# The evaluation of conservation planning policy effectiveness in the Solomon Islands: A case study of the Solomon Islands National Biodiversity Strategy and Action Plan

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# Abstract

This research evaluates the effectiveness of conservation planning policy in the Solomon Islands and specifically examines the National Biodiversity Strategy and Action Plan (NBSAP). The NBSAP is a requirement under the United Nations Convention on Biological Diversity (UNCBD)[1] which the Solomon Islands ratified in 1995. The NBSAP outlines a framework to ensure the sustainability of biodiversity in the Solomon Islands and is coordinated by the Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM). The practice of conservation or environmental policy evaluation is rarely undertaken in the Solomon Islands due to the lack of baseline data, inadequate monitoring of implementation, and unclear goals and objectives. In brief, effectiveness evaluation involves comparison of the actual result to the expected result at a given time in order to isolate the influence of a specific policy. However, because of unavailability of data and to avoid the complicated and lengthy process of evaluation, this research focussed instead on the performance principle[2] of evaluation and considered the overall performance of the NBSAP policy to determine whether it is effective or not.

This research was qualitative and thus focussed on words with the intention to examine the NBSAP and its problems. Interviewing was the main data collection method and was conducted in two parts: semi-structured interviews involving eight participants, and two focus group interviews with four and six participants each. Research questions were prepared to guide the discussion but flexibility was allowed for explanations and asking of further questions.

The study found that biodiversity is of paramount importance in the Solomon Islands in that large proportion of the population lives in rural village settings and depends on biodiversity for their livelihoods and subsistence purposes. To the government, biodiversity forms a big portion of its export and revenue. This research noted that biodiversity continues to be destroyed and lost despite various interventions including the NBSAP, involving conservation partners such as the

[1] It is used interchangeably with Convention on Biological Diversity (CBD) and they mean the same.
[2] As opposed to conformance evaluation

government, Non-Governmental Organisations (NGOs) and donors. This study found that human behaviour and attitudes are real obstacles to conservation practices in the Solomon Islands, coupled with factors such as increasing economic demand, population growth and climate related effects. The study further found that networks of the actors involved, and integration of the NBSAP policy, which can be horizontal and vertical in structure, are needed. Strong leadership was also found to be lacking among the conservation stakeholders and specifically in the MECDM as a coordinating agency for the NBSAP policy. To conclude, it was found that NBSAP policy was not effectively playing a role in influencing the decision and implementation of other related policies.

# Dedication

This thesis is dedicated to my late father (John Sisiolo) and mother (Lilly Barikia Sisiolo) for their unconditional love, support and vision for my future.

# Acknowledgements

Firstly, I thank my creator for His plan for me since from the time I came into this world through to the successful completion of this thesis and into the future. Without Him I am nothing. The completion of this thesis also would not be possible without the dedicated support of many individuals and organizations, including NZAID for providing me with a scholarship to study at the University of Waikato and paying for my expenses to undertake data collection in the Solomon Islands. The knowledge and experience I acquired while studying at the University of Waikato will certainly improve my work, to better serve my people in the Solomon Islands.

To my supervisor, Associate Professor John Campbell, I thank you for your professional advice and guidance that have helped me successfully complete this thesis. There were times when I got discouraged but your words of encouragement helped me stay focussed through to completion. I also thank my subject librarian (Ms Heather Morrell) for your unfailing support. To Cheryl Ward and Jenny McGhee I also thank you and never recall a time when you turned down my request for help.

I extend my gratitude also to my immediate family members for their support and especially my brother (Dr Lipson Sisiolo). Many times he called from Australia to provide me with the support I needed that enable me to come this far. I always look to him for advice and support whenever I come across difficulties in my studies and his always immediate response, despite the costs incurred, is so dear to my heart. I also thank my wife (Anica Sisiolo) and daughter (Lynca Asoburo Sisiolo) for their support in my studies.

