals both went on to say that provisions needed to be made for green space,

parks, and protected areas. Three individuals believe that the best decisions for St. Lucian future must be based on research and planning that is objective, administrative with little political influence. A tourism official spoke of the rights of St. Lucians and how these rights needed to be considered in planning and development thus the dire need for a land use plan.

The head of the Environment and Sustainable Development Unit stated that a land use plan is important for the future sustainability of the island:

> *"We need a proper land use plan built on correlation growth requirements into the future and that the sectors are equitably positioned to respond to the needs of the people. That to me is fundamental to the sustainability to the use of our resources in the country and unless we do that we will always end up with problems, that has to be balanced against the climate change scenario and whether the impacts will be influenced. The only way we can resource our issues is to have proper land use plan at the national level."*

The chairman of the Development Control Authority had a different view of land use planning in St. Lucia who believes that Development Control is dynamic and the small size of St. Lucia does not give the people the liberty of reserving land because of pressures and demands that are always coming up.

> *"because of the topography of our country and the limited amounts of arable land in the country, it is very difficult to make hard and fast rules concerning zoning, and especially where you have an economy that is not based on a lot of natural resource like Trinidad, there money is coming from oil so they can make some hard and fast rules for their land, but in St. Lucia for e.g. we have a typical example, 10-15 years ago, bananas were something that brought in most of the income for our GDP and so you had to say look we have to give priority to our banana lands, but now you have got to reprioritize this land into something else and so it is very difficult to go very far into forward planning"*

5.2.1.3 SUB THEME: ABSENCE OF A LAND USE PLAN

These are some of the reasons why respondents believe that there is no land use plan. An environmental consultant and former permanent secretary of the Ministry of Physical Planning spoke of insufficient resources for a land use plan as well as the need for political will to back such an undertaking. This was echoed by a tourism official who blamed the dearth of a plan on political considerations that prevented its implementation. A planning officer however said that a land use

plan was currently in the process of being produced and this was reiterated by the Minister of Physical Planning. A tourism official also spoke of failures of the political administrations for not having adequately addressed the lack of the plan and initiating its development and implementation. A civil society member also said that the government was to blame for the state of land use in St. Lucia and even went as far as saying that it was deliberate in order for politicians to have the flexibility to do as they please:

> "*It does not speak to an inability to plan for the future, it speaks to an unwillingness because it is going to take away from the perceived power at the political level if there is a plan that they have to follow, that is not good for them. They would like to do as they please, they would like to continue the policy of development by application rather than development through vision. There is no vision for the country, and it is convenient not to have one because the politicians do not know which developers will show up next and what they want to do. But they wish to be able to accommodate."*

This opinion was reiterated by a historian who claimed that the absence of a land use plan was not because of a lack of funds because this individual believes that if the desire for a land use plan was there, then money from donor agencies could be used towards that initiative. The respondent thought that not having a plan was convenient because it allowed a great deal of freedom to pursue development in a haphazard manner. A scientist also thought that this was the reason for no land use plan.

The chairman of the Development Control Authority said that historically governments had always mooted forward planning because the topography of the island and the limited amounts of arable land made it very hard to make hard and fast rules concerning zoning. Due to the changing structure of the economy from agriculture to tourism as the main stay, reprioritizing land into something else is very difficult and thus forward planning becomes quite complicated. Another environmental consultant who is also a former planner with the Ministry of Physical Planning stated more practical reasons for the lack of a land use plan, the individual stated that the production of a land use plan is a resource intensive undertaking requiring lots of personnel, time, and money. The environmental consultant also said that a land use plan had not been considered at the level of seriousness that it deserves by the government over the past decades.

5.2.1.4 SUB THEME: CHALLENGES OF IMPLEMENTING A LAND USE PLAN

Implementing a land use plan entails its creation by the Ministry of Physical Planning along with other auxiliary agencies such as other ministries, civil society and quasi-governmental agencies. The land use plan must then be approved by both cabinet and parliament, a process that tends to be extremely lengthy in St. Lucia. Two respondents, an environmental consultant and Sustainable Development and Environment officer, spoke specifically to the challenge of implementing a land use plan. The environmental consultant talked about a number of plans for parts of the island that had been created at the planning department, enforcing these plans were a challenge because of the arduous process of getting the plans legislated and once legislated having them firmly defended. The Sustainable Development and Environment officer also spoke of the same situation where draft plans had never been approved and were therefore useless and unable to be used by the Development Control Authority as part of its development processes.

5.2.1.5 SUB THEME: CHALLENGES OF LAND USE PLANNING

Land use planning does have certain inherent challenges that the government, planners, and technocrats would have to grapple with. A civil society member spoke of private land ownership laws and the constitution. The respondents gave the example of owning land that the government deemed suitable for one purpose such as agriculture while the owner may want to use that land for something else such as a touristic development. This conflict of interest would mean that the government would have to compensate the private land owner for the change in land value and the government of a developing country is not equipped with the financial resources to do such. Three respondents quoted the size of St. Lucia, 238 m^2, as well as describing it's very mountainous topography in order to express the how small the island was and the limited flat lands available with competing uses for the land. Two of the respondents emphasised that this did not give a country leeway in terms of putting land aside for preservation purposes as pressures and demands were constantly presenting themselves in an unpredictable fashion.

Another challenge of land use planning mentioned by a tourism official was that the motivation for development for politicians would be to provide employment for their electorate. Therefore there would be immense pressure placed on the planning unit to expedite the approval of developments that may themselves be poor in terms of their design and in their ambition. Thus poor land use planning would be employed in order to achieve perceived economic gain.

5.2.2 MAIN THEME: PROTECTED AREAS, MULTI USE AREAS, RESOURCE MANAGEMENT AREAS

5.2.2.1 SUB THEME: CONCEPT OF PROTECTED AREAS

The concept of protected areas has been advocated mainly by civil society groups that are trying to preserve landscapes of biological and historical value through sustainable use. It was explained by an employee of the St. Lucia National Trust. The individual described very generally the premise of protected areas as not locking up land but rather realizing that that land space and natural resources were limited and that since these resources must be used, there must be ways to ensure the continuity of those resources. One of the protected areas initiatives undertaken by that civil society organization is the OPAAL project (OECS Protected Areas and Livelihood) where the objective is to conserve biodiversity. The OPAAL project is being conducted in all of the OECS member states and in St. Lucia, the protected areas is located in Vieux Fort, the Point Sables Protected Area. Point Sables has high endemism of both plant animal species as well as rich biological diversity yet many people depend on these resources for their livelihoods. The project therefore acts to enhance the sustainability of already existing livelihoods as well as supporting the development of alternative livelihoods. The head of the Environment and Sustainable Development Unit at the Organization of Eastern Caribbean States was able to describe in more detail the OPAAL project. Guiding the OPAAL project is a three tiered framework which comprises of legal, policy, and institutional branches for the management of protected areas. Along with the development of legislation to help manage the protected areas, the sites that were chosen as protected areas were representative of global biodiversity and thus contained a variety of ecosystems such as mangroves, forests, beaches, off shore reefs, and small offshore islands. In terms of livelihoods, because many of the livelihoods pertain to protected areas they need to be addressed because of the impact that designating a protected are may have. Therefore livelihoods that may have a destructive impact on the ecosystem cannot be displaced but countries can try to find alternatives for the livelihoods impacting the biodiversity. The community is engaged in trying to manage resources in order to build a sense of ownership. The management of protected areas must be inter disciplinary and multi sectoral because of the forestry, social, cultural, and tourism elements as well as the various stakeholders and enforcement aspects. There would also have to be many community development agencies involved to manage the use of resources. Managing these resources is key because there needs to be opportunity for tourism, recreation, and conservation of the diverse ecosystems. Therefore "*various agencies have a stake in the process and see it as part of their responsibility for the*

sustainable use of those areas, so that they are involved in the day to day management and they see themselves not as recipients of management control but as contributors to management control, playing a part in management." (Director of Environment and Sustainability Unit, OECS)

An environmental consultant also spoke of capacity of people to manage the process of establishing a Biosphere Reserve successfully. The attitude of government agencies, skills and attitudes of civil servants, and policy making are all very important in managing a multi-use and protected area.

A respondent, the chairman of the Development Control Authority, spoke to the system of protected areas and rejected the idea that a protected area could actually be economically viable. The respondent said that he had never seen a plan based on the premise of sustainable development and sustainable livelihoods that could be sold to the people and gave the example of the Grande Anse estate where the most that people did that was ecologically friendly was watching turtles. With 3500 students leaving secondary school every year, the respondent did not think that turtle watching and other such activities would be sufficient to support the economic base.

5.2.2.2 SUB THEME: CHALLENGES OF PRIVATE LAND OWNERSHIP

The main challenge that respondents saw in terms of protected areas and zoning areas for conservation or multi use functions was that of private land ownership. An environmental consultant brought up some interesting points; that lands earmarked for conservation may be private lands. Owners would not give up their lands without proper compensation. This brought up another challenge as to whether or not government viewed the lands as valuable resources for conservation and would be willing to compensate the owners. The chairman of the Development Control Authority as well as the head of the Environment and Sustainable Development department at OECS made similar suggestions and emphasised that fair compensation is necessary.

The head of the Environment and Sustainable Development department at OECS spoke of the conflicts between owners of land that had been designated as a protected area and the constraints posed by the rules and regulations governing development. Another environmental consultant spoke of the negative by products of designations because of the perception of private land owners of something foreign being imposed on them. The respondent suggested that indigenous forms of resource and land management may be more suitable as opposed to a designation such as a World Heritage Site. A private land owner of a very large property, Grande Anse, spoke of the property being degraded by various communities, this land owner experienced

sand mining, beach erosion, turtle poaching, deforestation, the killing of iguanas and boa constrictors, and the removal of top soil. The land owner however suggested that the best way to develop the property was through a sustainable, multi-purpose way where the communities closest to the property would be educated on the sustainable use of the resources.

5.2.2.3 SUB THEME: ALIENATION OF LOCAL PEOPLE WITHIN PROTECTED AREAS

Protected areas or areas that are designated by an international body such as a UNESCO designated World Heritage Site often encounter difficulty with local people for a variety of reasons. Four respondents spoke to this. One respondent drew from the experiences of the St. Lucia World Heritage Site: the Piton Management Area. Located on the southwest coast of the island, the site was designated a World Heritage site in 2002 and was thought by many locals as a good thing because of the expected increase in economic revenue for the community from tourism. What actually happened was that the value of the land increased dramatically and local people could not afford to buy land within and in the vicinity of the World Heritage Site. Local people would therefore start to resent the development taking place within the WHS because they felt alienated from what they saw as their own culture and heritage. Another respondent also spoke of the alienation that people felt in the WHS as they did not have a sense of ownership and they feel that their involvement with the WHS is very limited. An environmental consultant, with the same idea, said that a designation or label may not have a positive effect because the people may feel that it is restrictive and a foreign concept that comes from the outside especially if linking conservation with sustainable livelihoods is not conducive to that particular area.

A respondent brought up the point that a lot of ecologically, socially, and historically important sites which were common property resources were being sold for commercial development.

One hundred and thirty community members were asked about their perceptions of a protected area. Forty two percent of the people did not know, 24% thought that it was for the preservation of biodiversity, 15% thought that it was a restricted area, 14 people thought that it was an area designated for greater security for the people, 11% thought that it belonged to the government, and 1.5% thought that it was an area designated for no development. When the concept of protected areas was explained to the community members 78% of the people were for protected areas, 4% were against it and 8% of the people were apathetic.

5.2.3 MAIN THEME: THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS IN ST. LUCIA

Many of the interviewees within their professional capacities are directly involved in environmental impact assessments (EIAs) in St. Lucia. These interviewees were either part of the referral agencies who review EIAs, environmental consultants who conduct the EIAs, and technocrats from the Ministry of Physical Planning who also act as referral agencies but who ARE more intimately involved with the process. The referral agencies are those organizations that possess expertise in various domains that would likely be affected by or involved in development as well as those agencies that have a stake in development. Examples of referral agencies would be the departments of Forestry and Fisheries, civil society organizations such as The St. Lucia National Trust, quasi-governmental organizations such as utility companies, and governmental ministries such as Physical Planning, Health, and Social Transformation.

5.2.3.1 SUB THEME: DESCRIPTION OF THE EIA PROCESS

Two environmental consultants, four representatives from a referral agency, and two planners from the Ministry of Physical Planning described the EIA process and what their involvement entailed.

One environmental consultant described the need for EIAs in St. Lucia. In the past EIAs were conducted as part of the approval of projects, projects which were defined in the legislation. However more recently, EIAs are required in advance of approval, EIAs are basically required t o support a decision for approval in principle. The environmental lawyer interviewed described approval in principle as a decision taken by a Minister or the government in favour of a development with the least amount of information available. The government or Minister can withdraw consent or approval and development cannot proceed based solely on approval in principle. The consultant spoke of the disadvantage of approval in principle which affected both the developer and the environmental consultant. The developer resented having to pay for and conduct a full EIA without the assurance that the project would be approved and it affects the environmental consultant's ability to influence design because doing it in advance of having full design means that there is much more speculation and it becomes academic. Rather, if an EIA is part of the approval process then the environmental practitioner can work alongside the design team to influence the design in a way that cannot be done when an EIA is conducted in advance. The consultant further explained their role in the EIA process: when a developer is instructed that

an EIA is necessary, the developer would approach the environmental consultant to conduct the EIA and pay the cost of the EIA. Depending on the scope of the project the consultant would hire other professionals and the EIA would then be conducted in collaboration with them.

The other consultant spoke more generally of the process and provided a broad overview. The proposal from the developer, after having been received by the department of Physical Planning is scoped and sent out to the number of relevant agencies with particular responsibilities for certain aspects of the environment. Terms of reference are assembled by the various agencies and the compilation is returned to the developer who must then hire a consulting team. The consultants will conduct the EIA over a period of time and then send a completed document to the planning department. The planning department must share the results with the referral agencies who contributed to the development of the terms of reference. Additional information may be deemed necessary from the consultants if these agencies determine that certain aspects have not been adequately addressed. According to the environmental consultant who spoke of the objective of the process,

> "*The whole objective of the process is to ensure that adequate consideration is given by that developer towards understanding the potential impact of that development within its specific location and under particular resources attributable to that*."

The 4 representatives from the referral agencies (Department of Forestry, Sustainable Development and Environment Unit of the Ministry of Physical Planning, St. Lucia National Trust) were all basically uniform in how they described their organizations role in the EIA process. The main role of these agencies is in the development of the terms of reference, reviewing the EIA once it is completed and providing comments and recommendations to the developer. The representative from the National Trust also spoke of meetings with developers, site visits, and collaboration with other referral agencies. Both representatives from the Sustainable Development and Environment Unit pointed out one aspect of their role in the EIA process that differentiated them from the other referral agencies. The Development Control Authority is the board that has executive decision making power over development in St. Lucia and the Sustainable Development and Environment Unit of the Ministry of Physical Planning is allowed to sit on that board. However, the Unit is only allowed to voice their opinions, concerns, and recommendations and is not allowed a vote.

The planning department, a central body in the EIA process, relies heavily on the referral agencies that have specific expertise in areas that the planning department lacks. Both planners

spoke of the referral agencies as being instrumental in figuring out how to approach a development. Referral agencies are asked to step in to give their advice on addressing the applications for development once they have fully understood the nature of the development request, have been on a site visit and collaborated with other referral agencies.

5.2.3.2 SUB THEME: THE EFFECTIVENESS OF THE EIA PROCESS

An environmental consultant spoke of how the EIA process was seen as a stumbling block by some developers because they did not see the process as informing or even improving their design; some see it as a nuisance that incurs a lot of unnecessary costs however, the consultant did experience having developers come to appreciate the value of the exercise during collaboration of the design of the project. Another environmental consultant experienced the same thing in that some developers did see the EIA process as a hindrance while others welcomed it because they understood that it was part of the process of getting approval as well as the importance of getting the communities on board.

The Minister of Tourism however, disagrees completely with the EIA process. The Minister believed that the whole country should be assessed so that the conditions are known before the developer comes to the island. The Minister believed that the country was small enough to know what the issues are and to develop accordingly based on density, types of structures etc. and that an EIA would be acceptable in the case where the developer disagreed with the previous assessment and could perform their own assessment to propose an alternative way to develop.

A civil society member expressed bluntly that the EIA process in St. Lucia was a "farce". The respondent pointed out several faults. The respondent disagreed with an EIA being conducted by the developer because of the influence that the developer would have over the hired environmental consultant and the results of the EIA. The respondent believed that EIAs should be independently done, by the development control authorities who would include the cost of the EIA in the application fees so that it could be recovered. The respondent also believed that the certain requirements and qualifications must be met by potential environmental consultants in order to ensure high quality of environmental assessments. The respondent also believed that the review process needed to be stronger so that not only the referral agencies and those directly involved in the EIA process could have access to the result but that it would be made a public document to give anyone the opportunity to read and comment. The respondent also said that the developer should

be more integrated in the process and could create forums whereby the development was presented and comments were invited. The respondent spoke of the Development Control Authority (DCA) and their involvement in the process, currently the DCA bases their decisions on the summary of results generated from the review of the EIA by all the referral agencies. The respondent believed that to be a major flaw because the DCA board members did not see exactly what was in the EIA but rather the summary of comments and recommendations made by the referral agencies that were compiled by the technical staff of the DCA. Finally the respondent addressed the approval stage of the EIA and said that conditions should be implemented that correspond to the recommendations made by the referral agencies and that monitoring should be executed to ensure that developers live up to the commitments made in the EIA. This currently does not happen and the respondent therefore expressed deep dissatisfaction with the EIA process and felt that it served no purpose. The lack of monitoring as a major problem was also restated by another civil society member, a tourism expert, an environmental consultant, and a planner from the Ministry of Physical Planning who said that developers needed to be responsible to their commitment and therefore the monitoring of works and the implementation of mitigation measures were very important because monitoring of developments in St. Lucia was deficient; something that Physical Planning was currently working to improve. The planner also made mention of the faults and loopholes within the system that made it possible for developers to avoid taking the necessary mitigation steps. The environmental consultant added that during site clearance and construction operations regulatory bodies need to ensure that they are a part of the EIA approval of developments that go up and that the developer commits to monitoring; a comprehensive monitoring plan is essential. However the consultant admitted that the onus is really on the regulatory bodies and control authorities to ensure that the developer implements the recommendations and stipulations made by the consultant during the EIA process.

A member of the Sustainable Development and Environment Unit of the Ministry of Physical Planning spoke of the limitations that the unit encountered in being more involved with the decision making process. Being able to sit on the DCA board and attend meetings gave the unit an opportunity to express ideas and recommendations however the unit had no decision making power which limited their effectiveness.

A forestry official spoke of the pressure placed on referral agencies that could compromise the EIA with regards to the interest of the developer. The officer went on to say that environmental concerns were often given secondary regard due to the economic pressures to develop.

5.2.4 MAIN THEME: THE PROCESS OF DEVELOPMENT IN ST. LUCIA

5.2.4.1 SUB THEME: IMPROVING THE DEVELOPMENT PROCESS IN ST. LUCIA

Seven respondents spoke of what it would take to improve the development process in St. Lucia. A civil society member, a forestry officer, and a businessman directly involved in the tourism sector responded that they believed that people should have greater input in projects and that developers should engage with the community to inform them of both the negative and positive aspects of the development. The forestry officer said that it was up to the government to work in the interest of the people and therefore the respective agencies who have management over the resources have a responsibility in presenting the facts to the communities in order to initiate a dialogue about how to mitigate the potential impacts that would take place. Two respondents, a civil society employee and an environmental consultant spoke of employing monitoring procedures to mitigate negative impacts and ensure that developers lived up to their commitment. The environmental consultant deemed it extremely important to create an Environmental Management Plan (EMP) as an addendum to the EIA; whereas the EIA describes the impacts of the development, an EMP speaks to the environmental issues within a preventative and mitigation framework. The consultant further said that the monitoring that regulatory bodies must engage in is lacking and that it is one of the most important things. One respondent said that rather than engage in large scale clear cutting and then restoring the vegetation afterwards that projects should be developed within the ecological footprint of the landscape. An environmental lawyer spoke of the environmental practitioners who conduct the EIAs and said that special legislation should determine the consultants who could be hired to conduct an EIA, these practitioners would have to be government approved before being hired by a developer. The respondent thought this was necessary in order to avoid developers who would hire consultants who could be easily influenced to change the results of the EIA. A private land owner with experience in soliciting developers spoke of establishing mechanisms by which developers with potential interests in the island could be welcomed into St. Lucia, and could educated about the laws and the development process and questions and concerns could be addressed. This could be achieved by putting together a group of various stakeholders who are involved and affected by development. This process would be important for both the developer and the island because the developer could be screened in terms

of whether or not they were suitable. The private land owner and business man also believed it extremely important to create a more collaborative environment for all stakeholders in the development process. The business man felt that projects were often dismissed because of lack of cooperation and compromise between the public and private sector and that bureaucracy was often a hindrance; rather than looking for solutions to a problem projects were altogether disregarded.

5.2.4.2 SUB THEME: PARTICIPATION OF SOCIETY IN DEVELOPMENT PROCESS AND ENVIRONMENTAL IMPACT ASSESSMENTS

Interviewees were asked to comment on the participation of the public within the development process and 11 respondents spoke directly to the public participation component in development. Four respondents spoke of the lack of frameworks to encourage public participation. An environmental consultant made the comparison with the Canadian system where town hall and community centre meetings are held to present the project and receive feedback from the public. In St. Lucia, although that does not happen, community input does occur through a social impact assessment where the social impact consultant will meet with various groups, make presentations and solicit input from the community. A sustainable development and environment officer said that the most common form of public participation was when developers would have a meeting with the community to inform them of the project, talk about the potential benefits, jobs, and increasing the value of the surrounding community and not necessarily talk about the negative impacts. This may be because public participation is not mandated therefore communities do not get a true sense of what is happening. The officer also mentioned that EIAs are not public documents and the public does not have rights to access that information. A conservationist described the public participation process as opaque because it was something that St. Lucians were not involved in or felt like they could be involved in. The conservationist went on to presume that because of the lack of public consultation, it was unclear exactly in whose interests and benefits decisions are made as public relations exercises are often done after decisions have been taken and permission granted rather than the public having an influence and guiding how development proceeds. An environmental lawyer spoke of the public participation section of the physical planning act which states that the Minister must make regulations which speak to the procedure requirements for participation. The lawyer found it to be a vague reference in the legislation to a particular procedure and would predispose it to being overlooked and not given adequate attention and consideration.

Four respondents claimed that the lack of public consultation was deliberate as developers and the government wanted to avoid public scrutiny on intended projects. One respondent made some controversial comments about politicians who he believed did not make decisions in the best interest of the people but rather in their own interests because they had done very little in the past to convince him otherwise. A planner and the head of the Sustainable Development and Environment Unit with the Ministry of Physical Planning both said that it has not been in the history of St. Lucia of involving the public in decision making. The planner added that therefore implementing that practice within the society may be viewed as problematic where developers and authorities fear that projects may stalling due to the creation of a conduit for the public to voice their concerns. The third respondent reiterated the same opinions and also added that public disclosure of information was maybe not as thorough as it should be because of the fear of the public swaying or influencing the decision making process. A private land owner said that it was simply unrealistic to think that developers would engage with the public or communities from the beginning because of fear that they would be bombarded with questions and criticisms. The private land owner said that it would be more effective to elect facilitators or representatives to go between the various parties in order to voice concerns, and receive feedback.

One respondent said that civil society groups were simply not vocal enough and did not stand up or object to questionable developments.

5.2.4.3 SUB THEME: CHALLENGES TO PUBLIC PARTICIPATION

The head of the Sustainable Development and Environment Unit with the Ministry of Physical Planning declared public participation a fundamental requirement believed that the reason it didn't happen was because it seemed like St. Lucians had surrendered their rights to ask questions and to advocate their beliefs.

A forestry officer and physical planner both indicated that citizens could not effectively participate if they were not aware or educated about their own resources in the first place, what the implications of development could mean for their lives, and how it would impact for their lives. The officer went on to say that public relations exercises could be undertaken but would not be effective or beneficial if the public were unable to critically analyze the facts presented to them concerning the projects and therefore would be unable to assist in recommendation mitigation measures.

5.2.4.4 SUB THEME: IMPORTANCE OF PUBLIC PARTICIPATION

The 7 respondents who spoke directly to the importance of public participation in decision-making regarding development all described it as an essential, crucial, and fundamental requirement. An environmental consultant and a sustainable development and environment officer both asserted that the importance of public participation is because the people who are really impacted are the ones residing in the vicinity of the proposed developments. This was further supported by a civil society employee who said that the communities adjacent to the development are the ones who use the resources and so they need to know exactly what is going on. A conservationist believed that public participation was immensely important because if the developments allowed public consultation and were done in the interests of local people, then there would be potential for huge benefits, conversely without the input of the people there was also potential for things to go wrong or not be done in the interests of the people.

5.2.4.5 SUB THEME: TRANSPARENCY OF THE DEVELOPMENT PROCESS

Seven of the eight respondents who spoke directly to transparency of the development process in St. Lucia, criticized it as being opaque and not open to the public. The chairman of the Development Control Authority spoke highly of the process and saying that it was very transparent, that any information required by any member of society could be obtained easily from the survey section of the physical planning department. The chairman also said that all developments that have been approved must be passed in the official gazette, however due to limited human resources the chairman said that it may not always be an easy task to acquire information but that the information could be attained with the requisite amount of patience and organization. The 7 respondents who spoke of the development process as being obscure spoke more of the EIA process, the conflicts between the Development Control Authority and the physical planning department, and decision making prior to a development being approved, accountability, and the politics involved. A historian spoke very critically of the whole development process:

> "*When you have this kind of system you have a planning act that has been there for several years and they are not implementing that. There is the DCA act and you have conflict between the DCA and the planning board. When you have Ministers of government flouting the law, when the government approves a development in principle, he does not have that authority, that authority must come from planning, but he overrides the authority of planning and signs the agreement in principle and gives the hoteliers 'unauthorized authority'. And so now you have the government at odds with its own people on behalf of foreign developers. And it's not because they don't know, they know, if*

they don't know there are enough educated people, consultants etc. who are available. But sometimes people like confusion because with confusion you can get away with certain things."

The historian and an environmental lawyer both talked the lack of government accountability for public expenditure and for revenue generated by the tourism industry. The historian went on the say that the St. Lucia people need to insist that politicians become accountable, that people need to learn what power they have as well as what power the government has and does not have. An environmental consultant was also very critical and cited political influence as the main reason for the lack of openness.

Three respondents spoke more on the Environmental Impact Assessment process. A civil society employee and an environment and sustainable development officer spoke of EIAs simply not being allowed to be viewed by the public, a practice that they both deemed as unfair because of the right of the public to know. The head of the Sustainable Development and Environment Section with OECS said that the lack of public involvement was to prevent the public from scrutinising and influencing the decision making process.

A conservationist, who said that the development process in St. Lucia was a fairly opaque process thought that due to the lack of participation by St. Lucians, it was unclear as to in whose interests development decisions were being made.

5.2.5 MAIN THEME: PEOPLE AND COMMUNITY PARTICIPATION

Respondents were asked about community participation and the involvement of the St. Lucian people in their communities and assuming active roles in trying to achieve various goals for the betterment of their communities.

5.2.5.1 SUB THEME: CAPACITY FOR COMMUNITY PARTICIPATION

Eight interviewees were able to speak to whether or not they believed that St. Lucians had the capacity to drive community based initiatives and to be actively involved and participating in community life. An environmental consultant expressed having observed proactive communities in certain areas and found that it was due to a strong core of leaders who were able to drive the process. A private land owner who has been involved in community development reiterated this idea of strong leadership driving a community group but also said that groups tend to lose their

momentum in the absence of that leadership. The land owner said that to bolster community participation, mentorship and support from the public sector was needed to in order to keep groups going.

The Minister of Tourism said that community participation required a certain level of education which regrettably most people did not possess and that the country would have to build on that. The minster also spoke of local government being critical in involving the society and making them more aware. According to the Minister, most people did not understand the parliamentary system or the law and were not involved in society due to the erosion of local government and town councils. Four other respondents were also in agreement with the Minister in terms of the need for education, capacity building, and awareness based on community specific goals. An environmental consultant added that the attitudes of government agencies and civil servants were also a matter of importance in public participation.

The chairman of the DCA spoke of being a strong advocate for public participation and talked about being involved in community driven programs. The chairman stressed the importance of engaging politicians in order to garner their support as well as making the people accountable for various initiatives that they were involved in. The chairman gave the example about a community-run Development Foundation in the south of the island that developed a plan to build a pier on their shores, a loan was taken in the name of the people so the people of that community were accountable and were therefore responsible to see the construction of the pier to completion.

The community members were asked what they would like to see happen in their community to make it a better place. Thirty three percent said that they would like more opportunities for people in the realm of youth and sporting activities. Twenty nine percent of the people said they would like to see better infrastructure, 11% wanted more employment activities, 10% wanted more development, 4.5% thought the community could benefit from more unity and cohesion, 3% wanted to see greater investment in agriculture, and 10% did not know.

5.2.5.2 SUB THEME: REASONS FOR LACK OF COMMUNITY PARTICIPATION

Thirteen interviewees spoke about reasons they thought were responsible for the lack of community participation in St. Lucia. An environmental consultant and an environmental lawyer both spoke of empowering community based organizations and civil society groups by making public consultation mandatory. The environmental lawyer spoke about people being scared to voice their opinions and to advocate their beliefs for fear of negative personal consequences and

thus thought that volunteerism and environmental activism in St. Lucia should be empowered with an environmental mandate. Two other respondents, a tourism expert with the OECS and a civil society employee both spoke of political influence in preventing people from being as involved as they would like because of the fear of being perceived as affiliated with a certain party and possibly experiencing negative consequences.

Three respondents criticized the civil society governance structure in St. Lucia as weak. An environmental consultant and Deputy Permanent Secretary from Physical Planning both described local government as very weak and a civil society employee said that environment and development goals were threatened because of the lack of formal structures to allow public or civil society in development decision making. The environmental consultant had observed civil society becoming weaker and more complacent over the past 20 years and attributed this to individualism and greed, where the culture of society focussed more on consumption and acquisition rather than sharing and engaging with others.

Three respondents spoke to the weakness of civil society groups as being a result of lack of education, capacity, and resources. A civil society employee spoke of experiences with trying to promote environmental governance at the community level and the limited capacity of community groups to complete minimal tasks.

Five respondents mentioned another reason for lack of participation; that people are less inclined to be involved in issues that do not affect them personally or financially. The Minister of Tourism spoke of Village Tourism and said that people would tend to protect their natural resources, and avoid engaging in any form of activity that would negatively impact their community if they were "economic players" and had a stake in the productivity of those communities. An environmental consultant spoke of stakeholder fatigue where community members after having participated for an extended period of time and not seeing any appreciable results and would lose momentum and discontinue participation. Another respondent spoke of people losing confidence in the government and thus not participating.

Two respondents attributed the lack public participation to the history of St. Lucia where St. Lucians have not had the legacy of participating in decision making. Other respondents spoke of the youth not having meaningful opportunities for employment and self development and were therefore less inclined to participate. Another respondent said that the public was often not given the opportunities to participate because authority figures were fearful of public feedback stalling

development that is deemed crucial. The private land owner thought that leadership in community groups was lacking while an environmental consultant believed that people were too dependent on the government to make things happen.

5.2.5.3 SUB THEME: SOCIAL EQUITY AND SOCIAL JUSTICE

Six people spoke to the issue of social justice as fundamental to sustainable development and they also spoke in terms of the limitations and inadequacies that they observed in St. Lucia.

The Chief Sustainable Development and Environment Officer with the Ministry of Physical Planning spoke of the rights of all individuals to have access to natural resources such as water. The officer spoke of valuing water as a commodity, not necessarily in economic terms but in terms of valuing the ability of an ecosystem to generate water which would lead to greater appreciation and proper management of the resource. The officer therefore concluded that it was imperative to recognise that everyone has a right to benefit from the social goods derived natural resources. The officer gave an example of a water tank located in the community that serviced a hotel before servicing the community members and a tourism expert spoke of residents who endure water shortages because priority was to service the hotel sector.

The assistant Chief Forestry officer spoke about the social value of ecosystems and that it was becoming an increasingly difficult challenge to assert the social and cultural significance of landscapes because they are not amenable to economic assessment. The officer also warned that it could lead to social unrest if there was no recognition for the value that locals have placed on landscapes, spaces, and other resources. The officer spoke eloquently about the importance of valuing ecosystems and landscapes in ways other than economic terms:

> *"A sustainable St. Lucia where culturally, a value of our natural resources is passed on through our education system so that the children coming up will realize that the there is a value to the beach and the forest. Setting them aside is a deferred value, at the moment if an investor is prepared to come and pay $25 US a square foot on beach side property, when the state says we are setting aside that stretch of beach for public access and use, we are deferring that cost for public enjoyment. That has to be honoured and recognized*

as an investment in the interests of the people as against a five star hotel; that is equivalent money that you are setting aside for your people."

A historian spoke of crown land resources in St. Lucia and was more forceful about the injustices involved in when these lands were being used. The historian explained that after independence the crown lands were placed in the hands of the government but that these lands could not be sold or used indiscriminately without the expressed consent of the trustees of those lands. The trustees were the people of St. Lucia who inherited these lands from the colonial days. The historian therefore thought that there was need for St. Lucians to assert their rights and to decide the best way to use the land as opposed to having those decisions made for them. In order to do so, the government needed to be more accountable to the public because the people have the right to know what is happening with their resources.

A tourism expert with OECS and the manager of the World Heritage Site spoke of the inequitable distribution of tourism benefits. The manager spoke of the town of Soufriere which has the main sites and attractions of the island and the World heritage Site which was the Marquis landmark of St. Lucia, the Pitons. The manager pointed out the deplorable state of the town of Soufriere and made reference to the proliferation of ghettoes, the high level of crime, the poor infrastructure, roads and buildings. The average community member from Soufriere did not see the benefits of tourism and of the World Heritage Site designation. The tourism expert said that the benefits of tourism were not being equitably diffused throughout the population because of the geographical concentration of tourism. Whereas the northern part of the island is a hub of tourism activity many other rural areas are isolated and do not benefit from the industry.

Tourists were then asked about the spread of the tourism dollar. Tourists were asked to estimate what percentage of money that they spent on their vacation went back to the island and the people. Thirty four percent of tourists said 10%, 7% said 5% or below, 32% of tourists said between 20% and 30%, 14% said 50%, and 7% said 75% and greater. When asked if they would like some of the money that they spend to go towards conservation, 98% of the tourists said yes while 2% said no.

5.2.6 MAIN THEME: POLICY

Thirteen respondents expressed their dissatisfaction with policy and legislation in St. Lucia. Many felt that weak or inadequate policies threatened the integrity of natural resources, did not support public advocacy, and did not always work in the interests of St. Lucians.

Eleven respondents criticised the policies and legislation governing environmental protection, development, land use planning, and public participation. 6 respondents spoke of the need to review laws in order to make them more stringent and to remove loopholes that could lead to environmental problems. An environmental lawyer also spoke of the need to clarify vague legislation where public consultation was concerned. Two respondents spoke of the lack of enforcement and three respondents spoke to the need to implement structured policy and regulatory frameworks that would allow planning and resource management. Hindrances to implementing these frameworks were listed as lack of commitment from policy makers, political considerations, and lack of capacity and education.

Three respondents pointed out specific areas where policy was insufficiently developed to guide development: the use of beaches by locals and tourists, golf courses and land use, and protected areas and designated areas such as a World Heritage sites. Several respondents said that civil society needed more policy support in order to function better and to participate more.

ECONOMIC SUSTAINABILITY

5.3.1 MAIN THEME: GOLF

5.3.1.1 SUB THEME: RATIONALE FOR INCLUDING GOLF COURSES AS PART OF THE TOURISM PRODUCT

Nineteen respondents spoke about why they thought the golf course was becoming such a frequent part of the tourism package. Fourteen of the respondents believe that a golf course confers a certain prestige to a resort or touristic development that attracts a specific clientele; tourists with high disposable income. According to a tourism expert:

> "*Golf courses are a signature amenity of your upscale hotel, so it is definitely an indication that we are moving in this direction*."

Two respondents stated that golf courses were part of developments that foreign investors wanted and without foreign investment, the economy would stagnate. These respondents therefore saw golf courses as important to growing the St. Lucian economy.

Two respondents also talked about how golf courses were good at marketing a development, thus in order to entice foreigners to purchase or rent a condominium within a gated development, a golf course was a marquee attraction that would help achieve that goal.

One respondent stated that the rugged topography of the east coast was a remarkable region for golf courses and would therefore attract many golfers who contribute significantly to the tourism economy.

Eight six percent of tourists preferred a nature reserve over a golf course while 14% preferred a golf course to a nature reserve. Tourists were asked to rank their desire to view interesting endemic species of St. Lucia. The majority of tourists ranked their desire as high while 11% tourists had very little or no desire for such an activity. Thirty percent of tourists ranked their desire as an 8, 22% ranked it as a 10, 16% gave it a 9, 12% gave it a 6 and 9% of the people gave it a 7. The remaining 12% ranked their desires between a 5 and a 1.

5.3.1.2 SUB THEME: NEGATIVE IMPACTS OF GOLF COURSES

Twelve respondents spoke about the adverse impacts that they deem golf courses have on the social and ecological environment. Seven respondents thought that golf courses would have negative impacts on both the biophysical and social environment because of the immense pressure placed on water resources. Five people expressed their concerns over the sustainability of golf courses; these individuals felt it unfair to compromise disproportionately large amounts of land in order to satisfy the desires of a minority, especially arable land that would contribute to the food security of the island. Three respondents spoke of the adverse effects on biodiversity because of the large scale clear cutting of forest and vegetation that precedes the construction and design of a golf course. Other negative impacts included the erosion and desilting that would result from clear cutting as well as pollution and contamination of ground water and the marine environment as a result of the extensive chemical and fertilizer use of golf courses. A respondent also spoke of the significant social impacts of exclusion where the average St. Lucian would probably not be able to afford the membership fees of a golf club and thus would be excluded from that landscape.

5.3.1.3 SUB THEME: CAP ON NUMBER OF GOLF COURSES

Twelve respondents addressed the issue of placing a cap on the number of golf courses that should be developed in St. Lucia. Only 4 people said that they thought St. Lucia should not have more than 5 golf courses. The remaining eight however said that the issue was not to arbitrarily place a cap on the number of golf courses that should be developed but rather, well researched policies and deliberate thought must go into determining the right number of golf courses for the island. This would allow the holistic consideration of other sectoral needs as well implementing proper environmental impact assessment policies and mitigation measures. Two respondents stated that St. Lucia was simply too small for the number of golf courses that have been proposed which range from 9 to 12. These respondents did express concern over the having too many golf courses on the island.

5.3.2 MAIN THEME: LOCAL BUSINESS IN ST. LUCIA

5.3.2.1 SUB THEME: CHALLENGES OF LOCAL BUSINESSES AND ENTREPRENEURSHIP

Three respondents spoke of the challenges of small local businesses in their quest for economic viability. The director of the Small Enterprise Development Unit in the Ministry of Commerce was able to point out many factors that worked against businesses and entrepreneurs in St. Lucia. The costs of inputs such as operating costs and utilities are extremely high, raw materials are expensive because they are often imported, and packaging costs are also high priced. Financing from institutions is limited for micro and small businesses and grant funding is also scarce. Grant funding available is often for technical assistance however most small businesses require assistance for working capital or to buy equipment. Equipment is also another challenge as most small businesses require small scale equipment yet equipment most readily available is large scale and that much more expensive. The Director also spoke of the structure of small businesses and recognized that many of them needed to become more organized in terms of building their skills and coordinating services necessary for the survival of their business. Challenges such as lack of skills or service delivery were impediments that the Director outlined at hindering the success of those small enterprises.

An economist with the Ministry of Tourism spoke of a Heritage Tourism program that helped propel sites and attractions with potential into the tourism sector. These new small enterprises were often at a disadvantage based on their location. Sites on the west coast fared much better than those on the east coast because most tourists want to visit the Pitons and the Sulphur Springs which are located on the west coast. Tourists therefore visit the other sites located

on the west coast as they are in closer proximity while sites on the east coast are overlooked. Other challenges that these sites faced are that they are common property resources that face the threat of being sold for commercial development.

An environmental consultant spoke of the concessions that many foreign developers are granted when they intend to invest in the island while local entrepreneurs are often do not have the resources to invest are not given incentives or concessions to invest and to have a greater stake in the tourism sector.

The Director of the St. Lucian Tourism Development Programme spoke of the Small Enterprise Development Unit as being limited in terms of resource allocation, exposure and awareness of the public to what SEDU can do because its small size.

5.3.2.2. SUB THEME: IMPROVING LOCAL BUSINESS AND ENTREPRENEURIALISM IN ST. LUCIA

Five respondents believed that micro, small, and medium sized enterprises required greater empowerment and more support. The Minister of Tourism believed that smaller businesses within the tourism sector were more apt to be culturally authentic and would bring economic development to areas in which they were located. Two respondents spoke of greater incentives for local enterprises and the Minister of Physical Planning as well as the director of SEDU believed that lend institutions should revisit their policies to be in a position to assist local small businesses. An environmental lawyer thought that more incentives should be offered to small and medium enterprises because they had a small environmental footprint and would therefore positively impact the environment. A tourism officer with the Ministry of Tourism spoke of experiences where potential St. Lucian investors were unaware of the various incentives open to potential investors or had the misconception that certain incentives were available only for foreign investors. The officer therefore expressed the need encourage local investment as well as create sectors within the economy that catered specifically to St. Lucian investors.

Three respondents thought that greater and more varied use of local products would allow for more entrepreneurialism and therefore more opportunities for economic generation while 1 respondent thought that more support should be given to the development of other sectors within the economy such as arts, crafts, sports, and information technology.

Three respondents mentioned the importance of creating and strengthening linkages between various sectors such as between agriculture and tourism. The Director of the Tourism Development Programme said that it was imperative to bring businesses up to standard in order to make them marketable such as ensuring appropriate public health and safety standards were implemented.

5.3.3 MAIN THEME: SUSTAINABLE DEVELOPMENT

Twenty three respondents were able to speak to sustainable development in terms of their understanding of the concept. Eighteen respondents in one form or the other described sustainable development to be continuity of resources; that resources should be used in a manner that benefits present generations but that does not deplete those resources in order to preserve them for future generations. One of those respondents, a tourism expert added that the concept of Pareto optimality was extremely important as well; the expert explained that Pareto optimality is a concept where no one is made better off at the expense of making other people worse off.

The Minister of Physical Planning described sustainable development as reconciling the competing uses of resources by choosing the most appropriate use.

Three respondents, the Minister of Tourism, a private land owner, and the representative of a development group in St. Lucia all quote the conventional definition of sustainable development; the three components of environment, socio-cultural equity, and economic viability[4]. The private land owner spoke of the three components as self supporting and not taking away anything upon which they depend so that there are benefits and sustainable development would allow for preservation and regeneration, much like a natural life cycle. The Minister of Tourism however said that economic viability often tends to be the component that is maligned because it seems to be the one accused of being least sensitive but that is was probably one of the more important ones because if it is not economically viable, then nothing else that you are doing is going to be sustainable. The Deputy Director of Social Transformation spoke of sustainable development within the context of livelihoods and said that it would means livelihoods that are independent of social assistance and that caters for the needs of everyone in the household without being detrimental to society, the environment, and one in which the next generation can get a head start

[4] Refer to Chapter 3 – Literature Review, section 3.1

without any detriment to the natural environment or to society.

The Chief Sustainable Development and Environment Officer described sustainable development as the ability to sustain life in the face of inherent frailties and disadvantages of a small island developing nation such as St. Lucia such as limited human resources, and vulnerabilities to the natural disasters and economic shocks.

An environmental lawyer defined sustainable development but was also critical of developing countries such as St. Lucia in achieved sustainable development:

> "*Sustainability for me is maintaining a balance between developmental goals and our security in terms of the environment and I think in the Caribbean we feel that we have lost so much over the years that we feel that we must play catch up with the developed countries and that is often at the expense of the environment. Sustainable development should obtain a more determinate context within the smaller island content because the negative impacts associated with development are most easily and readily seen on the small island context and it is a shame that our national government is not sufficiently aware of this, in fact I don't even think that it is a matter of awareness, it is a complete sense of disengagement. Because of our Westminster type of government where every 5 years there is a re-election, there is no notion of long term planning and long term thinking. Unfortunately my own personal views of sustainability are not readily demonstrated in the national governmental spheres."*

The tourists were asked various questions concerning their motivations for visiting the island and what they appreciated most about the island. Tourists were asked to rate on a scale of 1 to 10 with 10 being highest rating, how important it was for them to visit a country that operated sustainably in terms of environmental integrity and social equity. Twenty six percent of tourists gave it a 10, 25% rated it as an 8, 20% of tourists gave a rating of 7, 16% gave a rating of 9 and ratings of 5 and 6 were given by 9% of the tourists. No one gave a rating on less than 5 and more than half of the respondents rated it as 8 or more.

5.3.3.1 SUB THEME: CHALLENGES TO SUSTAINABLE DEVELOPMENT

Seventeen respondents during the interviews highlighted a number of reasons that would make it difficult to achieve sustainable development. An environmental consultant spoke critically of the abuse of power and legislation that takes place on the island, while the chairman of the

Development Control Authority deemed political influence a major factor in development decision making, and a civil society employee believed that the laws governing development were wrong, especially with regard to the EIA process. An example given was that once a project is approved, the government cannot change the conditions without compensating the developer for any costs incurred, thus making it unlikely that the government would revoke any approved projects.

The Deputy Permanent Secretary (DPS) of Physical Planning also spoke of the system in terms of its limited human resources, loopholes within the system, level of monitoring and mitigation being deficient. The DPS had observed that due to the fact that tourism was the mainstay of the economy, it was expected by agents of tourist development that there would be leniency in their development undertakings and this overarching mentality permeates throughout the system of regulation and control which leads to deficient levels of monitoring and mitigation. A historian made a similar observation concerning monitoring, that there were no safeguards for protecting areas once development reached completion. An environmental consultant added that the leniency within the system was often directed at foreign investors and there were no incentives for St. Lucians to benefit from developing the land for tourism themselves.

A civil society employee and tourism expert both criticised the Development Control Authority for not ensuring that developments happen properly in terms of maintaining environmental standards due to lack of enforcement and developers not adhering to the EIA stipulations.

A conservationist found that despite the wealth of technical knowledge on the island, either within the public service or private sector, decision makers did not always take in account the opinions of technocrats and experts when making important decisions regarding development.

A botanist referred to golf courses as a "waste of St. Lucian land forever", because it produced the lowest number of jobs per square mile of any use of land and thus was a very unsustainable way to develop land in St. Lucia. A sustainable development and environment officer however explained that it would be difficult justifying putting a large portion of land into a low impact development where the economic gains would not be as visible as a high dense, high footprint development.

Both the Minister of Tourism and the executive member of several tourism companies spoke about making sacrifices in order to grow the economy. The Minister went on to say that the biggest economic driver in St. Lucia was land and it had to be put to use, and that there would

inevitably be sacrifices but there were no other options.