I thank the former Permanent Secretary of MECDM (Mr Rence Sore) who recommended my study release to the Permanent Secretary of the Ministry of Public Service (MPS). I also thank the Under Secretary (Mr Timothy Ngele) of the Ministry of Education and Human Resources Development (MEHRD) for his support that enabled me to acquire my research permit. Without his help to get a permit at a very short notice, I would not have been able to undertake the research in the Solomon Islands.

Lastly, should there be anyone whom I have unintentionally not acknowledged please accept my apologies, I thank you as well.

# Acronyms

| | |
|---|---|
| CBD | Convention on Biological Diversity |
| CBNRM | Community Based Natural Resource Management |
| CBSI | Central Bank of Solomon Islands |
| CTI | Coral Triangle Initiative |
| IUCN | International Union for the Conservation of Nature |
| MALS | Ministry of Agriculture and Live Stock |
| MECDM | Ministry of Environment, Climate Change, Disaster Management and Meteorology |
| MEHRD | Ministry of Education and Human Resources Development |
| MFMR | Ministry of Fisheries and Marine Resources |
| MFR | Ministry of Forests and Research |
| NBSAP | National Biodiversity Strategy and Action Plan |
| NEMS | National Environment Management Strategy |
| NZAID | New Zealand Agency for International Development |
| NGO | Non-Governmental Organisation |
| PA | Protected Area |
| SA | Stakeholder Analysis |
| SILMMA | Solomon Islands Locally Managed Marine Areas network |
| SPC | Secretariat of the Pacific Community |
| TNC | The Nature Conservancy |
| WF | WorldFish |
| WWF | World Wildlife Fund |

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# Chapter One: Introduction

This thesis evaluates the effectiveness of conservation planning policy in the Solomon Islands and specifically the National Biodiversity Strategy and Action Plan (NBSAP). The guiding principle of the NBSAP states that "policies must be people and livelihood oriented" (Ministry of Environment Conservation and Meteorology 2009 27). However, this does not mean that conservation is a totally new concept in the Solomon Islands. Local people have been practicing it in their own traditional ways long before the introduction of modern concepts of conservation. Those living in rural areas make up more than 80 per cent of the total national population (Hviding and Baines 1994; Pauku 2009). Hence, they depend on terrestrial and marine biodiversity for their livelihoods and survival. These resources have provided much-needed benefits to the rural population for decades, but unfortunately are now under immense pressure from factors such as human population increase, economic demands and climate change effects (will be further discussed in Chapter 2).

The traditional governance system is used in most of the Solomon Islands' rural communities, especially for natural resources management. However, it now shows signs of deterioration in many communities. This is believed to be caused by both modernization and Christianity, which have eroded cultural norms, values and traditions and made traditional governance systems no longer effective. The chiefs and community leaders who have traditionally taken leadership in the management of tribal or communal resources are often no longer respected. Thus, biodiversity is threatened and so are the human beings who depend on it. To ensure proper protection and sustainable management of these resources requires effective intervention. This chapter introduces the research by providing the research rationale, the research significance, the research questions and lastly the thesis outline.

## Research rationale

Environmental problems are amongst the most controversial issues facing us at the beginning of the 21$^{st}$ century. Environmental issues have now entered many national and international political agendas seeking the commitment of

governments for possible intervention. For instance, it is now evident and well documented that the destruction of biodiversity and habitats causes huge losses and has major implications for sustainability. Many people now believe that the successive conservation policies adopted by individual countries in the past years have failed to adequately protect global biodiversity. As pointed out by Hauirae (2003); Healy (2006) and Kool *et al.* (2010), the Solomon Islands has over the years developed various pieces of legislation and policies relating to environment and natural resources management. The main elements of National Legislation include: Environment Act 1998, Fisheries Act 1998, Forest Resources and Timber Utilization Act 1984, National Parks Act 1954, Protected Areas Act 2010 and Wildlife Protection and Management Act 1998. The sub national legislation includes: Choiseul Province Fisheries and Marine Environment Ordinance 2011, Guadalcanal Wildlife Management Area Ordinance 1990, Honiara City Act 1999, Isabel Province Wildlife Sanctuary (Amendment) Ordinance 1991, Makira Province Preservation of Culture and Wildlife Ordinance, Temotu Province Environment Protection Ordinance 1989 and Western Province Resource and Management Ordinance 1994. Examples of national policies include: the Solomon Islands National Environment Management Strategy (NEMS) (1993); a report on the state of environment in the Solomon Islands 1993; a forest strategy for Solomon Islands 2006-2011; Solomon Islands State of Environment Report (SOE) (2008); NBSAP ( 2009); and Ridges to Reefs Conservation for Solomon Islands (2010).These laws and policies have been developed and implemented by successive governments attempting to tackle the environmental issues impacting on the biodiversity.