Two environmental consultants both said that there was a lack of public engagement within development and one of the consultants further commented that civil society in St. Lucia had become very complacent and was not organized because people were not adequately involved.

The Minister of Tourism spoke of the lack of collaboration between various stakeholders that would be involved in development such as civil society, the public sector, and developers. The Minister spoke of politics getting in the way of trying to find realistic solutions to development issues, that the three main groups at odds with each other being the party in power, the opposition, and civil society groups. The Minister described the civil society groups as scare mongers who rather than trying to collaborate and move forward with a development, would advocate against certain projects based on the possible negative environmental impacts.

The Minister also spoke about the precedence that economic gain must take because St. Lucia was simply a company that required economic growth in order to survive. The chairman of the DCA asserted that the provision of jobs was a more pressing matter than environmental preservation. A business man and executive member of several companies within the tourism sector spoke of the need to make St. Lucia competitive in terms of attracting investors to the island for development and therefore ensuring that there were no restrictions that would dissuade investors from wanting to develop in St. Lucia and moving to another island where conditions would be more conducive.

The Chief Sustainable Development and Environment Officer spoke of the challenges of achieving sustainable development within the context of a small island and its inherent limitations such as limited natural and human resources, meeting energy demands in the face of fluctuating oil prices, inadequate water resources, and food security. The officer mentioned these challenges as obstacles that needed to be surmounted in order to achieve a sustainable development agenda. The officer also talked about the Sustainable Development and Environment Section not having any legal mandate but rather collaborating with other environmental agencies to improve the efficiency of implementing plans and policies. The officer did mention that the legislation was currently being developed. A Sustainable Development and Environment officer also outlined these challenges to sustainable development; insufficient human and technical resources made it very difficult to implement plans towards sustainable development. The officer also observed that the more environmentally aware a development was the more cost intensive it would be.

A private land owner spoke very critically of the government, the owner did not believe that the government was adequately equipped to achieve sustainable development. The land owner did not think the government capable, not just because there is not enough capacity, political will, and technical expertise but also because governments tended to be very self serving and that once the party in power was replaced, there was no certainty that there would be any continuity.

A civil society member outlined another challenge to sustainable development. The civil society employee had observed that authority figures had several misconceptions about protected areas and preservation; that these areas were to be locked away and never developed, while civil society groups advocated for sustainable use.

These observations were noted by a Sustainable Development and Environment officer who found that agents of development would often regard environmental agencies and civil society groups as extreme conservationists and tree huggers because these groups were often unable to quantify the economic benefits of ecological systems. Another constraint that the officer found was that the environment was competing with that economic drive for the country and trying to get decision makers to see beyond the short term benefits of job creation associated with growing the tourism industry. Despite the difficulty in quantifying ecosystem benefits, there are economic benefits to healthy ecosystems such as coral reefs that contribute to shoreline protection, for diving, and in creating and maintaining a beach. The officer spoke of having the methodologies prepared to carry out studies that would quantify the value of the ecosystem, however limited resources and technical expertise were a challenge and thus hindered getting the information to decision makers in order to inform and influence their decisions.

The director of Social Transformation spoke of poverty as a challenge to sustainable development, in that, as long as the survival of man was in question, then he would always use the environment in order to survive.

5.3.3.2 SUB THEME: HOW TO ACHIEVE SUSTAINABLE DEVELOPMENT IN ST. LUCIA

Nineteen respondents were able to speak about ways in which St. Lucia could achieve sustainable development. Seven respondents thought that increasing the participations of people within society as well as educating and empowering the population would lead to long term betterment of the society because people would be more apt to voicing their opinions and therefore

authority figures would be required to work for the interests of the St. Lucian people. A civil society employee thought it necessary to define a vision for the country that was based on people and their empowerment rather than infrastructure.

Five respondents thought it necessary to increase governance and strengthen legal frameworks to ensure that there was effective enforcement of laws in the country. A civil society member said that the lack of effective enforcement was the greatest threat to sustainability and an environmental consultant deemed that regulatory frameworks were extremely necessary to allow resource management and planning.

Four respondents thought it very important to have proper zoning and a proper land use plan in order to protect certain ecosystems, to use some for the benefit of the present society and to preserve some for future generations.

Four respondents spoke of integrative management as a way to achieve sustainable development. A Sustainable Development and Environment officer spoke of the inter-sectoral committees within the Sustainable Development and Environment office as well as the various agencies that work together for coastal zone management including fisheries, forestry, agriculture, crown lands, tourism and so on. The National Environment Commission works with the public sector, community based organizations, and the private sector in order to come up with policy decisions to inform Ministers. The officer deemed this type of collaboration very important in order to push environmental concerns and solutions. An executive involved directly in development within the tourism sector found that there was a great need for more collaboration between agents of tourism development, planning, and civil society groups in order to proceed with development and trying to make it as environmentally friendly as possible. An environmental lawyer spoke of achieving sustainable use of resources by directly involving people who use those resources for their livelihoods and making them stewards of the resources. The lawyer went on to say that the government is often incapable of managing resource because of limited human and technical resources, therefore a more effective manner of ensuring appropriate management would be to train the habitual users of the resources. This way these individuals would be able to learn an income by contributing to the sustainable management of the resource. A private land owner also spoke to this concept of integrative management:

> "*Maybe there can be some kind of partnership but I really think that it needs a highly organized, it doesn't have to be private in the sense that private for profit organization*

but let's just say for example, if the government and a developer and an NGO can come together, everybody does what they do best. The government ensures laws are enforced, they facilitate the local governance and the community involvement, then the developer does something that will bring in revenue that will sustain it, publicize it and market it in a way that would benefit the property, put in the infrastructure and then the NGO would focus on the environmental issues because you need someone with resources and the government does not have the resources to deal with maintaining a nature park or research station where the turtles could actually be tagged."

Two respondents, an environmental consultant and the head of the Environment and Sustainable Development Unit at OECS both spoke of regional integration as important to achieving sustainable development. The head of the Sustainable Development Unit thought it important for regional integration in order to harmonize policies throughout the islands to ensure that islands did not "*play themselves off against the other*" as well as preventing outside entities from playing islands against each other especially with regard to tourism policy. The environmental consultant simply did not think that St. Lucia could be sustainable on its own and therefore deemed regional integration necessary in order to advance sustainable development.

The Minister of Tourism thought it very important to bring development to the marginal communities on the island in order to spread the benefits of tourism more equally as well as creating avenues for people to participate more integrally within the tourism sector. The chairman of the DCA asserted that the most important thing was economic viability in order to get people to have a stake in something and therefore develop the desire to preserve it. Four respondents however spoke of environmental integrity, the Chief Sustainable Development and Environment Officer regarded natural resources as the things that ultimately support life and civilization while a conservationist thought it very important to take into account the fragile nature of ecosystems and their irreplaceability. A forestry officer also added that the environment held special cultural and social value for the people, something that needed to be respected and incorporated in development.

An environmental consultant spoke of changing the mentality of people in order to achieve sustainability through changing consumption habits, more cautious use of resources, an ecosystem approach and valuing the benefits that came from that. The consultant also thought that the society had become too individualistic and that the society needed to focus less on consuming and acquiring and more on sharing and creating

5.3.4 MAIN THEME: TOURISM

A major component of the research entailed investigating the biggest economic driver of the island, tourism.

5.3.4.1 SUB THEME: MODEL OF TOURISM

Respondents were asked about their thoughts concerning the model of tourism that they believed St. Lucia subscribed to and 17 respondents spoke critically of tourism in St. Lucia.

Eight respondents believed that St. Lucia was a mass tourism destination, however 5 of those respondents believed that tourism in St. Lucia was moving away from mass tourism to a more diversified product with various niches such as eco tourism, boutique tourism, and sports tourism. A tourism expert with the OECS said that although St. Lucia could not be deemed a mass tourism destination, it had certainly reached a threshold where necessary measures needed to be taken to preserve the integrity of infrastructure and natural resource. If these measures were not taken then St. Lucia tourism could definitely become a mass tourism product with little management and control. An environmental consultant thought that tourism in St. Lucia did exhibit some elements of mass tourism but not entirely. A civil society employee believed that St. Lucia was a mass tourism destination despite the state policy of the government which was to embrace the high end of the tourism market. The civil society member therefore thought that there was a disconnect between policy and practice.

Four respondents believed that St. Lucia offered a wide cross section of tourism products. An executive member of several tourism companies said that St. Lucia had a fairly balanced, diverse tourism product based on the various plans offered to tourists such as all-inclusive, transient clientele, and European plan as well as hotel categories: small, large, medium and boutique. A tourism officer added that while the ultimate goal of the St. Lucia Tourist Board was to cater to high end clientele, St. Lucia tourism still catered to budget tourists, the middle class, and high end tourists.

Three people thought that St. Lucia tourism was positioning itself for the upmarket visitor based on the increase in upscale hotels on the island while two respondents were unsure how to categorise St. Lucia tourism. A Sustainable Development and Environment Officer spoke of the

various types of developments existing and proposed for the island, whereas along the West coast there are plans for boutique tourism with smaller more intimate hotels, the proposed developments along the East coast were immense developments "communities within communities" that would be self sufficient. The officer was therefore unsure about whether the island was in fact moving towards a more upscale tourism as proposed developments seemed contrary to tourism policy.

5.3.4.2 SUB THEME: IMPACTS OF TOURISM

Twenty four respondents spoke about both the positive and negative impacts of tourism on St. Lucia. Each respondent touched on several positive impacts that they observe while respondents often only outlined one or two negative impact.

Positive Impacts

The impact most quoted by respondents, 16, was the provision of employment within the tourism industry. According to the Minister of Tourism, the industry pays $200 million XCD in salaries annually as compared to the banana industry, the former economic mainstay of the island that at its peak, grossed $180 million XCD. The Minister of Tourism also spoke of tourism as being extremely important in supporting the financial institutions; claiming that without tourism these institutions would collapse because half of the loan portfolios with the local banks were related to tourism. Nine respondents spoke of the spin off effects of the industry such as arts and crafts and the indirect employment created such as taxi drivers, as well as the inter sectoral linkages created between other industries such as agriculture. One respondent pointed out that tourism had provided a safety net for those families who had once relied heavily on agriculture.

Eight respondents including a tourism expert within the Tourism industry spoke of tourism being the most important driver of economic growth and 5 respondents said that tourism was important as a foreign exchange earner as well as important for attracting foreign investment in the form of tourism.

Four respondents claimed that tourism was largely the reason for the improvement of infrastructure such as roads, air and seaports as well as telecommunications infrastructure.

According to 3 respondents tourism was a good economic rationale for conservation and

preservation of the island as efforts would be made to preserve its integrity in order to continue attracting tourists.

One respondent thought tourism was a good development option in terms of developing isolated communities and bringing economic opportunity to the lesser developed regions of the island.

Negative Impacts

Nine respondents spoke of the destruction of the environment, the large environmental foot print of tourism developments as well as the risk of destroying the very thing that attracts tourists as major impacts of the industry. A civil society member talked about little being done to curb the environmental degradation associated with tourism and 2 individuals working within the tourism industry declared that sites and attractions were compromised due to the large numbers of people visiting them.

Six respondents spoke of the negative social implications associated with the occupation of beaches by tourists and the resultant alienation of local people from those places of recreation and 6 respondents also spoke of the negative influences of tourism on St. Lucian culture as it was being commodified for the purposes of tourism, 2 respondents also spoke of the associated crime involving drugs and prostitution. Five respondents spoke of the added pressure that tourism placed on the infrastructure, especially water resources. An environmental lawyer spoke of concerns about waste effluent being dumped directly into the seas.

Five respondents observed that linkages between other sectors such as agriculture were not sufficiently strengthened and an environmental consultant thought that the tourism industry was not sufficiently integrated and could lead to social impacts.

Four respondents expressed their concern about the emphasis placed on developing the tourism sector in light of the fact that it is a fragile industry and is seasonal and it should therefore not be the only form of economic revenue for the island. A forestry officer questioned the spread of the tourism dollar while another respondent expressed that a large proportion of the profits did not remain in the island but were expatriated because most of the investments were made by overseas individuals and companies. An environmental consultant spoke of the benefits of tourism not being equally spread because the industry was concentrated geographically.

Seventy eight percent of community members were in agreement with the proposition of a hotel in their community while 20% were not and 3% were ambivalent. Of the community members who spoke of the potential benefits of such a development in their community, 58% thought that it would bring employment, 21% thought that it would increase economic wealth due to greater patronage of small businesses within the community, 8% thought that it would beautify the area, 13% thought that it would improve the infrastructure and make the area less rural. Of the community members who did not want a hotel in their community, 62% did not want a hotel because they wanted to preserve the biodiversity, beauty and natural resources of the community, 8% said that a development would restrict local access, 8% said that they preferred to see the area developed otherwise, and 8% said that the area should be preserved so that locals could use the natural resources in the area. Other responses included that the development may lead to social problems, and that there should be better forms of employment being created in the community.

When asked how they would like to see their community developed, 41% said that they would like to see a resort type development with a golf course, 22% said that would like a variety of development ranging from touristic, residential to recreational and heritage type developments. 20% said that they would like to see nature trails and a heritage park while 3% said that they would like the area to be developed for agriculture and 1% people did not know.

The community members were then asked specifically if they would like to have a hotel be developed on the beach of their community and 81% said yes while 17.5% said no and 1% was uncertain. Of the people who wanted to see the development happen, 83% said it was because it would provide jobs, 8% said that it would increase the aesthetic value of the area, and 7% said that it would improve the infrastructure. Out of those who did not want the development, 40% said that it was more important to protect the turtles and other species, 1.6% said that the heritage value was greater, 1.6% said that a development would alienate the people from the beach, 1.4% said that it would not provide long term employment and 1.4% said that the area should be developed otherwise.

When asked how they thought development could be more beneficial to the community and its members, 43% said that community members should be employed and trained at all stages of development, 11% said better infrastructure, 7% people said that there should be greater support for other industries namely agriculture, 5.6% said that development should be done in a more environmentally conscientious fashion, 5% said that development should accommodate different livelihoods as well as maintain the culture of the people, 3.5% said that there should be assistance

to help St. Lucians attain land ownership, 3% said that there should be more research and public consultation conducted before a development is undertaken, 2% said that there should be more local government and civil society involved, and 13% did not know.

5.3.4.3 SUB THEME: MODIFICATION OF TOURISM DESIRED

Twenty seven of the 29 interviewees had many thoughts concerning tourism and how it could be altered to be more sustainable and to provide more benefits for both the island and its inhabitants.

Ten respondents deemed that participation of the St. Lucian people in the industry was extremely important to make St. Lucians more direct beneficiaries of the industry. The Minister of Planning thought an important step towards this would be to have lending institutions more accommodating to locals and the Deputy Director of Social Transformation thought that there should be greater emphasis placed on local investment in the industry as opposed to foreign investment. An environmental lawyer also expressed the need to provide more help for local enterprise because those businesses were often small or medium sized and posed less environmental damage. A civil society employee thought that public consultation was important to get locals involved in the development process and tourism expert expressed the importance of discovering the talents that people possess and the ways of life of local people and using that to market the tourism product.

Four individuals responded that tourism need to be more compatible with the environment in terms of development, the use of natural resources, clear cutting techniques, and impacts on species and habitats. The chief Sustainable Development and Environment Officer spoke of designing hotels more environmentally friendly such as building them away from the coast, proper disposal of waste, less demand for energy resources, and using already existing vegetation. A tourism expert with OECS thought that proper zoning and enforcement of zoning regulations was very important to ensure the preservation of natural resources and biological diversity and thereby designating areas more feasible for hotel construction. The tourism expert thought that this was very important for the tourism industry in order not to prevent St. Lucia form declining as a tourist destination.

Two respondents expressed concern over the prominence of the Tourism industry in St. Lucia and that it should not be the sole major contributor to the GDP. A tour operator thought that both agriculture and tourism should hold equal place within the St. Lucian economy. A civil society member thought that it was a fundamental flaw to have an economy based primarily on one sector because of the fragility of the economy and the inability to control many variables that could adversely affect the industry.

Two environmental consultants and the Minister of Tourism spoke of beaches in St. Lucia and the alienation that locals felt after a hotel was developed on the waterfront. One environmental consultant spoke about the need for policy regarding beaches such as the use of beaches and reserving beaches for locals, the Minister of Tourism thought that it was very important to ensure that beaches were welcoming for St. Lucians by putting public facilities. The other consultant spoke of addressing the restrictions that certain livelihoods may face as a result of a development along the coastline such as fishing.

Seven respondents spoke of the model of tourism that they thought would provide more benefits to locals and the island. Respondents were of the opinion that St. Lucia should avoid mass tourism, and that the industry should be more high end and expensive for tourists. In this way, money would still be injected into the economy however the tourist numbers would remain manageable and negative impacts such as the over saturation of beaches, sites and attractions could be avoided. A civil society member though it important to focus on the quality of the experience as opposed to a tourism policy driven strictly by the number of rooms. Five respondents mentioned a diversified tourism product that would integrate various niches such as eco and sports tourism.

Five respondents described tourism that would involve a village tourism approach where local people could possibly offer their homes to accommodate tourists and communities could attract tourism due to their own unique peculiarities and so more people and communities could benefit from tourism.

Eight respondents thought that St. Lucia could benefit more if there was greater use of local products within the industry, if the St. Lucian culture were more incorporated into the industry and if arts and crafts unique to St. Lucia were developed. A conservationist and forestry officer thought that the best strategy for marketing St. Lucia was to capitalize on its unique attributes such as the rainforest, mountains, dry forest, species, culture, and political stability as opposed to competing with generic attributes found in other islands such as extensive golf courses and 600 room hotels.

Six respondents including the 4 individuals directly involved in the tourism industry spoke of much need training and education of St. Lucians to work within all spheres of the tourism industry. One respondent said that education was the key in order to attain all positions within the industry so that they go less to foreigners while another said that St. Lucians needed to be equipped with the necessary information and education to reap benefits from the industry.

Three respondents spoke to the need for clearly defining the tourism product. A tourism expert with the OECS spoke of creating a unique and authentic product that would compel tourists to visit while a consultant thought the a clearly defined product would allow for setting of limits so that people know and understand the things that are and are not allowed.

Eight people deemed it extremely important to better structure and strengthen the inter-sectoral linkages between tourism and other sectors, namely agriculture. A civil society member gave an example where better structuring was required, farmers who provide produce to hotels are often paid three months after they have delivered their goods, this is a fundamental flaw that works against the farmer. Another example was that many communities who have certain attractions within their communities are not compensated for its use, communities should become stewards of their own natural resources and should be given the opportunity to reap the benefits when other enjoy their resource. Most of the respondents spoke of agriculture, due to its strong presence and history in the island and they all believed that there needed greater coordination between the agricultural industry and the tourism industry so that partnerships and linkages be created.

Two respondents spoke of other industries within the economy such as manufacturing, fishing, agriculture, housing, and health and the importance of strengthening them and placing adequate resources within the sectors as opposed to relegating all resources to tourism.

Other ways in which tourism could be modified to provided greater benefits to the island as outlined by respondents were minimizing the tax concessions granted to hotels, doing cost benefit analysis of proposed tourism development, and according to the Minister of Physical Planning, not making the cost too prohibitive for tourists and investing in amenities such as casinos that would guarantee increased numbers of tourism arrivals.

The tourists were asked about local food, and to rate the importance of consuming food locally produced in St. Lucia. 28% rated consuming food derived locally as extremely important, with a 10, 23% gave it an 8, 17% people gave it a 9, and 15% people gave it a 7. 4.5% rated the importance of local food as a 6 and 11.5% gave it a 5 or less.

5.3.5 PARTICIPANT AND DIRECT OBSERVATION

5.3.5.1 ANALYSIS OF PARTICIPANT OBSERVATION

5.3.5.1.1. Excursions

The researcher engaged in two excursions with members from the communities of Des Barras and Lumiere. The first excursion, in Des Barras consisted of venturing into the dry forest with three of the community members who knew the forest well. The excursion started out on the community and quickly proceeded into the dry forest, walking for close to an hour before arriving on the beach called Grande Anse. The dry forest is located in the estate called Grande Anse, and while in the dry forest, the excursion leader, a young adult was able to name most of the trees in the dry forest and spoke of their uses for furniture, firewood, charcoal, and traditional medicines. All the excursionists were very knowledgeable of the dry forest and seemed to navigate effortlessly throughout the dry forest making it apparent that they spent much time exploring the dry forest. The excursion leader also spoke of venturing in the dry forest to catch opossums that were roasted and eaten.

The second excursion occurred in Lumiere with two young teenagers, a male and female, who the researcher had met randomly while visiting the community. Offering the teenagers a ride to the mangrove, the researcher was invited to accompany them as they went crab hunting. Walking through the mangrove, the teenagers spoke of the different types of crabs that lived there and how they caught them, but today the crabs that they were going to catch were in the ocean. Once on the beach the male teenager went directly into the rough waters, climbed over a large rock and came back about 15 minutes later with a can full of large crabs. The teenagers spoke of how they would have it for lunch and described how they would cook them. They also spoke of iguanas the wandered around the community, and people did eat the iguana. Later during the week I interviewed members from the community and many people told me that they see iguanas, they come close to the house and eat the scraps that the people leave for them.

5.3.5.1.2 Informal Discussions with key informant community members

Active member of the turtle watch programme, Des Barras

A conversation with an active member of the turtle watch programme run by the community of Des Barras revealed the inner workings of the group including its inception, arrangements with other organizations and the challenges faced by the group. Turtle watching was

started by an American man who wanted to hand it over to the community. The Minister of Communication, Works, Transport and Public Utilities was supportive of the initiative; members of the community, mostly the youth, were trained in tagging, counting the eggs, and measuring the carapace. The community worked in collaboration with the Heritage Tourism Association of St. Lucia (HERITAS) where the association would sell the tours to tourists and locals and would provide transportation for the clients to the community and to the beach. The money received from the tours went to the community and 3% went to HERITAS.

The number of people employed from the community was about 14 which included a cook, a security officer, and an artisan who would sell handmade arts and crafts to the tourists. The community groups also have volunteers who survey the beach during nesting season to ensure that hatchlings make it to the ocean because the hatchlings can be burnt by the sun before the reach the sea. The artisan who is an avid fisherman also works as a volunteer by surveying for hatchlings while he fishes from the shore. All sightings of hatchlings are reported and recorded in a log with data sheets for both adults and hatchlings.

The member also spoke of the types of people who enjoyed the tours. The member explained that while tourists do come on the tours, because the nesting season is during the summer months, most of the tours are for locals including summer camps for the youth, church groups, hotel staff, and various other groups.

When asked about the poaching of turtles the group member revealed various concerns surrounding the issue. The group member did not believe that poachers came from the community of Des Barras but rather from the close surrounding communities of Garrand, Boguis, and La Guerre. The member first spoke of the arduous process that a hatchling must go through to reach adult hood; a turtle is fully grown at the age of 25 to 30 years old however, living until that stage is a constant challenge for the turtle as it must content with larger predators such as bigger fish, birds, crabs etc. Once a female turtle is old enough to procreate the turtle returns to the beach where it was hatched and lays about 90 to 120 eggs at one time. The turtle lays 7 to 10 times over the span of 1 to 2 months for the season and will nest again in 3 years.

The group member spoke of the poachers; while some of them seem to be killing the turtles for the meat, others seem to be killing the turtles maliciously because some poached turtles are often found completely intact with only a flipper missing. However, the group member believes that the communities from which poachers come do enjoy turtle meat and do not see anything

wrong with the poaching of turtles. The member recounted his experience of visiting a school to speak to the youth about poaching and he recalls a student asking if he would arrest their parents if he caught their parents killings turtles in Grande Anse. The group member further explained that poaching could end up being a bigger problem because children were being brought up thinking that poaching was acceptable.

The group member also spoke of the injustice when poachers who are caught have to face punishment. The group member explained that a poacher must pay either $5000 or be incarcerated for a year and half however, three poachers who were recently caught only had to pay $1500 each. And even then, the punishment is useless because the poachers must now kill more turtles to sell the meat in order to pay the fine. The group member lamented about the assistance from the government and contrasted St. Lucia to Trinidad by recounting his period of training in Trinidad where the Trinidadians spoke of their own issues with poaching however they were resolved rather quickly because of support from the government, however the government support in St Lucia for the turtle watch group was not as strong.

> "*The people in Trinidad told us that when they started turtle watching, they used to fight with the poachers and the government was with them. But the government is not with us, we used to call poachers and tell them that there are poachers on the beach and we spend the whole night and we get no police man. This has gotten better recently but in the past it was really bad, we got no assistance*."

The turtle watch member spoke of how he would like to see turtle watching improved; he spoke of greater governmental support in the form of greater enforcement of the laws against poaching and more community awareness initiatives. The community member also spoke of how turtle watching helped the community, by having tours coming through the community small enterprises such as bars were able to sell to the guests. Also the profits from the turtle watching group were used to support other groups and activities in the community such as to the sports club and to school activities

Artisan and Volunteer with the Turtle Watch Programme, Des Barras

An artisan who also worked as a security officer and volunteer with the turtle watch group spoke of his craft making. He used timber products from both the dry and rainforest; collecting wood from the dry forest, Bay Leaf and White Cedar and harvesting vines from the rain forest. The artisan spoke of sustainable harvesting of vines in the rain forest such that you had to be careful

how you collected the vines, ensuring that you did not remove all but left some so that the vines would replenish themselves. The artisan said that he would sell his crafts to the tourists who came on the turtle watching tours but he was eager to build an addition to his house where he could have his own store to sell his crafts as well as run workshops to teach interested people carving and basket making, however financial challenges held him back.

When asked about the use of the dry forest, the artisan spoke of the people of Des Barras who used the dry forest for agriculture but also for recreation purposes. He spoke of people who on the weekends would walk through the bush to explore the forest. He also spoke of his own experiences;

> "*But the forest is so nice, you see the birds, all different types. That is why when I want to make some spoons, I say to myself, let me go and look for a piece of wood to make spoons. I walk in and I go into the bush, I cut a tree and split it and I sit in the woods and I carve my spoons. It is really enjoyable because you can hear different sounds, you can see the little birds, it is so nice."*

The artisan also addressed the turtle poaching and while the turtle watch member thought that turtle poaching was because people simply enjoyed the meat, the artisan thought that poachers were motivated by malicious intent because dead turtles were often found with most of the meat still on the turtles. The artisan thought that the poachers did not want to see the turtle watch programme be successful and were therefore sabotaging it and he also said that poachers enlisted the help of community members from Des Barras who would tell the police to survey the beach when there was a tour but never when there was not a tour in order to allow the poachers free access to the beach. The artisan also spoke of his security duties on the Grande Anse beach and said that he had received death threats from the poachers.

The artisan also spoke of the community and development close to the community. The artisan seemed to both want development and also fear it. The artisan said he was scared of development in the community because of the danger that the wildlife would face but he also spoke of the importance of development in order to sell local products and to improve the infrastructure of the community. The artisan spoke of the peacefulness of the community and how development could negatively affect that.

Founder and Former President of the La Borne Development Community, La Borne/Dauphin

This community member spoke of the challenges encountered when attempting to form a community group in order to achieve various goals. The community member, who realized the heritage value of the area because of the Amerindian petroglyphs found on the beach, decided that the area should be properly developed in order to make it into a tourist site which would include components such as a pavilion and an interpretation centre. He believed that such a development would lead to improvements in the infrastructure such as roads and that more people would visit the community, thus enriching the area. He drew plans and visited the St. Lucia Archaeological and Historical Society who supported this venture. However, the community member knew that this had to be a community effort and therefore set up the committee, enrolled members in the committee and held fundraising events such as a clean-up event in the vicinity of the petroglyphs. However, the community member recounted how things never fully developed as people lost interest, they stopped attending meetings and paying their dues.

The community member spoke of his desires to see the community develop as well as how he thought it should be developed. He said that development should entail the proper planning of houses and commercial areas and that basic infrastructure such as running water near the beach was a necessity so that people would not use the river water. The community member was also adamant that a community should have a bank account and that activities should result in money being put towards the bank account so that community members would be able to rely on these funds in the event of an emergency. Several people should be held accountable for the funds to prevent embezzlement and bank transactions should be transparent so that community members know that there funds are safe.

The community member also spoke of the involvement of the government as being imperative. Once a community group such as the La Borne Development Committee is registered then it is accountable to the government and therefore if anyone robs the committee then they are answerable to the government.

He also stated that the most important thing for community development was the ability for people to work together towards a cause. The community member spoke of the main challenges for people to work together which included the fact that too many people wanted to be at the top and that people were more concerned with their own interests. The community member also said that leadership was extremely important and gave the example of successful community groups on the island that enjoyed longevity because of strong leadership. The community member also spoke of the importance of volunteerism; having people who gave of their time and effort for the good of the

community as well as for people to understand that change happens slowly and incrementally. The community member talked about people becoming discouraged easily and that there were many naysayers.

5.3.5.2 ANALYSIS OF DIRECT OBSERVATION

5.3.5.2.1. Communities

Visiting each of the five communities on several occasions for the purposes of surveys allowed the researcher to conduct direct observation. One of the most striking observations was how agriculturally-oriented the communities were. While most working community members earn a livelihood outside of the community in the service and retail industry and in trades, in communities such as La Borne/Dauphin and Des Barras, many of the households have gardens in their back yards where they grow vegetables, roots, tubers, floral and herbal plants. The community of La Borne/Dauphin is known for its produce; they boast having the sweetest watermelon while the community of Boguis has many small farms that benefit greatly from the Marquis river. An informal conversation with an older female farmer in the community of La Borne revealed that there were many families who worked together to grow and cultivate crops to sell. The farmer spoke of her children who were involved in agriculture and how they worked together to produce a harvest that they would then sell to commercial centres. The woman showed me her garden next to her house which was full of herbal plants and showed me the various plants and described the illnesses that each one was used to treat.

Boguis, the community closest to the Marquis Estate which was sold to a development corporation for a resort development, had many farmers who were happy to sell their land, however there were some farmers who were unhappy that so much agricultural land was sold. An informal conversation with one farmer brought such issues to light. The farmer agreed that many people would benefit from the development by finding employment in the development however he spoke of the larger question of food security as very fertile and arable land was ultimately going to be used for purposes other than agriculture.

The community of Au Leon is largely agricultural as it is located within the Mabouya Valley, a valley of rich, alluvial soils that has traditionally been a large scale agricultural area where much of the banana farming took place during the height of that industry. Working the land is therefore a traditional practice for many people although the youth do not seem to be following suit. An

informal conversation with a community member revealed that the community experienced frequent water shortages that often lasted more than a week.

The La Pelle Organic farm located in La Pelle and very close to Lumiere is a Rastafarian-run organic farm that was once very successful but had encountered some difficulties and had stopped farming. The Rastafarians were attempting to restart the farm and were in the process of cultivating legumes such as soy beans. The Rastafarians are very passionate about their project however it is a Rastafarian-run project that does not involve the non-Rastafarian members of the community.

Another interesting observation is how the communities viewed touristic developments. The majority of community members would like to see touristic developments in their communities because they knew that they could benefit in terms of employment and improved infrastructure.

However, it was remarkable to see how many people spoke of the beauty of their communities and that a hotel would be the most appropriate development to benefit from this beauty. It was also very interesting to hear such a large number of community members refer to tourists as "white people" who would enjoy the beauty of their communities. And while the majority of people were happy to have a touristic development, the people who were against such a development all had the same reasons for feeling this way. These community members spoke of being alienated from the beaches and not being able to conduct the same activities on the beach once the hotel was built. People also expressed concern over the biodiversity, the natural environment, the various species and their habitats, and expressed that such large scale developments would destroy the ecosystems in the area.

A major challenge that the researcher noted about the communities was the difficulties that community members encountered with regard to transportation to and from their homes. This challenge resulted because of the distance of these communities from larger, urban centres where most jobs would be located as well as the infrequent and unreliable bus system servicing the communities.

5.3.5.2.2. Tourist Surveys[5]

[5] The tourist surveys took place at two Sandals resorts; Sandals Halcyon, Choc and Sandals Grande, Pigeon Point. Surveys were also conducted with cruise ship tourists on the dock at Pointe Seraphine.

Informal conversations with tourists revealed some interesting information regarding the motivations for vacationing in St. Lucia. One tourist couple from the United Kingdom spoke about having vacationed in the Canary Islands when they were younger but were displeased with how the area had changed. They described it as a spoilt destination that had subscribed to mass tourism and was therefore very commercialized, very crowded, and environmentally degraded as it was not as beautiful as it once was. They chose St. Lucia as a destination because of the natural beauty of St. Lucia, and its rustic and pristine nature.

A conversation with a tourist who enjoyed golf when asked if he would rather visit a nature reserve than play golf said that he would rather visit a nature reserve because despite golf being a hobby, he knew that he could play golf at home. He spoke of the multitude of golf courses in the United States and said that when he was on vacation he would rather do something that he could not do at home.

5.4 CONCLUSION

The descriptive nature of these results provides rich material from which to extract the most pertinent concepts and phenomena that can play an important role in the designation of a Biosphere Reserve. While the researcher knowingly set out to obtain certain data, other unanticipated pieces of information were collected that fit into the concept of sustainable development and the designation of a Biosphere Reserve. Major themes with significant implications for sustainable development included land use planning and the environmental impact assessment process, tourism, and biodiversity conservation. While face to face interviews revealed many negative impacts of the tourism industry in its current form, the majority of community members supported tourism developments in their communities. Direct and participant observation revealed the ecosystem services provided by the northeast ecosystems, namely the dry forest and coastal ecosystems.

The essence of the analysis is to synthesize the information pertaining to the many facets of sustainable development in order to decide on whether or not to recommend the northeast coast for a Biosphere Reserve designation. Conversely recommendations can be made for the cultivation of greater sustainability in various spheres, including community development and conservation that would need to be implemented before a Biosphere Reserve can be considered.

CHAPTER 6 - DISCUSSION

The analysis of the research was conducted within the broad framework of sustainable development as the context within which the themes created could be analyzed. The criteria were based on the 3 broad requirements that a Biosphere Reserve must fulfil; conservation, sustainable economic development that is socio-culturally acceptable, and a logistic function that encompasses environmental education, learning, demonstration, and research in particular where sustainability is concerned. Other sustainability frameworks use the three pillar model as a foundation upon which to build more explicit requirements for sustainability which includes the sustainability assessment criteria and the ecosystem-based approach. A preliminary conceptual framework was created prior to the analysis of results that centred around the three pillar sustainability approach and the sustainability assessment criteria however a final conceptual framework emerged as a result of having integrated the ecosystem-based approach over the course of the analysis.

The Gibson et al (2005) sustainability assessment criteria are incorporated to bolster the three pillar approach by integrating practical concepts that must embraced and integrated to achieve gains towards sustainable development; these include socio-ecological civility and governance, livelihood sufficiency and opportunity, inter- and intra- generational equity, precaution and adaptation, socio-ecological integrity, and resource efficiency and maintenance. The integration of the components of the criteria is emphasised such that it should result in mutually reinforcing benefits. Although trade-offs are expected, there must be an overall positive impact on sustainable development.

Finally, proposed by UNESCO as the model upon which Biosphere Reserve should be formed is the ecosystem-based approach. This approach recognizes socio-ecological systems as complex systems that are dynamic unpredictable systems exhibiting surprise (UNESCO 2000). Managing these systems requires not only an adaptive management approach that fosters learning, it recognizes that while acquiring knowledge of these system is of paramount importance, decisions often have to be made in the absence of information. The ecosystem approach values adequately the goods and services derived from ecosystems and works to prevent economic incentives from devaluing these goods and services (UNESCO 2000). The ecosystem approach espouses the equitable sharing of benefits derived from socio-ecological systems and adopts a management style of decentralization to allow those individuals closest to the issue be empowered to handle it (UNESCO). The approach favours multi-sectoral cooperation in the management of a socio-

ecological system in order to have the requisite expertise who can learn from the experience of others and work together to formulate the most suitable management practices (UNESCO 2000).

The ecosystem approach and the Gibson sustainability criteria exhibit many similarities and overlaps while reinforcing important concepts. The frameworks were therefore combined in order to conceptualize the results in terms of Biosphere Reserve and the notion of sustainable development (see Table 7. Conceptual Framework).

TABLE 7. CONCEPTUAL FRAMEWORK COMBINING SUSTAINABILITY ASSESSMENT AND ECOSYSTEM APPROACH.

Conceptual Framework			
3 Pillar Model	**Gibson Sustainability Criteria**	**Ecosystem Approach (Operational Guidelines)**	**Combined Frameworks**
Ecological Sustainability	**Socio-ecological Integrity**: establish relations between social and ecological systems that maintain proper functioning of socio-biophysical systems in order to support life	Focus on the relationships and processes within the ecosystem: understand ecosystem resilience, ecosystem services, cause and effects of biodiversity loss. Ecosystems must be managed within the limits of their functioning	Foster greater knowledge of socio-ecological systems in terms of their processes and services, understand uncertainty, make decisions within society that support the proper functioning of biophysical systems
	Precaution and Adaption: Recognize and respect uncertainty, employ the precautionary principle although some decisions must be made in absence of necessary information	Use adaptive management principles: management of systems that foster learning, adaptive methodologies to adjust to inevitable change and unexpected occurrences Ecosystem management approach is to learn by doing	Use adaptive management principles to foster learning within uncertain socio-ecological systems. Flexible policy making and implementation Need for better understanding of socio-ecological systems Employ precautionary principle
	Resource Maintenance and	Benefits derived from	Reduce market

	Efficiency: Provide sustainable livelihoods for all and maintain socio-ecological system integrity through reduction of and efficient use of resources	ecosystem are maintained or restored Proper valuation of ecosystem services as opposed to market distortions that undervalue natural systems	distortions that negatively impact biodiversity. Use incentives to promote biodiversity conservation and sustainable use Employ technology and implement policy for more efficient use of resources
Economic Sustainability	**Livelihood Sufficiency and Opportunity**: Strong foundation of socio-ecological system includes environmental integrity and access to services, resources, and opportunity. Where opportunity is lacking, resources should be used to create greater opportunity for those in need.	Ecosystem services and functions should benefit those who contribute to managing and producing them. Local communities must be involved in managing ecosystem	Access to requisite resources for a decent life for those who experience economic or physical insecurity. Ecosystem services and functions must be shared equitably; where there is scarcity efforts should be made to provide more and where there is abundance decouple well-being from material growth. Involve those whose needs are being addressed.
Socio-Cultural Sustainability	**Intra- and Inter Generational Equity**: Requirement for social justice and economic opportunity for all. Choose activities and make decisions that will confer unto future generations the ability to live well and to live sustainably	Recognize diversity of cultural and social factors. Recognize right of indigenous and local communities. Employ polluter pays principle Tangible and intangible benefits derived from natural systems must be shared equitably Recognize the varying temporal scales of	Require opportunities to access economic security for all. Recognize rights of all cultural and social groups. Benefits and services derived from ecosystem shared equitably Management of biophysical systems should ensure continuity so that future generations

		ecosystem processes; decisions made should be for long term benefits as opposed to short term gains and benefits	have the resources available for a decent life Decisions made should favour longer term benefits rather than short term gains
	Socio-ecological Civility and Governance: Greater participation and decision-making capabilities of civil society, non-governmental, and non-market groups within socio-ecological systems More integration of government, market, customary and personal decision making practices Increased capacity of collective decision-making bodies to work towards sustainability	All forms of relevant knowledge including local and indigenous types to arrive at effective ecosystem management strategies. Management decisions and actions decentralized to lowest most appropriate levels so that stakeholders are empowered, assume responsibility, and possess capacity for action All stakeholders and actors should have access to relevant information and be consulted regarding proposed decisions Increased inter sectoral cooperation and communication	Greater participation of civil society, non-market and non-governmental groups in deliberative and decision making processes. Inclusion of indigenous and traditional knowledge in ecosystem management. Governance structures that integrate sector components and promote decentralizing management to lowest appropriate level Greater governmental and legislative support for sustainability Build civil capacity for involvement in decision making and management

Adapted from Gibson Sustainability Assessment (Gibson et al 2005) and the ecosystem approach adopted by the Convention of Biological Diversity (UNESCO 2000).

6.1 FINDINGS AND EMERGENT THEMES

The purpose of this chapter is to integrate the analyzed information collected over the 4-month data collection period with secondary information such, as statistics and legislation, and the experiences of the researcher during that time frame. The emergent themes from the data analysis will guide the discussion and will focus on the dry forest, conservation, tourism, the development process and environmental impact assessment, community participation, and community activism.

The themes have been grouped under ecological, economic, or socio-cultural sustainability however the Gibson et al (2005) sustainability criteria and the ecosystem approach framework integrate these themes into more practical concepts that can be analyzed.

6.1.1 ECOLOGICAL SUSTAINABILITY

6.1.1.1 THE DRY FOREST

The dry forest was one of the major focus points of the research because of the fact that it is a tropical ecosystem with various functions, a habitat for many species, and a source of livelihood for some individuals and is potentially threatened due to development. The face-to-face interviews revealed that many respondents were quite knowledgeable about the dry forest in terms of species, vegetation, topography, and micro climate while the knowledge of the community members seemed to be limited in their experiences. Despite being constantly surrounded by the dry forest, they described it mostly in terms of the species inhabiting the dry forest and the main livelihoods depending on the dry forest such as agriculture.

Many interviewees spoke of the dry forest as being threatened mostly by developments of a touristic and residential nature as well as by the unsustainable use of the land by individuals supporting their livelihoods. The reasons why the dry forest is threatened are wide ranging. Firstly, private land ownership of some critical areas of the dry forest means that these lands are subject to being developed in whatever way the land owner sees fit. There are certain misconceptions concerning the dry forest in that it is scrub or waste land and because it is not as lush or green as the rain forest then there is less desire for its protection and great desire for it to be developed, a potentially harmful misconception as the dry forest has greater biological diversity than the rainforest. The fact that the northeast coast is seen as the "last frontier for development" means that politicians are more willing to develop the northeast coast in order to provide jobs for their electorate.

The traditional uses of the dry forest have been agriculture, the community surveys illustrated this with overwhelming responses of community members making reference to the dry forest as a place where people keep their gardens, and grew various crops. Despite the fact that these activities support the livelihoods of people, it must be noted that some of these practices are unsustainable, such as charcoal production where trees are cut, buried underground and burnt. The use of dry forest trees such as the *Campeche* is rampant and over time can lead to the

degradation of the forest. This becomes more complex as some of these practices are traditional in St. Lucia. Many people within the communities engage in these practices in order to supplement their household incomes. This is on a relatively small scale and Latanye broom making and charcoal making are on the decline. More and more individuals are finding work outside of their communities and in the main cities, mostly in the tourism or service industry.

The fact that some community members deemed that the dry forest was necessary because of its watershed function was very instructive as it showed that people have been heavily sensitised with regard to the rainforest which has a significant watershed. The dry forest does not necessarily have that function and people therefore assume that it does because they have not been exposed to information regarding the dry forest ecosystem. Education and public awareness is therefore severely lacking when it comes to the dry forest.

6.1.1.2 ECOSYSTEM SERVICES

Despite the paucity of knowledge about the dry forest, many people benefit in a number of ways. Participant and direct observations as well as interviews and surveys revealed that the dry forest is an integral part of people's lives by providing many ecosystem services. The regulating services are extremely important for the functioning of the ecosystem and provide services that are essential to the well being of the people and to the maintenance of their quality of life; the roots of trees prevent erosion of soil which maintains both the terrestrial and coastal ecological integrity. Cultural services are also extremely important, the health and beauty of their natural surroundings such as the integrity and health of the dry forest are components that influence tremendously the well being of people.

TABLE 8. ECOSYSTEM SERVICES OF ECOSYSTEMS ON THE NORTHEAST COAST

Ecosystem Services	**Incidences where ecosystem services are present and are used**	**Source of Information (Observation, Interviews, Literature)**
Provisioning Services		
Food	Use of dry forest for agriculture, crabs found in mangroves and beaches and opossums in the dry forest Mangroves serve as spawning grounds for fish and lobsters	Interviews, direct observation Participant observation; excursion into dry forest and crab catching

Fuel	Use of timber within dry forest to make charcoal	Interviews and Surveys
Natural Medicines	The leaves of dry forest trees used for medicine	Interview with community members of Des Barras
Ornamental resources	Wood from dry forest trees, vines from forest used for art e.g. wood carving, basket making, The Latanye palm used for broom making	Interviews, Direct observation of artisan from community of Des Barras
Regulating Services		
Water Regulation	Dry forest trees prevent run off and flooding. Water storage potential of ecosystems directly affected by presence of mangroves	Interviews with Forestry Official, environmental consultants, information from academic literature (Millennium Ecosystem Assessment 2005)
Erosion Regulation	Dry forest trees and roots prevent erosion which leads to run off and sedimentation	Interviews with environmental consultants and Forestry officials
Water purification and waste treatment	Mangroves filter out and decompose organic wastes that damage reefs and sea grass meadows	Interviews with environmental consultants and Forestry official, information from academic literature (FAO 2007; Pattulo 2005)
Pollination	Flowers within the dry forest are an energy source for pollinators such as bees, fruits found within the dry forest are eaten by bats which are also pollinators and seed dispersers	Information derived from academic literature (Mickelburgh et al 2001)
Natural hazard regulation	Mangroves reduce the damage caused by storms and sea surges	Information derived from academic literature (Millennium Ecosystem Assessment 2001; Pattulo 2005)
Cultural Services		

Inspiration and Aesthetic Values	The beauty of the dry forest and costal ecosystems on the northeast coast are appreciated by the majority of community members The beauty and wildlife of the dry forest are used by the people to foster their psychological well being	Surveys with community members Interviews with community members of Des Barras
Sense of Place	Aspects of the ecosystems of the northeast coast such as the greenery of the dry forest, the beach, and the mangroves provide features that people relate to as part of their home and environment	Interview with Matthew Morton
Recreation and ecotourism	Youth use dry forest for recreation, turtle watching tours are conducted by the community of Des Barras	Participant observation: excursions with youth from the communities of Des Barras and Lumiere

Derived from Millennium Ecosystem Assessment (2005).

The misconceptions of the dry forest coupled with the lack of information seem to be part of the reason why no dry forest is legally protected. The Forest Reserve on the island, which constitutes 7496 hectares of forest includes 259 hectares of dry forest, 3.4 % of the entire forest reserve, the rest being rain forest (Toussaint, 2006). This is a reflection of how little the nation understands and/or values the dry forest.

The Forest, Soil, and Water Conservation Act declares that it is lawful to designate crown lands as Forest Reserve but it also declares that lands other than crown lands can be declared as part of the forest reserve on the condition that the preservation of those lands contribute to protection from storms, winds, rolling stones, floods, and landslides as well as for the prevention of soil erosion and land slippage and the maintenance of water supplies in springs, river, canals, and reservoirs (St. Lucia Forest, Soil, and Water Conservation Act 2001). Many respondents from both interviews and community surveys mentioned erosion control as being a primary function of the dry forest and given that the dry forest is coastal, it would be crucial for the prevention of siltation into the sea and therefore it is very important that certain areas of dry forest be protected in order to preserve the specific functions declared in the Forest, Soil, and Water Conservation Acts. According to the act, lands that are under private ownership could become part of the Forest

Reserve, however this would pose many challenges such as land owners being unwilling to relinquish their land and the government being unable to compensate land owners who were willing to sell their land. There are also many complications involving land tenure as many large estates were divided and sold to various farmers.