Hence, it is important that these laws and policies are evaluated to ensure that they achieve their intended objectives. Evaluation in a practical sense is really what enables human beings to "evolve, develop, improve things, and survive in an ever-changing environment." (Davidson 2005 1). Whenever they try something new they tend to question its value or quality, to see if it is better than other options or find areas for improvement.

In such situations legislation and policy are not supposed to "remain exactly as announced in a formal, published statement. They might well require amendments in the light of changing external situations such as financial crises or changes of…

leadership" (Palfrey *et al.* 2012 33). Biodiversity also goes through sequences of biological and environmental changes (Pressey *et al.* 2007). However, successive governments often come up with new policies thinking that they are better and sometimes they do so for other reasons which may include political ones. The Solomon Islands has so far made no attempt to evaluate the effectiveness of conservation related legislation and policies despite it being an important part of the policy implementation cycle. Most participants noted this during my interviews with them, and, interestingly, most said that they had already been in their job for more than ten years, which is long enough for the policy evaluation to be conducted. It is vital to undertake evaluation because the information discovered should enable the policy makers and implementers to make changes and improvements to their legislation and policies to ensure better outcomes.

There are many factors that can hinder the evaluation process: one is lack of capacity, and this has often been experienced by government institutions. This indeed really affects how the governments "plan, make and implement public policies and programmes to achieve development" in addition to the "well entrenched process of corruption in the political and administrative systems" (Smith 1985 135-136), which may suppress public criticism and political opposition so as to prevent the evaluation being conducted. Resistance to evaluation by the "officer or the institution often arises from fear of negative input and exposure as well as fear of change. Such resistance can result in a lack of sufficient resources being budgeted to carry out an evaluation…" (Kleiman *et al.* 2000 363). A further barrier is the dearth of specific methodology.

The literature has provided different methods for policy evaluation (see.e.g. Cashmore *et al.* 2010; Clements *et al.* 2013; Kirby 1995; Maas *et al.* 2012; Muthiga 2009; Sanford and Stroud 2000). In the case of effectiveness evaluation, it is important to know whether the outcome is actually caused by the policy intervention and not by other external factors (Hildén *et al.* 2002; Mickwitz 2002). This is a more complicated process of "linking the effects to the policy" (Mickwitz 2002 82), which requires the development of indicators to track the progress of changes towards the outcome (Bottrill and Pressey 2012). The intervention logic model is a tool that provides the framework for tracking the changes to the policy implementation. It is used for the policy implementation and

evaluation purposes and guides the executives or policy implementers to achieving the policy expected outcomes.

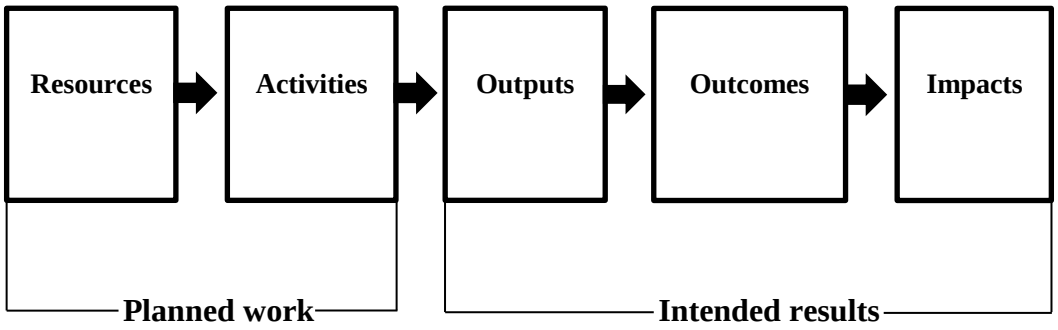


Figure 1: Intervention logic model. (W.K. Kellogg Foundation 2004). Diagram used with the permission of the W.K. Kellogg Foundation