6.1.1.3 BIODIVERSITY AND ECOSYSTEM PROTECTION

It is important to note that the St. Lucia Wildlife Protection Act speaks to the protection of a plethora of bird species yet does not speak directly to the protection of their habitat. The Assistant Chief Forestry Officer mentions this in his article "Saving Our Tropical Dry Forest for Sustainable Development" (Toussaint 2006), as a fundamental flaw that is insensible and does not implement the necessary measures required to protect dry forest species. Species residing within the rain forest are protected because their habitat is a legally protected reserve. Another flaw within the act concerns the absolute power of the Minister. There are three schedules which list wildlife that are protected, partially protected, and unprotected. The act speaks to the power that the Minister possesses, by statutory instrument, the power to add, vary, or delete any of the species of wildlife in any of the said schedules (St. Lucia Wildlife Protection Act 2001).

The St. Lucian pit viper (*Bothrops Caribbaeus*), locally known as the Fer-de-lance snake is found only in Saint Lucia yet it is listed under the unprotected wildlife schedules in the Wildlife protection act revised in 2001, this act includes mice, rats and the alien species, the mongoose. Bites by this snake are rare (Numeric et al. 2002) however they are very severe, cause cerebral infarctions, and have been known to be fatal (Numeric et al. 2002). The fact that it is not protected has bred the mentality that it is acceptable to slaughter the animal in its natural habitat. Due to the fear incited by this snake, people who are unable to clearly distinguish the pit viper from the boa constrictor (*Constrictor constrictor orphius)*, often kill it indiscriminately, although it is harmless to human beings.

It is also worthy to note the role that the St. Lucia National Trust plays in the protection of biodiversity. The St. National Trust Act states, as one of the many objectives of the Trust, "the listing of flora and fauna and promoting their conservation". Furthermore, the act speaks to "pursuing a policy of preservation and acting in an advisory capacity", as well as to "acquire property for the benefit of the state". The National Trust is not necessarily a very powerful organization as they have no jurisdiction in protecting biodiversity but they can serve conservation purposes through advocacy and acquiring land that becomes vested in the Trust for conservation.

The feedback from tourists concerning the forests and biodiversity of the island may help in persuading less intensive development of the northeast coast as an overwhelming majority of tourists were attracted to St. Lucia for its beauty, which many of them described it as being lush and green; an obvious reference to the abundance of vegetation and forests on the island. Many of the tourists also spoke of the hospitality of St. Lucians, often claiming that people were warm and friendly. The preservation of the appeal of St. Lucia, its greenery and vegetation, is therefore in the best interest of the tourism as well as keeping the local people satisfied. The large scale development planned for the northeast coast speak of huge resorts with associated amenities will provide many jobs for people, however it will alienate locals from areas that they had been accustomed such as the beach and within the dry forest. This may result in resentment towards the tourists that can undermine the industry.

The future of the dry forest appears to be largely pre-determined as two of the three large estates on the northeast coast, Marquis and Louvet, were sold. Within the past two years, there have been the initial plans for developments such as environmental impact assessments and graphical representations of the developments. Developers have plans for large scale resort development and associated amenities. The Marquis development called Harlequin Resort Limited, which will be built on agricultural land will include an 18 hole golf course, a hotel, a 4 acre marina, a spa island, a casino, an equestrian centre, manmade water parks, restaurants, medical facilities, tennis academy, a football academy and conference suites (see Fig. 2 Proposed Developments on the Northeast coast). The Louvet development, named Caribbean Ocean Front Properties Limited development will be built on substantial areas of the dry forest and coastal area, it is a 548 acre property. The development is a beachfront and spa facility that will include an 18 hole golf course, a marina, a beach club, medical facility and other amenities, a casino, 256 luxury single family home sites, as well as a "dune and riverine reserve to protect vital ecological corridors to provide continued habitat for the iguana, turtles and other species" (Environmental Impact Assessment, Ocean Front Properties Limited, 2009).

6.1.1.4 LAND USE AND DEVELOPMENT

Environmental protection in a small island such as St. Lucia negates locking up large tracts of land solely for conservation. According to the Minister of Tourism "our land is our greatest asset", this is true as foreign investment is needed to be able to develop certain parts of the island in order to produce jobs. Economic growth seems to be the main driving force behind development while the environment, ecosystems, and biodiversity are neglected, if development of the land

resources are the only way for greater economic growth, then it is essential to implement rigorous land use policies and regulations. Development supplanting the environment was clearly demonstrated in the Le Paradis-Westin development along the northeast coast of the island. Many respondents during the face to face interviews, without being prompted, made reference to the Le Paradis-Westin development as an environmental disaster. Not only did the project cause major erosion and siltation, it destroyed a sizeable portion of the White Breasted Thrasher, a bird endemic only to St. Lucia and Martinique, the neighbouring French overseas department.

This incident had thus highlighted many weaknesses in the Physical Planning department with respect to land use, development, decision making and Environmental Impact Assessments.

The Development Control Authority (DCA), a statutory board is legislated as the head of the Physical Planning and Development division within the Ministry. The DCA consists of various representatives from agencies involved in Development and the EIA process as well politically appointed members from the private sector. The newly appointed (2010) DCA board has 13 board members, all of whom have voting rights. These members represent the following organizations or governmental ministries:

TABLE 9. BOARD MEMBER REPRESENTATIVES OF THE DEVELOPMENT CONTROL AUTHORITY, ST. LUCIA

Organization	Type
The Saint Lucia National Trust	Civil Society
Ministry of Health	Government
Ministry of Communications, Works, Transport and Public Utilities	Government
Saint Lucia Electricity Services (LUCELEC)	Quasi-governmental agency
Chief Architect	Government
Chief Surveyor	Government
Commissioner of Crown Lands	Government
Solid Waste Management Authority	Quasi-governmental agency
Piton Management Area (World Heritage Site)	Government
Ministry of Agriculture	Government
Ministry of Physical Planning and Development (Deputy Permanent Secretary)	Government

(Obtained from Karen Augustin, Personal Communication, March 15th, 2010).

The DCA was formed in 1971 following the dissolution of the Central Housing and Planning Act (General Secretariat of the OAS, 1986) and was established for the interim until the Head of the Physical Planning and Development Division should undertake their duties (Physical Planning Act 2001). The DCA has remained the head of Physical Planning and is therefore the chief decision maker in planning decisions. The notion of a board consisting of various members with varied expertise in contributing to a decision making process concerning development seems to be important in creating a participatory and democratic environment for such important decisions, yet, members of the DCA are appointed by the government.

Based on information from the face to face interviews, it seems as though certain organizations or agencies that play a key role in development are not represented on the DCA board. Both the Chief Sustainable Development and Environment Officer and another officer from that department explained that they acted as referral agencies for EIAs, and were able to attend DCA meetings but were unable to vote on development decisions. The Sustainable Development and Environment Unit with the Ministry of Physical Planning plays a key role in environmental management in terms of implementing multi-lateral environmental agreements and collaborating with other environmental agencies such as the Departments of Fisheries and Forestry. Other important functions include the sustainable development of coastal areas, planning issues, habitat loss and balancing the need to develop with habitat loss, and integrative management with other environmental agencies, tourism, and health.

The Departments of Forestry and Fisheries, which are normally instrumental as referral agencies during an EIA are not represented on the board. These departments are the most knowledgeable on the marine and terrestrial ecosystems and wildlife of St. Lucia and it would be imperative to consult them in the event of development proposals that are located in ecologically important sites. As well the Environment and Sustainable Development Unit of the Organization of Eastern Caribbean States is not represented and despite the fact that most large scale development proposals are tourist developments, the Ministry of Tourism is not represented. The general public is also under-represented; only one board member represents civil society and this is unjust to the St. Lucian people as they have a right to decide on the usage of the natural resources within their country. The National Environment Commission which was approved by cabinet in 2007 was created in order to liaise with government agencies, community based organizations, and the private sector in order to come up with policy decisions that can inform the Minister (Laverne

Walker pers. comm. June 2009). This organization which would be able to address salient concerns regarding development proposals is also not present on the DCA board.

Zoning and land use planning are important topics that were criticized heavily by respondents in terms of the absence of zoning and a land use plan. While most respondents were adamant that a land use plan was essential, one opinion proved quite instructive. Based on the responses by the chairman of the DCA, due to the dynamic nature of land use planning, it was unnecessary to introduce forward planning into the development process. And as a country trying to grow economically, St. Lucia must not put itself into a restrictive position whereby it may not be able to take advantage of economic opportunities.

Many respondents questioned the fact that there has yet to be a land use plan implemented in the legislation, according to a planning officer, plans for parts of the island were produced yet they were never implemented by cabinet. This is another point of contention that forces the questions of why and who is benefitting from the absence of a land use plan. It is possibly as a result of political considerations, however the bigger question is why do politicians have so much power over a piece of legislation that involves and impacts the entire population. A study conducted by the general secretariat of the Organization of American states for the implementation of a land registration program concluded that environmental planning in St. Lucia is inadequate as "*it is apparent that agencies with authority do not necessarily worry about environmental problems, whereas other agencies (particularly the Forestry and Fisheries Division of the Ministry of Agriculture), which have more direct responsibility for conservation of natural resources, do not have the powers to evaluate the impact of development projects or officially designate specific area for restricted use*" (General Secretariat of OAS 1986). Despite the study being conducted over 20 years ago, the findings are still pertinent today. The study continued by proposing a strategy for successful environmental planning that would strengthen the DCA and involve both governmental and non-governmental groups with a stake in environmental management. The study specified that the DCA would need to enter into permanent consultation with the forestry and fisheries department, the Ministry of agriculture, the tourism sector and non-governmental interests; which does happen to an extent and has probably improved since the 1980's but is still inadequate to ensure the adequate

A National Land Policy which was approved by cabinet in 2007 was finally implemented by the Ministry of Physical Development, Environment, and Housing in 2010. A land policy differs from a land use plan such that a land policy speaks to the national vision, goals, and objectives for

land use. It outlines a policy framework, policy directions, instruments and actions and also speaks to environment and resource management. The land policy therefore promotes the use of a land use plan as a policy instrument which speaks to the actual use and appropriation of land. The land use policy is therefore a positive step in the right direction for more sustainable development of St. Lucia's land resources, however land use plans which are still not approved, are imperative to achieving the goal of sustainable land use development. A sustainable development and environmental officer with the Ministry of Physical Planning spoke about the land use plans as being instrumental in allowing them and other referral agencies such as the Departments of Forestry and Fisheries to voice their concerns about development. The creation and development of such plans would obviously be a multi-stakeholder process and thus the officer believes that referral agencies would have the opportunity to assert their opinions and recommendations about how certain areas should be developed.

6.1.1.5 ENVIRONMENTAL IMPACT ASSESSMENTS

Another flaw within the development process concerns environmental impact assessments (EIA). Environmental impact assessments are conducted by the developer, in that they hire a private consultant to conduct the EIA. EIAs are not conducted independently and therefore the developer can influence the outcome of the final EIA report. EIAs are not public documents, thus preventing the incorporation of public opinion and perspectives that may influence the project design to take into account factors that are important to the public. Furthermore, the board members of the DCA who vote for or against development applications never review the actual EIA but rather they review an executive summary of the EIA that is compiled by technical officers of the DCA office which reflects the recommendations provided by the referral agencies. An important decision with potential environmental and social impacts deserves to be reviewed much more thoroughly and by a wider range of stakeholders. Finally, once approval has been granted there needs to be put in place, a rigorous monitoring system to ensure that the developer complies with the recommendations and stipulations put forth in the EIA review.

The Physical Planning act stipulates that draft physical plans be made available to the public via the gazette and newspaper, and allows the public to present concerns to the Head of the Physical Planning and Development Division yet it does not say how effective this process should be in modifying the plans to reflect the concerns brought up by the public as it is up to the Minister to accept the plan with or without modifications. The whole process of development seems to be alienating the public as the requirement for public participation is left to the Minister to decide the

specifications regarding public participation. This vague legislation therefore makes it easy to discount the input of the public which has apparently become the norm in St. Lucia, even the current Minister is unaware of the exactly what is involved in public participation:

> "*There are clashes between the two, where there are clashes the EIA is demanded and the objective of it is to provide mitigation mechanisms that would essentially permit the development but in a sustainable way. I am unsure at this juncture what it entails in terms of having town hall meetings, what I do know is that everything has to be addressed, as to the mechanism used to address those issues, I am ignorant and so I am not sure if the way we conduct it is the proper way. Invariably public participation is important, the EIA has a social component which is mandatory, and as to how you interact with the people, is not something that the EIA would speak to but it would certainly speak to the social component and how you address issues that persons have concern with.*" (Minister of Physical Planning and Development).

In terms of development and the EIA process, a private land owner recommended having better procedures and established relationships to guide potential investors in the country in terms of legislation, social and environmental factors. This idea is somewhat echoed in the article by Gramman and McCreary (1989) that talks about how EIA should involve three parties, a policy officer, the government, and the proponent. The article recommends creating a separate entity within the Ministry of Physical Planning that deals specifically with EIAs as well as designating project officers who will be in charge of EIAs in the country (Gamman and McCreary). The article also speaks of the financial feasibility of establishing such a unit and suggests various ways that the EIA unit could be funded: a portion of the development application fee can go towards funding the project officer duties, a segment of the taxes collected for hotel occupancy or other tourist activities could go towards funding the unit, or aid from international development assistant agencies (Gamman and McCreary 1989).

Currently in St. Lucia the EIA process is carried out by the proponent of the project who hires an environmental consultant. The governmental agencies formulate the terms of references for the EIA and review the EIA while the entire process is left up to the proponent and consultant, while the government is minimally involved. An established EIA unit however, would set up guidelines that must be followed for each development proposal; the policy officer would then do a scoping procedure by doing a site visit in order to determine the types of impacts that may be caused by the project. Once it is decided that an EIA is required and more technical expertise must

be incorporated, both the policy officer and the proponent would choose a consultant based on technical expertise and knowledge of the pertinent natural systems (Gamman and McCreary 1989). Gamman and McCreary further recommend ensuring the legitimacy of the EIA report by transferring the funds for the consultancy to the government and pay for the EIA in sections. The policy officer would be in charge of this and would continually supervise the EIA. Payments would be divided and paid in intervals such that once a particular section of the EIA was satisfactorily completed the consultant would be paid (Gamma and McCreary 1989).

6.1.1.6 PRECAUTION

Respondents spoke of other flaws that seem to hamper the development process; decision making that is not based on vital research and lack of rigorous policies and enforcement of legislation. Conducting research in St. Lucia is a challenge as funding, time, and technical personnel are factors that constrain the successful undertaking of research that would inform decision making. According to respondents, decision making is often casually determined based on expert opinions without the necessary research; a practice that does not bode well for sustainable development.

6.1.1.7 LIMITED NATURAL RESOURCES

People are well aware of the limited natural resource base of the island and many interviewees expressed concern over exceeding the capacity of the island to support both the population and the tourism industry. The fact that so many interviewees spoke of water and land with reference to the natural constraints of these resources is indicative of the fact that people understand that the resources are limited and have experienced such constraints through water shortages and the intensive competition over land use. The policy and the management of these resources is another cause for concern; while tourism, residential, and commercial development proceeds, there seems to be a lack of parallel growth in the resource management sector such that little is being done to address the capacity of the island to provide water and sewage facilities and services. The lack of a land use plan substantiates the lack of adequate management over limited resources.

6.1.1.8 IMPLICATIONS FOR THE SUSTAINABILITY FRAMEWORK

Socio-ecological Integrity, Precaution, Adaptive Management, Resource Maintenance and Efficiency

The understanding of the interactions, processes, and functions of the biophysical systems in which socio-ecological systems are embedded is fundamental to establishing human ecological relations that support the continued functioning of the system and thus the continued provisioning of goods and services of social importance (Gibson et al 2005, UNESCO 2000). The research revealed a lack of knowledge of the functions provided by the northeast ecosystems; namely the dry forest and mangroves. Community members are aware of obvious ecosystem services provided by the dry forest such as food, fuel, and ornamental resources, however there is little recognition of the important regulating services of the dry forest and mangroves that include erosion control, water purification, and natural hazard regulation (see Table 1). In addition, the cultural services of the northeast coast landscape do not even seem to be regarded as services, however, inspiration, aesthetic value, sense of place, and recreation services were identified during the research.

The unsustainable use of the northeast ecosystems includes sand mining, turtle poaching, charcoal production, slash and burn agriculture, large scale development, and the ineffective wildlife protection legislation. This reflects the paucity of knowledge of the northeast coast as a biophysical system and thus contributes to poor management decisions that affect the proper functioning of the various ecosystems which in turn impinges on the ability of people to support their livelihoods.

The small size of St. Lucia limits its natural resources and its capacity to process waste. The use of resources is often imprudent as sufficient research has not been undertaken to adequately inform resource use decisions. When knowledge and expertise is scarce, a judicious approach should be embraced while also allowing adaptive management strategies to be employed in order to learn how to manage natural resources. Environmental impact assessments are meant to be used to introduce precaution to development projects, yet in St. Lucia, the EIA process is rife with flaws that do not always invoke mitigating measures and hardly ever promote learning. Thus many of the same mistakes are made which have devastating consequences on the environment such as coastal erosion, pollution of beaches, deforestation, and habitat destruction.

Weaknesses in land use planning that lead to environmental degradation affect the ability of socio-ecological systems to continue providing ecosystem services thus impacting severely on the economically insecure who depend on such goods and services to support their livelihoods as well as future generations who have fewer environmental resources upon which they can depend. Land use planning is deficient in terms of integrating important sectors that have a stake in development and environmental management. Important governmental bodies that can contribute greatly to the

sustainable development are not adequately represented within the development control authority along with other civil society and non-governmental groups. The capacity of governance structures for deliberation and participatory decision making is low and thus is not capable of incorporating various sources and types of knowledge such as local knowledge as well as integrating the full range of stakeholders.

Resource maintenance must be achieved by reducing unnecessary use of the resources as well as employing more efficient means. Market distortions that undervalue ecosystem goods and services negatively impact biodiversity; while the economic benefit of a golf course or a hotel resort may be readily measured, the eradication of biophysical systems may incur severe short term and long term costs that negatively affect the ability of people to access resources required for a decent life. The costs of deleting important ecosystem services such as erosion regulation, natural hazard regulation, food, and fuel eventually elucidate the true value of biophysical systems.

6.1.2 ECONOMIC SUSTAINABILITY

6.1.2.1 TOURISM

One of the three principle objectives of a Biosphere Reserve requires economic and human development that is socio-culturally and ecologically sustainable (UNESCO 1996a). A proposed Biosphere Reserve must show potential in fulfilling this objective and must act as a pilot site for promoting sustainable development of its region. The Biosphere Reserve Nomination form focuses on tourism as most Biosphere Reserves around the world are characterised by impressive bio-geographical features and tourism is therefore a viable source of economic capital that does not result in the degradation of the sites. The nomination form also asks of the benefits of economic activity within the region to the local people.

Current economic development in St. Lucia focuses primarily on tourism. As most interviewees responded, tourism is the most important driver of economic growth as tourism is responsible for much of the employment on the island, foreign exchange, and contributing positively to the GDP. However, many of the negative opinions of the industry concerned the large environmental footprint of tourism developments and the use of limited natural resources such as water and land as well as the social impacts of locals being alienated from beaches and other recreational areas.

Respondents were dissatisfied with the path that the development of tourism was embarking upon and made many suggestions of how tourism could be modified to be more compatible with sustainable development. Respondents thought that St. Lucians needed to become more direct beneficiaries of the industry by receiving more help and incentives from the government to participate and invest in the industry. Another popular opinion was to strengthen the linkages between tourism and other sectors, especially the agricultural sector. Respondents lamented that hotels imported most of their food including produce that could readily be supplied by St. Lucian growers. Other respondents said that the tourism sector needed to focus on the unique peculiarities of St. Lucia, the people, the culture, and the environment and capitalize on that to market the island rather than trying to compete by investing in products such as golf courses that are easily replicable by other destinations.

Many community members however, expressed their desire for development of their communities and saw a hotel development as a viable option. People are expressing their need for greater economic benefits because they know that it can enhance their well-being however, it seems that they may not necessarily consider the implications that large scale developments may have on their natural environment as well as the impacts that it may have on their access to beaches and other recreational areas. The dry forest and other ecosystems on the northeast coast constitute part of the natural surroundings that people relate to and look to for aesthetic value, for inspiration, and for recreation; components that are necessary for human well-being.

6.1.2.2 LOCAL BUSINESS AND ENTREPRENEURSHIP

It is interesting to note that most of the community members wanted a hotel development in their communities because their community needed employment. For them, the main benefits of the tourism industry was employment and the improvement of infrastructure, very few community members spoke of tourism allowing them to benefit in other ways such as investing in the industry. This reflects the many obstacles that small and micro businesses in St. Lucia encounter and is thus not a feasible option to support local livelihood. Challenges include high cost of inputs and importation and financing from institutions limited. The tourism incentives act provides a tax holiday period for any tourism product which includes hotels, restaurants, visitor booths, interpretation centres, museums, and entities of historical and architectural merit (St. Lucia Tourism Incentives Act 1996). However, the description of hotels and restaurants in the act point to relatively large scale development. The act defines a hotel as having no less than six rooms, must provide a dining area where guests are served by the employees of the hotel and must have one or

more kitchens in which meals are prepared while a restaurant must contain a minimum of EC $50 000 (CAD $19000) in capital stock, and must have at least one dining room that accommodates 15 patrons at any one time (St. Lucia Tourism Incentives Act 1996). These are large scale operations that are geared towards foreign investors who are capable of establishing large scale tourism products while there are no incentives for locals who many want to invest in smaller scale tourism products that are not as elaborate as those prescribed by the tourism incentives act.

Human capital is also a challenge as people do not seem to possess the necessary skills or the knowledge about how to run a successful business. Often people develop small or micro businesses for the main purposes of survival while business savvy, knowledge of the industry, knowledge of important components such a quality control and networking, and other skills and abilities are lacking. The Director of the Small Enterprise Development Unit spoke of the multitude of initiatives and programmes geared to help people in the small and micro business sector such as development courses, financial assistance with business registration fees and legality, and strategic alliance to foster greater networking. Despite the important work of the Unit, it is a very small unit that is limited in its capacity, as well, people who may require the services of the unit may be ignorant of its existence. Networking for small and micro businesses is also a challenge as larger companies tend to dominate in their respective industries, making it difficult for smaller businesses to penetrate the industry and create vital contacts.

6.1.2.3 IMPLICATIONS FOR THE SUSTAINABILITY FRAMEWORK

Livelihood Sufficiency and Opportunity

The foundation of a socio-ecological system is sustained by intact and functioning ecological systems as well as the opportunities for individuals to access services and resources that contribute to livelihood sufficiency. Everyone is entitled to opportunity and the needs of those being addressed should be involved in ecosystem management and control.

The large scale developments proposed for the northeast coast (see Fig. 2 Proposed developments on the northeast coast) affect resource availability that contributes to people's livelihoods and well-being. However, the rationale is that development will provide jobs that are in close proximity to the communities thus providing a source of economic revenue; the main goal of development. While the needs of the local people for employment are being addressed through development, they are not being included in the process. The ecosystem services and functions that have been provided for them by the existing biophysical system will not be taken into account thus

potentially leading to major surprises as the biophysical environment is transformed. In addition fiscal policies and incentive mechanisms favour large scale developments which are predominantly foreign owned while there exist few incentives and opportunities for local involvement which is often of a small scale. The agricultural inclination of St. Lucians is also not being incorporated as the linkages between the agricultural sector and tourism are weak, much of the food that is imported into hotels can be grown in St. Lucia thus major leakages occur rendering the multiplier effect insignificant.