The articles by Bennear and Coglianese (2005); Jacobson (2010); Margoluis *et al.* (2009); McLaughlin and Jordan (1999) provide other examples of intervention logic model. However, to avoid this very complex process of evaluation this study only deals with the question of whether the goals and/or the objectives are actually achieved or not by investigating the performance of the NBSAP policy. Then it further identifies "key activities that could be improved" (Mickwitz 2002 82). A detailed discussion of effectiveness evaluation is in Chapter Four.

I started work with the Solomon Islands government in 2007, after completing my Bachelor of Science (BSc) at the University of Papua New Guinea (UPNG), in 2006. My workstation then was in Honiara, under the Ministry of Forest, Environment and Conservation (MFEC) and specifically with the Environment and Conservation division. Prior to my employment, the Environment and Conservation division was staffed by only two officers, who were responsible for the administration and functions of the whole division. This was a significant problem and a major setback to the work of the division at that time.

Despite being faced with those challenges, the division had assumed important responsibilities for the government, such as being responsible for the administration of the Environment Act 1998 and the Wildlife Protection and Management Act 1998. However, because of the lack of staff at that time, these two pieces of legislation were only gazetted and implemented in 2008, after ten

years delay. Also the division was a focal point for various multilateral, regional and bilateral agreements including the CBD from which the NBSAP was derived. This will be further discussed in chapter two.

However, soon after my employment, there was a change of government, and the Environment and Conservation division became part of the Ministry of Environment, Conservation and Meteorology (MECM). After going through various government restructurings it is now called the Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM). Despite being faced with various difficulties and challenges, I was given the responsibility of overseeing the national protected areas in the country. In addition, I was also assigned to coordinate the CBD Programme of Work on Protected Areas (PoWPA) and the Protected Areas Act 2010 and its Regulations, which I completed before beginning my study at the University of Waikato. The Protected Areas Act 2010 is now part of the Solomon Islands' law.

The fact that I was not trained and had little experience in this area put me in a particularly awkward position. At times I became very discouraged and considered resigning, but I managed to hold on with the help and support of family and friends, and now I am pleased that I completed the task. The highlight of my employment was the Protected Areas Act 2010 which was the first ever national legislation directly responsible for the establishment of protected areas and the protection of biodiversity in the Solomon Islands. This experience compelled me to undertake environmental planning studies at the University of Waikato and stimulated me to undertake further research in this area.

**Significance of the research**

The Solomon Islands, like other neighbouring Pacific Island nations, had a long history of traditional conservation before the introduction of scientific knowledge and practices. Examples of these practices are taboo sites, where an area is placed out of bounds for exploitation for reasons that may be important to a local tribe. Also, there are other areas that can be accessed only for specific occasions, like major feasts. However, over the last 100 years or so, especially in the wake of the introduction of a capitalistic economic system and Christian religion, modern values and influences have had major impacts on the cultures of the country.

Biodiversity is crucial to the lives of Solomon Islanders, given that the great majority of the population lives in village settings and individuals are mostly engaged in shifting agriculture and traditional fishing practices (Hviding and Baines 1994; Pauku 2009). They only sell surplus production or just a small quantity for income to support the family. The 2011 report of the Central Bank of the Solomon Islands (CBSI) showed that the economy of the Solomon Islands is strongly based on logs, fish, copra, minerals and palm oil and kernels. Both the 2010 and 2011 reports of the CBSI have shown that logs continue to be the main income earner for the Solomon Islands, making up 55 per cent and 46 per cent (Central Bank of the Solomon Islands 2010 23; 2011 26) respectively of commodity exports. The 2011 report also indicated that minerals make up another16 per cent, fish 11 per cent , palm oil and kernel 10 per cent and copra 7 per cent (Central Bank of the Solomon Islands 2011 26). These data have revealed that with the exception of mining, biodiversity is central to the economic prosperity of Solomon Islands.