6.1.3 SOCIAL AND CULTURAL SUSTAINABILITY

6.1.3.1 CAPACITY FOR COMMUNITY PARTICIPATION

The participation of people in determining how their communities are developed is an important element of a Biosphere Reserve. High amounts of social and human capital are necessary tools for engagement and community action. Based on the research, social and human capital appear to be lacking from communities on the northeast coast of the island. The lack of human capital, the skills and knowledge that people possess has been voiced by many respondents as many people in these communities have not attained high levels of education nor do they possess significant skills. Social capital, the networks of trust and reciprocity between individuals and institutions and the collaboration between social groups is also lacking as respondents spoke of there not being a significant level of cohesion within communities (Pike et al 2006). This poses a serious challenge to a Biosphere Reserve as the concept is designed to involve multiple stakeholders with community members playing a crucial role in obtaining the designation. The other challenge to community participation is the history of St. Lucians of relying extensively on colonial patrons to impose top-down policy, administrative, and management structures that leave little room for public involvement. Although there have been instances where community groups have attained success, the responses from community members and interviewees spoke to the challenges faced by community groups due to lack of trust and lack of capacity and skills.

Another challenge however is human and social capital that are exceedingly important for community development. Social capital, "the norms and networks that enable people to act collectively" (Okazaki, 2008 pp. 516) differs from human capital, the skills, education, and knowledge of people in that the former speaks of relationships and structures existing between and among people while the latter refers to abilities residing within people (Hayami 2009). Thus the abilities, talents and knowledge that people have as well as the networks of trust and reciprocity

that people are able to cultivate are essential components for community development as well as economic success. Social capital would foster cooperation within a community by facilitating joint action among people in order to achieve certain objectives, therefore economic goals can be attained more effectively through cooperation (Hayami 2009). Human capital would incorporate skills and knowledge that would facilitate the attainment of various goals set out by the community. The challenges encountered by the La Borne Development Committee as explained by the founder seems to have been a lack of social capital as people did not seem to trust each other and also did not work together to develop a common vision for the committee. Lack of human capital was probably also a challenge where education or management skills possessed by one or a few individuals could have made a difference by establishing leadership within the group.

6.1.3.2. SOCIAL EQUITY AND JUSTICE

The lack of social equity is evidenced by little to no participation of the general populace with regard to decision making in the development process, the alienation of people from beaches and other areas of recreations as well as their changing landscapes, and the use of limited natural resources for the development of the tourism sector while other sectors are being neglected. Constant water supply for hotels while many communities experience shortages and the use of arable land for golf courses are examples of the misappropriation of natural resources that reflect a national vision that is geared solely to economic prosperity and not necessarily to the social advancement of the people. Greater participation of the people in decision making is a slow process, universal suffrage was only instituted in 1951, and the attitudes of the St. Lucian people still seem to be passive when it comes to decision making and participation. This would therefore have implications for development as civil society and governance structures are weak resulting in the interests of the people not being forcefully asserted.

6.1.3.3 TOURISM

The drive for tourism as the engine of growth for the St. Lucian economy is completely justifiable and is the most viable industry upon which the economy can rely especially in light of the fall of agriculture. While other industries such as agriculture and manufacturing require expensive inputs and heavy initial investments, tourism is a very cheap industry to develop where the people, culture, and resources are packaged to appeal to the masses. The increase in poverty due to the decline of the banana industry, where many people benefitted, is another compelling factor to create as many jobs through tourism as possible. These are often the arguments used to defend

criticisms about the industry yet it must be recognized that tourism is not a panacea for the economy, neither is it environmentally nor socially benign.

Recognizing that tourism does have its fair amount of trade-offs is the only way to progress towards a more sustainable industry. Large hotel plants and resort developments lead to large scale employment, yet the hotel plant structure is bottom heavy which means that the majority of workers in the hotel plant have low level jobs with few opportunities to advance to higher positions. Therefore the majority of people within the industry are wage earners as opposed to salaried earners, meaning that they earn less than $2000 EC ($800 CAD) a month. However, these salaries are comparable to a public sector worker and are higher than construction, retail, and agriculture which may be the reason why people tend to be more interested in hotel employment.

The legacy of island colonies as producers of cash crops seems to linger within socio-economic situation of St. Lucia. Tourism, the newest form of economic revenue and foreign exchange earner following sugar and bananas is also extremely dependent on external conditions and much of the economic benefits do not remain in the country. Fifty five to 60 percent of hotel rooms on the island are foreign owned and package-tours are increasing in popularity. The majority of the revenue from foreign investment is repatriated back to the country of origin while 75 % of the revenue earned from visitors purchasing a package-tour belongs to tour operators resulting in minimal income distribution and an inappreciable multiplier effect (Jules 2005). The majority of interviewees spoke of locals not benefitting from the industry and an examination of the workings of the industry reveals many barriers to local involvement.

The St. Lucia tourism industry is characterised by a high degree of foreign ownership of tourism products and is dominated by large operators marketing and attracting large numbers of people (Renard 2001). The established linkages between airlines, hotels, and tour operators make it difficult for smaller tour operators to infiltrate as large operators are able to control the activities of visitors. As aforementioned larger operators are often awarded incentives such as tax holidays while small operators are not eligible, thus making it easier for larger operators to establish themselves (Renard 2001). Smaller scale initiatives may find it harder to comply with international standards of quality and safety as well as providing quality services and infrastructure such as roads and telecommunications and marketing requires professional capabilities which smaller enterprises may have difficulty attaining (Renard 2001). An obstacle highlighted by the Director of the St. Lucia Tourist Development Programme is the geographical dimension, where the tourism industry has been concentrated on the northwest of the island, creating a barrier for many who

would like to partake in the industry but are separated spatially (Renard 2001). Decision making within the tourism industry is often made on foreign territory or by few but powerful local interest on the island. The interests of the layman who may be inclined to invest in tourism are therefore not represented and decisions are therefore not made to support their involvement (Renard 2001). The average layman also does not have access to physical or financial assets that are necessary for investment which is a major obstacle and knowledge of the workings of the industry by local people is deficient thus affecting the involvement of locals in the industry (Renard 2001).

A trade-off can be described as "the allowance of adverse effects in the interests of securing important gains" (Gibson 2005). The trade-off in tourism however must be evaluated in terms of whether or not the gains are worth the adverse effects. If the gains are employment and economic growth while the adverse effects include reduced human resource development, social resentment, low level jobs requiring little skill, the loss of access to common property resources such as beaches, then the question of how the tourism industry is being developed is a salient one to pose.

Many interviewees expressed the belief that the benefits derived by locals from the tourism could be greater by creating linkages with the tourism and other sectors, especially the agricultural sector. This has been recognized at the national level and the Minister of Tourism as well as a representative for the Harlequin Property of the newly purchased Marquis Estate spoke of a renewed interest in fortifying the linkages between agriculture and tourism so that newly built tourism developments could provide greater benefits to the surrounding communities.

Human development is another major issue; as explained by the Director of the Saint Lucia Tourism Development Programme, hotel workers are trained to follow orders, surveys conducted in hotels revealed low self–esteem and low levels of literacy. Therefore if one does not need to possess a certain level of self-confidence and literacy in order to find a job that will pay as high as the public sector then this has some serious implications for the human resource development of the country. While jobs are important, the type of job that a country provides for its people is equally as important. A historian who spoke of the precedence of the tourism industry in the economy criticised tourism as not being able to develop human resources or cater to the myriad of talents and interests that St. Lucians possess. The historian spoke of information technology, sports, entertainment, and the arts as avenues that were being neglected in terms of training people in those fields. The historian also went on to say that tourism in St. Lucia consisted of government selling or leasing the Queen's chain because developments all want beaches. This would lead to

social problems as the alienation of the local people where the landscape of the beach that was once frequented by locals has now been transformed to suit the hotel.

Community members do understand the implications of large scale development vis-a-vis loss of biodiversity and alienation however they are more concerned with economic stability and that is the trade-off for them. It is important to evaluate this trade-off because while the many community members would not favour environmental degradation many not link the implications of such degradation with the loss of important ecosystem services that the environment confers upon the communities.

6.1.3.2 GOLF COURSES

In terms of diversifying the tourism product and reducing numbers of total numbers of tourists while trying to attract less tourists who have more disposable income then a golf course is an obvious tool as it is a past time enjoyed by individuals with more money. However in doing so, it seems that the overall outcome would be the same in terms of environmental damage and exceeding carrying capacity. The mass tourism model is detrimental because of the large influx of visitors that equal or exceed the local population who would place tremendous amounts of pressure on local infrastructure and resources such as water (Warnken et al 2001). Tourism infrastructure must be built and maintained, large tourism plants with associated amenities are constructed, overcrowding displeases locals and reduces the enjoyment of the visitor, marine ecosystems and terrestrial ecosystems are also degraded due to waste being dumped into the ocean, and hotel plants being built on ecological sensitive areas.

The golf course development on the other hand often brings with it more sophisticated supporting infrastructure because the destination is now catering to a different clientele with higher expectations and higher demands. There is therefore the greater provision of more elaborate amenities such as spas, casinos, and golf courses with the associated real estate, condominiums, and residential developments. So even though actual visitor numbers may be reduced the overall stress on the natural environment has not really decreased because of the resource intensive nature of golf courses and the high end resorts. The golf courses use extreme amounts of water and fertilizers are used that runoff into the ocean thus causing marine ecosystem damage. Golf courses are built on land that was once considered ecologically fragile or on land that could better serve the community. Golf course developments can also be considered as enclaves and landscapes of exclusion as the majority of the local population would not have the financial

means nor the desire to use the courses. Also increase in real estate prices making it increasingly difficult for locals to purchase land within close proximity to such areas. Based on tourist surveys, it is clear that the majority of current tourists could care less about a golf course, these tourists however could possibly be characterised as the organized mass tourist who buy an all-inclusive package and enjoy a predictable vacation and may represent a somewhat different market than those attracted to golf vacation (Warnken et al 2001).

6.1.3.3. PROTECTED AREAS

Many of the community members did not seem to understand the term protected area, however when it was explained to them as an area that would safeguard the biodiversity in the area, most of them were in favour. However those who were not in favour all spoke of being restricted from using the natural resources in the area; a salient concern that protected area paradigms have always grappled with. However, the intention of a Biosphere Reserve would never be to alienate the local populace from using the resources. Of course core zones must be designated that will restrict human use however the Biosphere Reserve concept attends to the necessities of human life addressing the socio-economic situation of local people.

The chairman of the DCA rejected the notion of protected areas on the northeast coast such that the eco-tourism initiatives such as turtle watching tours could not bring in significant economic revenue to support the economic base. The chairman spoke of environmentalists who wanted to protect the area but who could not come up with a way to both conserve the area and produce economic benefits. Due to the fact that the chairman of the DCA is appointed by the government, it would be reasonable to deduce that his opinions possibly reflect those at the governmental level. The objective of a developing country like St. Lucia is for economic growth and with limited natural resources, land and the way in which it is developed should maximize its economic growth potential. A Systems Plan for Protected Areas in St. Lucia was proposed in 1992 to establish several protected areas, marine and terrestrial reserves, some which included parts of the northeast coast. The plan was never implemented by the government although it was used extensively to inform both governmental and non-governmental institutions (Haffey 2009). The fact that the plan was never implemented speaks volumes; the government understands protected areas as areas that completely restrict human use and the government is unwilling to lock away land that may potentially be used for economic development in the future.

This is certainly a challenge for a Biosphere Reserve designation as the government may be averse to implementing such forms of protection on land that may be desirable for other purposes. It is therefore imperative to educate the government about the possibilities that biosphere hold in the way of economic development and sustainability.

6.1.3.4. IMPLICATIONS FOR APPLYING THE CONCEPTUAL FRAMEWORK

Intra and Inter generational Equity and Socio-ecological civility and Democratic Governance

Intergenerational equity espouses social justice and economic opportunity for all, where the rights of cultural and social groups are recognized and benefits derived from the environment is shared equitably. Modifying one's economic situation requires education, certain skills, or assets. The education level of many of the community members was quite low; reflecting the lack of opportunities for people to gain a certain level of education or a marketable skill. The lack of access to opportunities that allow people to build capacity and acquire education affects their ability to obtain social justice and to participate in decision making. This affects the use of resources which has proven to be inequitably shared as described by respondents. The alienation of local residents from beaches and other places of recreation, the increasing pressures on water supply to local residents as the tourism industry expands, and questionable land use decisions are growing contentions that local residents have concerning the way in which natural resources are exploited. The trade-offs have serious implications for the use of resources by future generations where ecological capital is being depleted for economic benefit; the reluctance of the government to implement a land use plan as well as to designate protected areas disregards efforts to ensure the continuity of biophysical systems in order to confer upon to future generations sufficient resources to maintain a decent quality of life. The conversion of arable land into a golf course on the Marquis estate, is a clear example of decisions that favour short term gains while overlooking the long term impacts.

The tourism industry is also not necessarily geared to involving locals directly and encouraging them to invest in the hotel industry, as aforementioned there are many barriers to locals with limited financial and physical assets to partake and benefit from the industry. The only way that locals benefit currently is being employed in within a tourism product such as a hotel, restaurant, or touring service, while greater economic benefits are gained by investing and having

ownership. The majority of the economic benefits remain with a small group of people who are mostly foreigners while the majority of local people benefit marginally through level employment.

While the emphasis on tourism is reasonable other avenues for economic generation are neglected including sectors such as technology, the arts, and science. As these sectors are not being developed, neither are the skills of the people which is unfair to the overall human resource development of the country. According to one respondent, people are being trained to take orders and there are no other significant avenues for the development of skills that do not pertain to the tourism industry.

Socio-ecological civility and democratic governance

People do not seem to be active participants in the decisions made that affect them. This is most probably as a result of low levels of civil society action within communities which seems to be directly affected by the faltering levels of social and human capital, as well as the colonial tradition of non-involvement by the people which equates to the disempowerment and disenfranchisement. In addition, governance structures are either too weak or eroded to allow for meaningful deliberative and participatory processes, thus the interests of local communities, non-governmental, and non-market groups are often under-represented or not at all. Decisions, especially those pertaining to the tourism sector are often made outside of the country by foreign investors and developers or by a few local and powerful entities, which results in interests being made in the best interest of those selected parties.

Governance is centralized and management assumes a top-down, authoritative approach that leaves very little room for the decentralization of management to local stakeholders. The development process in St. Lucia, in addition to not being participatory, is also not transparent as documents such as an environmental impact assessment reports are not made public documents and thus cannot contribute to the process. Thus, all actors who have a stake in a development project do not have the same level of access to the relevant information required for decision making as well as not having the same level of consultation for decision making.

There is a dearth of cooperation and communication across sectors, government ministries, non-governmental groups, and civil society that severely limits the ability to initiate and complete development projects that address the conflicts and problems arising in a manner that does not favour one important aspect over the other, such as an ecosystem for employment gains. There are no formalized relationships between sectors such as the Ministry of Tourism and the Department of

Forestry yet communication and collaboration between these sectors is vital to development where the typical proposal for development is often a tourism project on an environmentally sensitive landscape.

The importance of customary civility, deliberate choice, civil society action is highlighted by the failure of the government and market structures to properly value ecosystem services in such a way as to development the country and grow economically without compromising these vital goods and services. Governance is therefore weakened by the absence of these components which must be strengthened through building of social and human capital.

6.2 SUMMARY

The conceptual framework, stemming from the 3 pillar sustainable development approach and expanded upon by the sustainability assessment criteria and the ecosystem-based approach, elucidated many of the flaws that can hamper the designation of a Biosphere Reserve as an on-the-ground working concept of sustainable development. The undervaluation of ecological services and landscapes, the development of sensitive landscapes without proper scientific research and involvement of important stakeholders such as local people, eroded governance structures with inadequate representation of civil society, disregarding the needs of future generations for natural resources, and the uneven and unplanned development of the country where a few people benefit greatly while the majority benefit marginally, and inadequate legislation protecting wildlife and giving the people of St. Lucia opportunities to participate in decision making are some of the hindrances that can make a Biosphere Reserve designation unfeasible.

The resolution of many of these issues lies in the structural changes of governance, constitutional reform, empowering the local citizenry through the building of human and social capital, and the creation of a democracy that is more participatory. These are grand feats that will require a lot of time, vast amounts of effort, and a common vision before the designation of a Biosphere Reserve can be contemplated.

CHAPTER 7 - CONCLUSIONS AND RECOMMENDATIONS

The development process of St. Lucia is currently geared towards the economic growth of the country. As a developing country, development and poverty reduction are of significant concern. Therefore investment in tourism is a major priority because of the direct correlation between increased international tourism arrivals and GDP growth (Ashe 2005). Nevertheless, a single focus on tourism development is no more likely to result in the longer term sustainable development for St. Lucia, or the capacity to move beyond the limitations of post-colonial legacy of disempowerment and disenfranchisement than did the reliance on the banana or on slave-driven sugar plantations before them. However, while the expectations of the pertinent relationship would seem to be between the tourism industry and development, the outcome of this research has shown that the fundamental relationship is between political will and development. Despite the proliferation of mass tourism in St. Lucia, the intention and aspiration, which dates back to the 1970's was to create a low density, environmentally benign and socio-culturally sustainable form of tourism. Thus, there is an apparent disengagement between the plans suggested for the future development of the island and the actual laws and acts that have been implemented by those in power.

If power is no longer to be divided unequally, it is imperative that civil society and local governance take precedence in the development of the communities. People need to feel empowered –what stands in the way are education, sensitisation, lack of community unity; essential elements of human and social capital. Human and social capital must be built up within the communities on the northeast coast in order to equip them with the necessary tools to drive sustainable development.

While the process of development and tourism is a highly studied relationship, that between politics and the social and biophysical environmental is often neglected. Development regarding tourism has highlighted weaknesses in legislation that fail to adequately protect the environment by being vague and not addressing certain issues. The relationship between politics and the environment may be at the heart of the issue in terms of achieving sustainable development rather than the relationship between tourism and development. This may be the greatest challenge for a Biosphere Reserve from which all smaller challenges stem; while the role of government

officials, Ministers, and executors of environmental management is important, it may be necessary to shift the attention to the overall socio-political framework in which managers are embedded. Thus strengthening governance and institutional capacities that promote robust public and civic sectors can lead to a more holistic management of environmental conservation and social sustainability (Reed 2007).

Political will is a salient issue concerning environmental degradation and the sustainable development and use of resources. Despite the inherent vulnerabilities of SIDS, there are policy shifts that can influence greatly the way in which islands are developed. The government of St. Lucia has recognized the potentially harmful effects of tourism on both the society and the environment. The concept of sustainable tourism has been mentioned and has been the aim of the country since the beginning of the boom of the industry, however, and with the exception of the heritage programme that was launched in the early 21st century, there have been no major gains towards a more sustainable tourism. According to Wilkinson (2003 pp.108), "Nevertheless, the government continues to the present time to encourage the expansion of hotel facilities in general and of large, international-scale hotel in particular. Such developments seem to contradict the government's stated policy of encouraging small-scale local hotels. The creation of immediate jobs appears to be taking precedence over the creation of a sector geared to maximizing local participation; moreover, the lack of policy and action regarding training on a national level for the tourism sector appears to be symptomatic of emphasis being placed upon the development of the physical plant without the development of human resources to service the plant".

However, as a small island developing state, it is important to be wary of the time it takes to make things happen—since the 1970s there have been concerns regarding the creation of sustainable tourism yet policies up to this present time do not wholly reflect this, the national land policy which was initiated about 10 years ago was only approved by cabinet in 2007 and implemented by the Ministry of Physical Planning in 2010.

Thus a Biosphere Reserve can serve as vehicle of change; by providing a development alternative that includes tourism but does not rely on mass tourism and also by promoting major gains towards sustainability through the integration of socio-political and ecological processes that determine the manner in which resources are developed, managed, and shared (Reed 2007).

7.1 THE FEASIBILITY OF DESIGNATING A BIOSPHERE RESERVE

A Biosphere Reserve can only be nominated if there is evidence of sustainable development. Designating an area in the hopes of achieving sustainable development is not feasible because sustainable development cannot be triggered by a designation but must be a national vision supported by national policies that exist prior to a Biosphere Reserve designation. The designation of a Biosphere Reserve must also be an expression of the desire of local communities who are willing to work towards sustainability. The northeast coast makes a suitable area for the designation of a Biosphere Reserve because of its rich biodiversity in the dry forest, mangrove, and marine ecosystems. The northeast coast contains many communities that are still strongly agrarian and that depend on the land for their livelihood. Therefore a management approach that advocates biodiversity conservation, sustainable development of the dry forest, as well as social sustainability which includes equity, democratic governance, and equal opportunity is needed. Land use and development in St. Lucia is currently geared to the singular purpose of economic growth, and hence the legislation and processes governing development and land use do not address the needs for conservation, sustainable use, and equitable use of resources; issues that a Biosphere Reserve is designed to tackle. The land acquisition and plans for development on the northeast coast however, threaten to eliminate significant amounts of the existing dry forest which pose significant barriers to overcome for a Biosphere Reserve designation.

7.2 BARRIERS AND SOLUTIONS

Three main functions of a Biosphere Reserve include conservation, sustainable economic development that is socio-culturally equitable and responsible, and logistic support. The barriers to sustainable development previously discussed are presented with the Biosphere Reserve framework.

7.2.1 BIOSPHERE RESERVE FUNCTION 1: CONSERVATION

The disadvantages that hinder the development of a Biosphere Reserve proposal can be linked to all three principles that a Biosphere Reserve espouses. Biodiversity is threatened due to the large scale developments that will clear much of the dry forest. Legislation is weak; protecting species but not their habitat and instruments for environmental management such as EIAs are inadequate. There is also the threat of environmental degradation from golf courses, the destruction of mangroves to create marinas, and beach erosion; all elements of tourism

developments proposed for the northeast coast that have very large environmental footprints. The map of proposed developments along the east coast show large scale developments that would clear a lot of the natural vegetation in the area and threatening the habitats of many species that make up the biodiversity of the island. Large former estates are being converted to golf courses, hotels, casinos, condominiums, and a marina; leaving little room for conservation. The current form of tourism designed for the northeast coast is therefore incompatible with the Biosphere Reserve model and this form of tourism is not conducive to community development. Given that these are enclaves and exclusive developments, locals will most probably only experience these developments as employees. However, the Louvet development does speak to a forest and dune reserve which could potentially be part of the core areas of a Biosphere Reserve.

Socio-ecological integrity and Precaution and Adaptation

Environmental impact assessments (EIAs) are environmental management tools that should be used by a country to ensure precaution is incorporated in development. EIAs are mechanisms for maintaining socio-ecological system integrity yet they are being misused in St. Lucia. Environmental consultants conducting EIAs are hired and paid by the proponent of a development proposal; it is therefore left up to the consultant to provide a truthful account of research conducts. Therefore EIAs should be conducted independently to ensure that the developer does not influence the outcome of the EIA, to prevent conflict of interest and distrust of proponent motives (Brown and Jacobs 1996) as well, environmental consultants conducting an EIA should be adequately certified to ensure that potential environmental and social impacts are addressed and mitigated effectively (Brown and Jacobs 1996). Currently EIAs are not to be reviewed by the public in order to prevent unwanted scrutiny on proposed developments, however, they should be available to the public not only to strengthen the review process, but to make the process more participatory so that all actors who have a stake in the project are adequately involved and can provide feedback that may potentially used to enhance the design of the project.

This lack of precaution seems to be a major issue that works against sustainable development as important decisions are often made without the necessary research and requisite information. Lack of precaution means that not enough emphasis is placed on learning about the socio-ecological system; this can have serious repercussions for the future when decisions are made that do not take into account important components of the system. Adaptive management is thus very important in order to learn effective natural resource management strategies however,

many obstacles prevent its execution: lack of technical and human resources, local people who are not empowered, and the top-down management structures that prevent the decentralization of management to local stakeholders who have more direct interaction with the natural resources.

The absence of a land use plan for is indicative of the lack of a clear direction for the country with regard to resource use and maintenance and imperils existing natural resources and the livelihoods of people who depend on them. Resource maintenance requires designing plans to manage resources in order to satisfy the requirements for the well being of all members of the present generation. This means that resources must be divided equitably and among people and the various sectors of the country. While it is true that land use planning is dynamic, and this is evidenced by the decline of the banana industry and the ascent of the tourism sector, the ability to determine the future use of land on such a small island as St. Lucia is essential to ensuring that the development of the island proceeds in a manner that is compatible with various factors including food security, equitable access to services and infrastructure, and ensuring that there are sufficient natural resources that allow the country to service their present needs while preserving these resources for future generations.

7.2.2 BIOSPHERE RESERVE FUNCTION 2: SUSTAINABLE ECONOMIC DEVELOPMENT THAT IS SOCIO-CULTURALLY EQUITABLE AND RESPONSIBLE

In terms of economic viability; many of these communities are in dire need of development and the implementation of basic infrastructure. Most community members must leave their communities to travel long distances to city centres for work, therefore the desire for employment in close proximity to the community is high. Community members are therefore in favour of hotels and associated amenities being developed within their communities. While jobs will be more abundant, the types of jobs will be low-level, wage earning jobs where there is no active local participation from the community members in the tourism industry. Economic growth within these communities will therefore be as a result of such forms of employment as opposed to local enterprises and entrepreneurial activities. These low-level tourism jobs do not require much education thus implying that human resource development of the country as insignificant. In terms of socio-cultural sensitivity, the developments on the northeast threaten to alienate locals from beaches and mangroves and other natural resources that are used as a common property resource. The form of tourism proposed for the northeast coast will not allow for local participation but will rather use the local people solely for labour as opposed to equal participants and beneficiaries.

Socio-ecological civility and democratic governance

Decision making in St. Lucia is not collaborative nor is it participatory. Often times, decisions are left up to the discretion of the Minister, for example the Minister has the power to add or delete species of wildlife to the wildlife protection schedules. An important decision such as delisting a particular species from a protected list should require input from parties other than the Minister, such as civil society and other referral agencies.

The voting members of the Development Control Authority, the statutory agency responsible for the granting of planning permission in St. Lucia, are appointed by the government. Members should be appointed based solely on expertise and without the infiltration of party politics. Thus nominating board members based on politics is contentious; members should be appointed based solely on expertise and without the infiltration of party politics. In addition, agencies such as Sustainable Development and Environment Unit with the Ministry of Physical Planning, the Departments of Forestry and Fisheries, the Sustainable Development Unit of the Organization of Eastern Caribbean States, Ministry of Tourism, the National Environment Commission with an important stake in environmental planning are not represented on the board and have a right to be represented and to vote on development applications with potential adverse impacts on the environment as they are able to address salient concerns regarding development.

Despite the fact that these groups are somewhat represented in development and environmental planning matters, they need greater power to impact development decisions and to assert environmental management to a higher degree. The Planning Acts should be revisited and amended by Cabinet to ensure that government and quasi-governmental agencies have authority commensurate with their levels of responsibility for natural resource management and sustainable development planning.

The lack of a strong civic sector component coupled with the colonial traditional of non-involvement make for governance structure that is not as robust as it should be, hence the contentions of St. Lucians not being adequately involved in decision making that affects them. Legislation governing the EIA process is vague concerning public consultations and is again left up to the Ministers discretion in terms of the processes to be used for public participation. Creating a more participatory development process will require changing the legislation to incorporate

specific directives concerning how the public should be involved in terms of consultation, feedback and decision making.

The integration of various sectors is major challenge because it would require traditional roles to be broken and new ones adopted. The various stakeholder groups that need to be involved must find a way to create new liaisons and assume different modes of operation. It would also require constitutional reform, greater enforcement of existing and newer legislations. Planners would need to assume greater responsibility for sustainable development, and therein lies a major hindrance. The development process in St. Lucia is geared towards economic growth of the country. As a developing country, development and poverty reduction are significant concerns therefore investments in tourism is a major priority because of the direct correlation between international tourism arrivals and GDP growth (Ashe 2005).

Current decision making processes must be changed fundamentally in order to elevate environment and development to the same level as economic and political decision making. This new paradigm, must involve all stakeholders, and therefore partnerships must be forged between governments, the private sector, and local authorities as well as with national, regional, and international organizations (Jabareen 2008). These new partnerships however must work within an improved regulatory framework that reflects the integrative principles of management and decision making and therefore national plans, regulations, and law must be modified in order to address these issues (Jabareen 2008).

Livelihood sufficiency and opportunity and Intra and Inter generational Equity

Within the tourism industry, fiscal policies and incentive mechanisms favour large scale development, which are most often undertaken by foreign investors. Incentives do not exist for smaller scale tourism products that would be undertaken predominantly by locals, and hence the St. Lucian people are not given equal opportunities for involvement within the tourism industry. In addition, linkages between the tourism industry and other sectors are not strong enough leading to high leakages within the industry and an insignificant multiplier effect. Opportunities for greater livelihood sufficiency must be provided to St. Lucians, especially to those with limited assets. Since the tourism industry is the main economic driver of the country, locals should be encouraged to invest in the industry to procure the same benefits that foreigners obtain. The tourism incentives act should encourage local, small-scale tourism that would benefit the people directly and would be more environmentally benign. There should also be greater efforts towards strengthening the relationships between tourism and other sectors, especially the agricultural sector.

The economic benefits of a golf course or a marina may be easily tabulated and expanses of dry forest or mangroves are often viewed as unproductive wastelands. However, the ecosystem services of the dry forest and mangroves far outweigh those of a golf course or marina and while the conversion of dry forest and mangroves into golf courses and marinas respectively, positively impact developers and local employment, important ecosystem functions are being traded in for economic gain. These ecosystem services are thus lost to the local people and to future generations. When decisions are made regarding the fate of ecosystems that affect the way that ecosystem services are shared, the interests of all must be taken into account including local and indigenous knowledge in order to ensure the equitable division of services.

7.2.3 BIOSPHERE RESERVE FUNCTION 3: LOGISTIC SUPPORT

The logistic function of Biosphere Reserves entails research, learning, sharing, and serving as a demonstration site for environmental education, training, and research concerning conservation and sustainable development. These components are currently largely undeveloped within the northeast coast region. The lack of research may be due to the fact that world-wide, dry forests are not as highly regarded as other ecosystems, and are thus not studied and researched as much. The limited technical capacities of the agencies dealing with environmental management make it very challenging to undertake studies and engage in environmental education. Fulfilling the logistic function of a Biosphere Reserve would require creating alliances with educational institutions, creating opportunities for volunteers to engage in field work, inviting scientist to conduct research on the island, and receiving funding to undertake various studies. Furthermore, if future developments along the northeast coast remove a substantial portion of the dry forest and with hotel plants are built on top of heritage sites there may be nothing of value left to study in terms of ecology. The results of this research, however, suggest an important alternative, with some urgency. Dry forests are of ecological importance and have major value in location like St. Lucia. Notwithstanding development pressures driven by shorter term economic needs and priorities, there is considerable recognition within St. Lucia and throughout the sustainable development literature on the importance of taking into account longer term well being of future generations and of the habitats that support them. In terms of sustainable development and learning about it, if the ecological integrity, economic viability, and socio-cultural sensitivity are to be respected then there is much to be researched and much to be learned.

7.3 ZONING

The zoning function of a Biosphere Reserve will also be a challenge, given the ownership patterns of land in the area as well as the large estates, two of which have been sold for development, appropriating a core zone strictly for conservation is challenging. Community members in Boguis, near the Marquis development, spoke of farmers being happy to sell their land to the development. Depending on the inclination of smaller private land owners to conserve the dry forest is precarious because without countervailing incentives, they will be quick to sell. For the northeast coast which is the next frontier for development, alternatives are clearly necessary if sustainable development is to be a reality. Educating people of the potential advantages of a Biosphere Reserve designation may be the best way to ensure zones are respected.

7.4 RECOMMENDATIONS

A Biosphere Reserve may not be feasible at this point in the development of the island but this does not mean that the northeast coast cannot become a more sustainable region making it more possible to designate the island as a Biosphere Reserve.

Based on the research outcomes a preparatory phase of no less than 10 years to make the northeast coast an area suitable for a Biosphere Reserve is recommended. During this period of time significant gains should be made towards sustainable community economic and social development, environmental education concerning northeast coast ecosystems of the dry forest mangroves, and coastal systems, communities should be educated on Biosphere Reserves, small-scale sustainable tourism should be undertaken as well as other economic development initiatives in other sectors such as agriculture. While the various aspects of sustainability such as conservation and sustainable tourism are important and must be addressed, the essential aspect requiring immediate action is education. Informal and formal educational programmes must be implemented to teach the youth the importance of a healthy environment and ways to maintain it. Education must also target the population at large in order to teach people about the ecosystems that make up their immediate environments; thus the notion of environmental stewardship must be communicated. Creating a society that is more environmentally conscious can take a long time however, the introduction of a Biosphere Reserve concept can potentially be used to rally the people for the cause as the concepts of sustainable tourism and alternative livelihoods can entice people to become more involved because they understand that environmental awareness and proper management can go hand in hand with the creation of sustainable livelihoods.

7.4.1 SUSTAINABLE TOURISM

Research revealed that many of the tourists who were attracted to the island were not interested in golf, in particular, one tourist spoke of liking golf but not wanting to play it in St. Lucia because he had golf courses in his country and he would rather do something that he could not do at home while on vacation. A different approach to tourism would be to capitalize on what is unique about St. Lucia, therefore harnessing the cultural aspect by increasing the involvement of St. Lucians, harnessing the natural beauty by protecting the environment, and understanding the true cost of mass tourism so that seemingly intelligent economic decisions can be re-evaluated using other measures aside from fiscal ones. The life cycle of tourism proposed by Butler (2006), defines the various stages of tourism that goes through exploration, involvement, development, consolidation, and stagnation before either declining or becoming rejuvenated. In order to prevent St. Lucia from declining into a destination that is no longer attractive to tourists, is unable to compete with other destinations, and results in local alienation and resentment towards tourism, the tourism strategy must be geared to achieving both ecological and social sustainability.

Renard (2001) speaks of pro-poor tourism strategies in St. Lucia to involve local people in the industry, asserting that tourism related activities can be designed and implemented to create significant economic opportunities for locals, improve social infrastructure and cultural and educational benefits. The barriers that often prevent St. Lucians from partaking in the industry are uneven geographic distribution, seasonality, loss of access to resources or conflicts in the use of common property resources, lack of market access, and lack of financial or physical assets.

Remote areas can be promoted through tours as well as through strategic community planning, and the diversification of the market away from the sand, sun, sea elements to cultural, natural and ecological resources could reduce the effects of seasonality (Renard 2001). The loss of access to resources is significant as it impinges on social equity, thus negotiation measures must be put in place to ensure the equitable sharing of natural resources. Market access initiatives, such as those proposed to increase agro-tourism linkages should be promoted for other sectors such as arts and crafts and fisheries. The lack of financial and physical assets can be overcome by creating specific incentives for local involvement that do not require possessing significant financial or physical assets. There could also be community-based tourism initiatives to involve entire communities in designing and implementing a tourism product. Where financial or physical assets

are insufficient, common property resources can be used to promote tourism activities such as nature tours or festivals (Renard 2001)

Linkages between tourism and other sectors must be fortified. Given the importance of agriculture to many St. Lucians agro-tourism linkages have been targeted. The initiative to support agro-tourism integration such as the 2003 Market Access Initiative launched by Oxfam GB that was geared towards enhancing fair trade between Caribbean farmers in tourism markets. The goals of the initiative were to implement systems that would supply small farmers with training, credit, and market information, aid in creating a distribution facility, and enhance the public policy governing agriculture, tourism, and trade (Caribbean Policy Development Centre 2008).

As a recently launched initiative, there are still inadequacies within the system that result in higher leakages than there should be. There must be a contractual agreement implemented between farmers and hotels or farmers and restaurants where farmers are paid promptly as opposed to the habitual routine of receiving produce from farmers and remunerating them at a later date (Caribbean Policy Development Centre 2008). Land use policy is a tremendously important component as it must be used to delineate and preserve arable land for domestic and export agricultural purposes along with land use for tourism, residential, and commercial development and for areas that should not be developed. A land use plan is essential for demarcating land according to its most suitable use, and will help prevent the conversion of arable land to other less appropriate purposes. Policies should also be developed that encourage the tourism sector to purchase locally grown produce and to create partnerships with farmers and/or farming communities for supply to hotels and restaurants (Caribbean Policy Development Centre 2008).

7.4.2 EDUCATION

A Biosphere Reserve designation is a community-driven initiative. People must therefore understand the concept of a Biosphere Reserve and agree that this is something to strive for. Thus implementing an education programme concerning Biosphere Reserve would be an important starting point towards the eventual Biosphere Reserve designation. A Man and the Biosphere Committee must be created which would be composed of the Forestry Department and the multitude of actors who would have a stake in the Biosphere Reserve, thus other government ministries, civil society, the private sector. In essence, the MAB committee must be as multi-sectoral and inter-disciplinary as possible and would eventually invite interested community

members who seem to possess leadership qualities. The programme would target community organizations, churches, and schools, and hold meetings with these groups in their communities. The goal of these community meetings would be to engage the community in a discussion on Biosphere Reserve and sustainable development using examples pertinent to the communities. It is important to remove power differentials between community groups and governmental agencies in order to engender feelings of equality between the groups so that community groups feel like equal participants and thus act accordingly. These meetings can also be attended by government Ministers who would learn about Biosphere Reserve and their potential for achieving sustainable development. The desire of communities for a Biosphere Reserve Designation will be supported by a Minister who relies on community as his/her electorate.

Education on Biosphere Reserves will inevitably extend to education on a wider scope of sustainability and workshops, courses and environmental education should be implemented to further educate and involve the community. The Sea Flower Biosphere Reserve in Columbia has programmes to train community members in the design and implementation of sustainable micro-projects (Mow et al 2003). With the bilateral cooperation of community members who shares their traditions and attitudes and specialists who bring in new approaches and technology, there is significant potential for creating alternative livelihoods by combining new technologies with traditional methods (Mow et al 2003). However, community members must be willing to learn and there must be activities and programmes offered to community members that will interest them and contribute to their livelihoods, thus community-based projects such as eco-tourism, sustainable or organic agriculture, and beach restoration are development schemes that can be tackled to involve the community directly in economic development.

The education component for preparing a community or communities towards Biosphere Reserve designation will require training in co-management, conflict resolution, consensus building, and increase in local management autonomy (Mow et al 2003). This can yield a more cohesive community with higher levels of social capital and thus greater potential to initiate and complete community-driven projects.

Education is also very important in overcoming the challenges of private land ownership that may affect the designation of specific zones especially the core areas. Thus private land owners must be made aware of the potential advantages of a Biosphere Reserve and this may influence their decisions made concerning the use of their land.

7.4.3 COMMUNITY CAPACITY

Due to the fact that a Biosphere Reserve designation must be community-driven, trust, networks of communication and reciprocity are important requirements for high levels of social capital. Thus the requirement for the northeast coast communities would be to build social capital so that people can work collectively to achieve certain goals. Human capital is another component of community capacity however, human capital is both the informal and formal education levels of people, local knowledge, abilities, skills and talents that are learned and honed over the course of an individual's life. Human capital therefore requires greater input and time while social capital could possibly be influenced over a shorter period of time. People can be taught to see the advantages of social capital and can be taught to cultivate it within their communities. Thus part of the preparatory phase for a Biosphere Reserve designation could be an education component designed to build community capacity through increasing social capital. Thus consensus building, conflict resolution and other informal courses covering human relations and human resource development would be very important to equipping community members with the necessary skills to work effectively together.

High levels of social capital would also contribute to greater individual and community participation in decision making and can thus lead to stronger governance structure due to a more robust civic sector.

7.4.4 ENHANCING LEGISLATION TO PROTECT THE NORTHEAST COAST ECOSYSTEMS

Strong policies that are heavily enforced are imperative in the quest for sustainable development and require considerable attention from authority figures as well as the general public. Legislation governing wildlife protection must be amended to include the protection of wildlife habitat and the decision making process must also be modified to become more participatory rather than being left up to the discretion of the Minister. Changes to the environmental impact assessment (EIAs) process that should be implemented are that EIAs must be conducted by an independent body that is approved by the government, public consultation must be elaborated within the legislation and not left up to the sole discretion of the Minister.

Legislation should also be amended to give government agencies authority commensurate with their level of expertise and in addition, cooperation and communication between and across disciplines and sectors must be promoted in order to approach sustainable development from a more holistic view point

The functions and services provided by the northeast coast must be nationally recognized and legally protected. The mangroves and dry forest along the northeast coast are essential, both ecologically and economically, and in the same way that the rainforest is protected to preserve the watershed function, so must the dry forest and mangrove ecosystems be protected to prevent erosion and sedimentation, protect terrestrial and marine species, provide food for people, protect the interior of the island from natural disasters, and provide cultural services such as inspiration, aesthetic value and recreation.

7.5 ANSWERING THE RESEARCH QUESTIONS

Would a Biosphere Reserve be a feasible concept of sustainable development on the northeast coast of St. Lucia? What are the major challenges that can hinder the establishment of a Biosphere Reserve? What are some existing attributes of the northeast coast that would make it feasible to establish a Biosphere Reserve? How can tourism achieve economic sustainability on the northeast coast? How can tourism as the major economic development tool be become more sustainable in terms of conservation, socio-cultural acceptance, equity, and sufficiency and opportunity for all?

There is no 'yes' or 'no' answer to the question of whether or not establishing a Biosphere Reserve on the northeast coast of St. Lucia is feasible. Rather, it can be concluded that if there are some significant gains made towards sustainable development, conservation, and education on the northeast coast over a time period of roughly 10 to 15 years, then the area may become eligible to be granted a Biosphere Reserve designation. However, various aspects must be addressed including conservation, policy making, land use planning, sustainable tourism, sustainable livelihoods and ecological integrity. The major challenges that hinder a Biosphere Reserve are the recent land acquisitions that threaten the viability of the dry forest and the species residing there, the continuation of the mass tourism model of development on the northeast coast, the lack of research and monitoring in that area, and the unsustainable use of natural resources. The northeast coast would be a suitable area for a Biosphere Reserve given the range of ecosystems, the high biodiversity, the dependence of the local communities on the land and natural resources, the

potential for sustainable economic development and the potential to learn a lot from biodiversity conservation, and the sustainable use of natural resources.

The northeast can achieve economic sustainability that is socio-culturally equitable by involving community members directly in the tourism industry through incentive mechanisms and policy implementation favouring local investment. The agrarian nature of many of these communities must be recognized and linkages must be fortified between agriculture and other sectors, namely tourism. Enhancing stringent legislation that governs environmental planning and development proposals is the first way to create a tourism industry that will be more ecologically sustainable, a land use plan must be approved and implemented by cabinet in order to designate land for various forms of development and land for the conservation of natural resources. Empowering the civic sector and making them more active participants in the decisions regarding development is another very important way to ensure sustainability.

7.6 FUTURE RESEARCH

Further research should be towards creating a comprehensive inventory list of ecosystem functions and services of the northeast coast especially with regards to the dry forest. A financial assessment of ecosystem services should also be conducted in order to contribute to the cost-benefit analyses undertaken for development proposals. Research should also address community capacity and its components of social and human capital in order to understand why the levels of social capital are so low, what contributes to social capital of the northeast coast communities and how social capital can be enhanced.

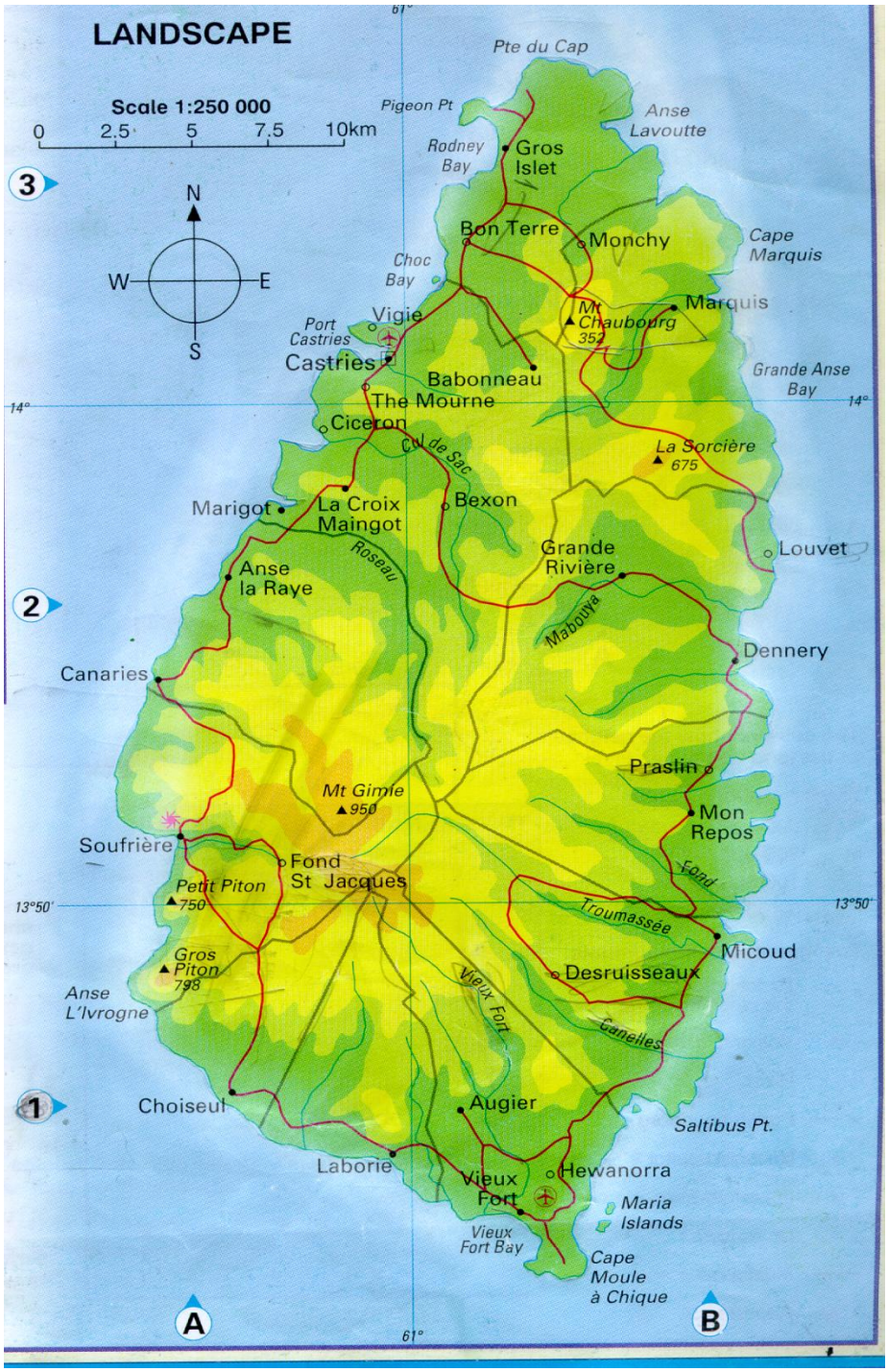
The conceptual framework that was created using the sustainability assessment criteria as well as the ecosystem-based approach provides tremendous direction towards sustainability such as through the proper valuation of ecosystem services, fostering greater knowledge of ecosystem processes and services, acknowledging the unknown and uncertainty of socio-ecological systems and making management decisions to support the proper functioning of biophysical systems, the creation of a strong socio-ecological system that is capable of providing access to resources for all so that everyone is able to have enough for a decent life. This framework is very useful and has potential for applicability to small island developing states on the whole. Thus this would be a worthy matter to consider for further research.

7.7 CONCLUDING REMARKS

The political ecology of St. Lucia is key to understanding the development outcomes that the country faces. While there are widespread contentions about the way in which the tourism industry is developing, the same mistakes are being made as sensitive ecosystems are being endangered, locals are being alienated from beaches and other places of recreation, huge economic benefits from the tourism sector are repatriated to other countries, and locals are not being adequately equipped to partake in the country's largest industry in order to reap the wealth of benefits. The focus therefore needs to shift away from the relationship between tourism and development to the relationship between politics and development which always impinges on the environment. The legislation governing environmental management, conservation, land use planning and development is weak and non-participatory; limiting factors that hinder progress towards sustainable development. Before a Biosphere Reserve can even be contemplated, there are fundamental changes that need to be made in St. Lucia. Of course, there are the deeply rooted relics of colonialism that hamper sustainable development such as non-involvement of the local people in important matters, the implementation of a top-down management approach that excludes local people who may have important insights and knowledge, and the mentality that the resources provided by the natural environment are infinite. However, there are changes that the country is capable of making; amendments to legislation that protect the environment and include local people in participatory, instituting comprehensive and participatory land use planning, deliberative decision making processes, creating tighter linkages between the tourism industry and other sectors, and involving local people in the tourism industry so that they feel a sense of ownership rather than a sense of servitude.

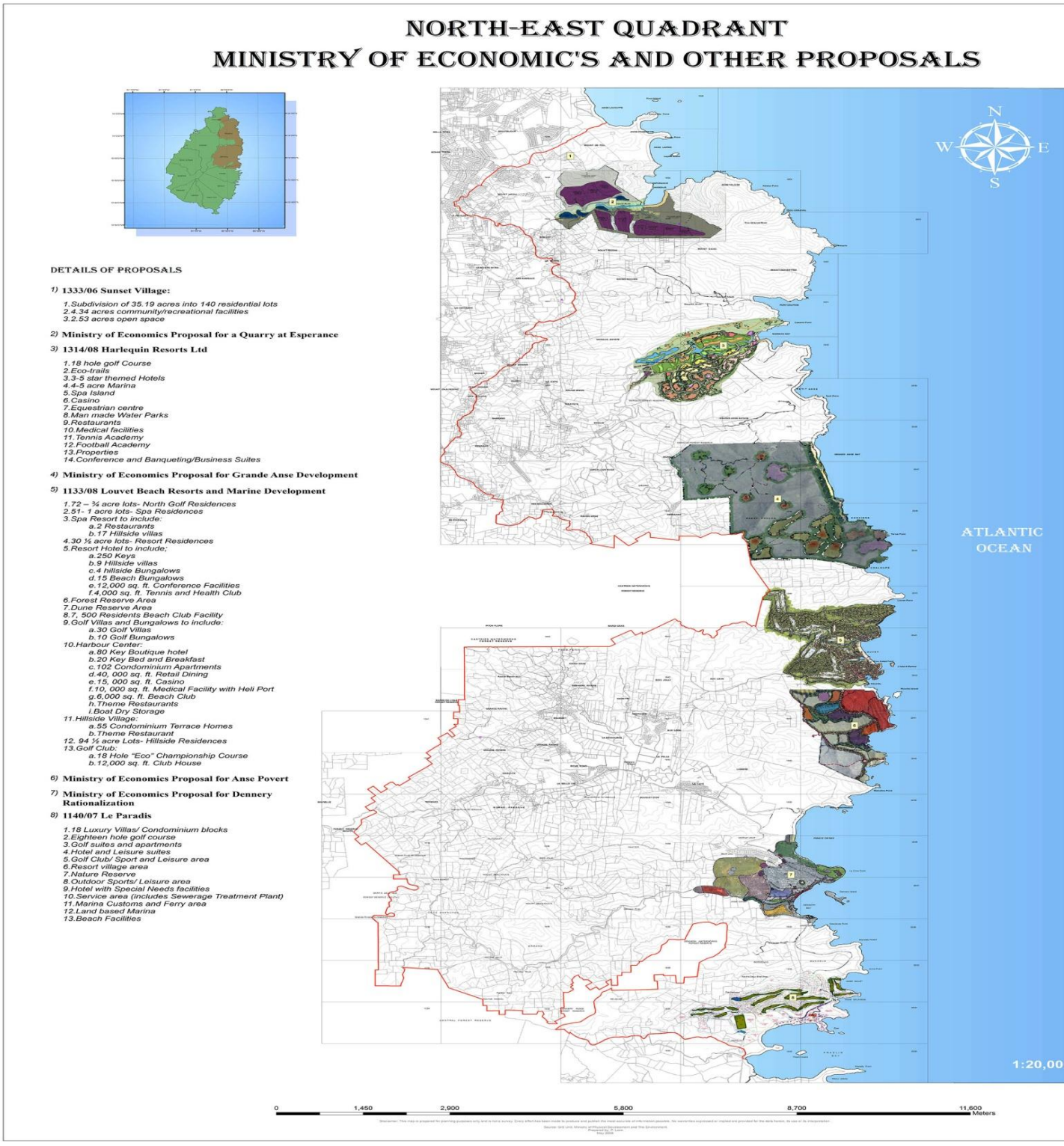
This research is important because it does not propose implementing a protected area to conserve biodiversity with the exclusion of human beings but rather it attempts to propose an alternative path of development for the island that is embodied within a geographical location, includes the surrounding communities to be stewards and managers of the natural resources, and fosters learning about socio-ecological system management through adaptive management principles. A Biosphere Reserve can serve as a prototype from which the rest of the island and the wider Caribbean can learn valuable lessons about reconciling conservation with economic sustainability that is socio-cultural equitable. This research is also important because the obstacles highlighted are important starting points from which the country can begin to work towards achieving sustainability goals.

MAP 1: GENERAL MAP OF ST. LUCIA



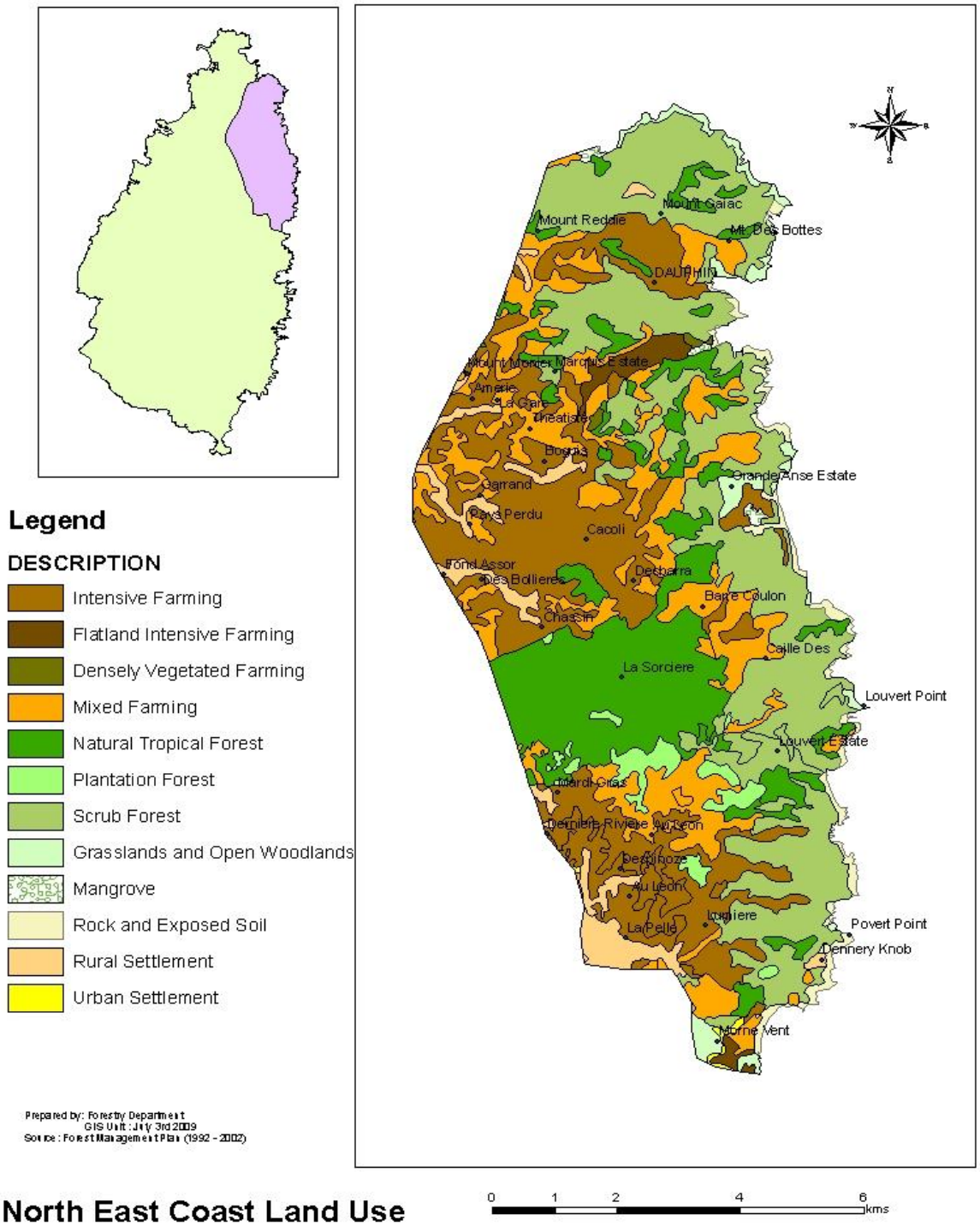
(Source: Government of St. Lucia)

MAP 2: PROPOSED DEVELOPMENTS ON THE NORTHEAST COAST



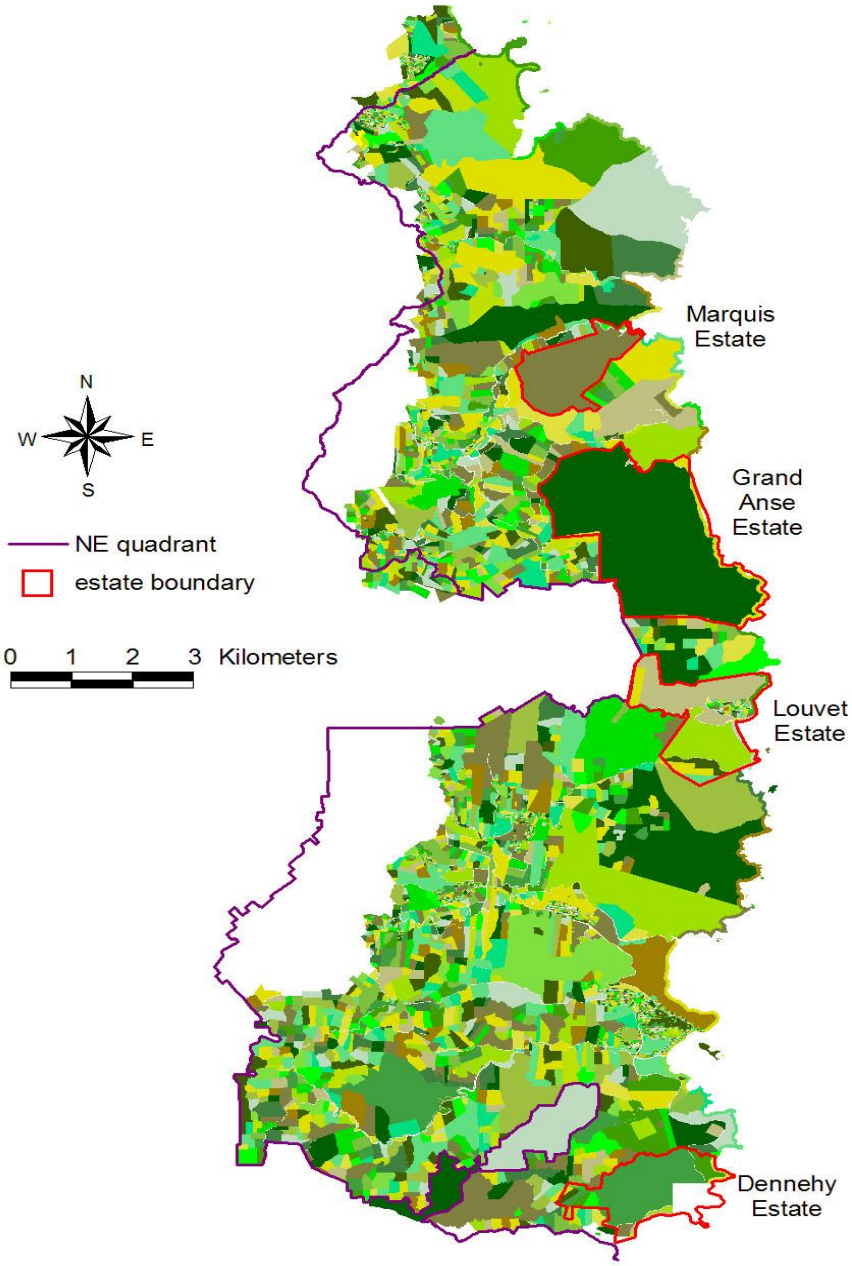
(Source: Government of St. Lucia, Ministry of Physical Planning)

MAP 3: LAND USE OF THE NORTHEAST COAST



Source: (Government of St. Lucia, Department of Forestry)

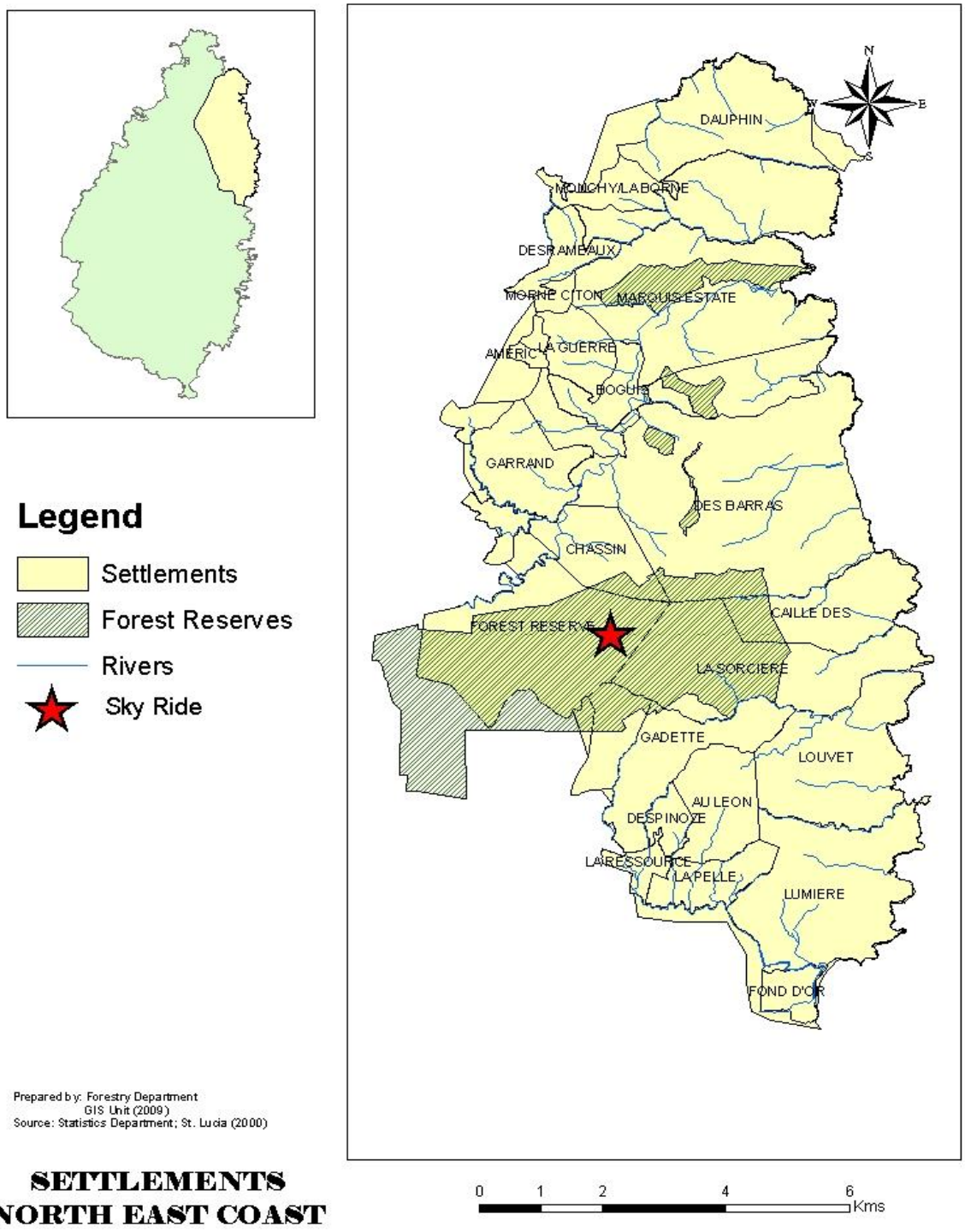
MAP 4: CADASTRE MAP OF THE NORTHEAST COAST



The various shades of green, yellow, brown represent different land owners, the major estates and highlighted in red

(Source: Government of St. Lucia, Ministry of Physical Planning)

MAP 5: NORTHEAST COAST COMMUNITIES



(Source: Government of St. Lucia, Department of Forestry)

APPENDIX 1: INTERVIEW CONSENT FORM

University of Waterloo

Faculty of Environment

Department of Environment and Resource Studies

Makeddah John

University of Waterloo

(758)4536431

200 University Avenue West

Waterloo, Ontario, Canada

Dear Potential Stakeholder of a Biosphere Reserve in St. Lucia*:*

This letter is an invitation to participate in a research study. As a Masters student in the Department of Environment and Resource Studies at the University of Waterloo, I am currently conducting research under the supervision of Professor Susan Wismer on the feasibility of establishing a Biosphere Reserve on the northeast coast of St. Lucia, which includes 4 communities on the northeast coast of St. Lucia. This research is being conducted in collaboration with the Forestry Department under the Ministry of Agriculture, St. Lucia.

Study Overview

A Biosphere Reserve is a model of sustainable development that promotes the well being of the local communities through facilitating and encouraging livelihoods of the local people that are economically viable, socially just, culturally appropriate, and ecologically sensitive. A Biosphere Reserve also promotes the conservation of biodiversity that is so important on the northeast coast of the island as it contains the dry forest; an ecosystem teeming with biodiversity. A Biosphere Reserve is designated by UNESCO and would be nominated by the government of St. Lucia but such a designation can only be made possible with the help and collaboration of all involved: community members, business owners, tour operators, tourists, private land owners, government officials, civil society groups.

An interview will be conducted with select stakeholders within a Biosphere Reserve that have interests in the resources of this region of St. Lucia, these include private land owners, community members, government officials, and civil society groups. This interview will be audio-recorded only with the expressed permission of the participants.

The purpose of the interview will be to attain views, perceptions, experiences, and opinions of a diverse range of people and groups. The information gathered will reflect the interests, biases, and priorities of the potential stakeholders in a Biosphere Reserve as it relates to economic opportunities, local economic development, the importance of preserving the dry forest or the assertion of the substitutability principle where the development and destruction of the dry forest is unavoidable for future development, the degree to which the dry forest affords local people the ability to sustain their livelihoods, the role of tourism in affecting the integrity of the dry forest and the opinions surrounding such future development. As a result of the diversity of the participants, the views and opinions garnered may present conflicting interests. The information will therefore

be analyzed and used to paint a lucid picture of the pertinent factors, and therefore can be used to support an alternate model a Biosphere Reserve of development that respects the interests of all.

I would like to study 5 communities along the northeast coast of St. Lucia as my case studies since these communities are directly related to or involved with the dry forest. As a member of the local communities, a government official, a member of a civil society organization or a private land owner, you play an important role in the management of a potential Biosphere Reserve, and your input would provide key information and opinions to this study. I would therefore like to invite you to participate in this in-person interview.

Your Involvement

The interview includes questions about the importance of the dry forest, the conservation of the dry forest, economic development in St. Lucia, rural livelihoods, opportunities for St. Lucians, the tourism industry and how it benefits local communities.

If you agree to participate, I will contact you to arrange an in-person interview. I will be available and happy to answer and address questions or concerns you may have and I would ask that any opinions expressed be your own.

I will be scheduling in-person interviews commencing ***(insert date).***

The interview would last about one hour and would be arranged at a time convenient to your schedule. To ensure the accuracy of your input, I would ask your permission to audio record the interview.

Participation in the interview is entirely voluntary and there are no known or anticipated risks to participation in this study. You may decline to answer any of the questions you do not wish to answer. Further, you may decide to withdraw from this study at any time, without any negative consequences, simply by letting me know your decision. All information you provide will be considered confidential unless otherwise agreed to, and the data collected will be kept in a secure location and confidentially disposed of in one year's time.

Your name and the name of your organization will not appear in any thesis or publication resulting from this study unless you provide express consent to be identified and have reviewed the thesis text and approved the use of the quote. After the data have been analyzed, you will receive a copy of the executive summary. If you would be interested in greater detail, an electronic copy (e.g., PDF) of the entire thesis can be made available to you.

Contact Information

If you have any questions regarding this study, or would like additional information about participation, please contact me at (758)453-6431 or by email *mljohn@uwaterloo.ca.* You can also contact my supervisor Professor *Susan Wismer* by telephone at 1-519-888-4567 ext. 35795 or by email at skwismer @ uwaterloo.ca

I assure you that this study has been reviewed and received ethics clearance through the Office of Research Ethics at the University of Waterloo. However, the final decision to participate is yours. If you have any comments or concerns resulting from you participation in this study, please contact Dr. Susan Sykes of this office at 1-519-888-4567 ext. 36005 or ssykes@uwaterloo.ca.

Thank you in advance for your interest and assistance with this research.

Yours very truly,

Makeddah John

Masters Candidate

……..

CONSENT FORM

I have read the information presented in the information letter about a study being conducted by Makeddah John of the Department of Environment and Resource Studies at the University of Waterloo, under the supervision of Professor Susan Wismer. I have had an opportunity to ask any questions related to this study, to receive satisfactory answers to my questions, and any additional details I wanted.

I am also aware that excerpts from the in-person interview may be included in the thesis and/or publications to come from the research.

I am also aware that excerpts from the interview may be included in the thesis and/or publications to come from the research, with the understanding that quotations will be either anonymous or attributed to me only with my review and approval.

I was informed that I may withdraw my consent at any time without penalty by advising the researcher.

This project has been reviewed by, and received ethics clearance through, the Office of Research Ethics at the University of Waterloo. I was informed that if I have any comments or concerns resulting from my participation in this study, I may contact the Director, Office of Research Ethics at 519-888-4567 ext. 36005.

With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.

❑ Yes ❑ No

I agree to have the audio-recorded in-person interview.

❑ Yes ❑ No

I agree to the use of anonymous quotations in any thesis or publication that comes of this research.

❑ Yes ❑ No

I agree to the use of direct quotations attributed to me only with my review and approval.

❑ Yes ❑ No

Participant Name: _____(Please print)

Participant Signature: _____

Witness Name: _____(Please print)

Witness Signature: _____

Date: ____

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