Unsustainable logging practices coupled with other factors have continued to cause major environmental consequences for biodiversity. According to Pauku (2009), forest cover has decreased from 80 per cent in the 1990s, to 76 per cent in 2009 causing logged areas to lose their biological and ecological value. WWF (2003, as cited in Wein and Chatterton 2005 10) states that the forest in the Solomon Islands is now categorized as among the ten most threatened forest eco-regions in the world. It is important to note that the effects caused by deforestation on land (e.g. erosion and subsequent siltation) may often end up impacting on the marine environment, affecting various marine resources including the coral habitats and their associated biodiversity. As one might not expect, the Solomon Islands is only protecting 0.5 per cent of its land and seascapes (Convention on Biological Diversity 2012; Ministry of Environment Conservation and Meteorology 2009), indicating a weak commitment to the CBD agreement that was ratified in 1995. It was therefore critically important that this research evaluated the NBSAP which is the overarching conservation policy in the Solomon Islands.

**Research questions**

The main objective of this research was to evaluate the effectiveness of conservation planning policy in addressing current and future environmental challenges in the Solomon Islands. The study focused on the goals and objectives and then the identification of the key areas that need to be strengthened.

The following main research question guided the study:

1. Is the conservation planning policy in the Solomon Islands effective in addressing current and future environment-related challenges?

A number of sub-questions helped focus the research. These are listed below:

a. Law enforcement:
    - Are there existing rules or laws used by the community?
    - How are those rules implemented or enforced?
    - Are those rules or laws sufficient to protect the protected area?

b. Threats and constraints:
    - What are the factors the community thinks affect the protected areas' success?
    - What are the threats?
    - How have the threats been addressed?
    - Are the threats being minimised or controlled?

c. Management resources:
    - How was the operation being undertaken in terms of finance?
    - Did the community receive any financial assistance from an NGO or the government?

d. Community outcomes:
    - What are the benefits the community gets from the conservation activity?
    - Why are they engaged in the conservation activity?

e. Conservation outcome:
    - Are the objectives achieved?

**Thesis outline**

This first chapter serves as the introduction and outlines the orientation of the research and therefore introduces the concepts and context of the research. It lays out the background information, the research rationale, the significance of the research, the research questions, and it concludes with the outline of the thesis.

The second chapter provides brief information on the Solomon Islands. This includes the physical geography, climate, political structure, population, economy, the current state of and threats to biodiversity and lastly the overview of conservation planning developments in the Solomon Islands.

The third chapter contains the literature review and the literature cited covers major areas of research from a wide range of sources including academic literature, government policies and reports.

The fourth chapter provides a summary of the methodology of the research. This includes the type of research undertaken, the validation techniques, research methods and design for data collection, ethical considerations, and the research process, from access to the participants to data analysis.

The fifth chapter discusses the results and includes both the primary and secondary data. The chapter discusses the eight themes that have emerged from the analysis of the data.

The sixth chapter is the discussion section of the research. It discusses the results in the context of the literature outlined in Chapter three.

The seventh chapter concludes the main sections of the thesis by reflecting on the research aims and objective. Also it discusses limitations of the research and then provides recommendations for future research.

# Chapter Two: Background on the Solomon Islands

## Introduction

This chapter provides a brief background on the Solomon Islands and its biodiversity. The chapter includes information on physical geography, climate, political structure, population, economy, current status of biodiversity, threats to biodiversity, natural resource management in the Solomon Islands and an alignment of the NBSAP and the CBD Article.

## Physical geography

The Solomon Islands is an archipelago and consists of about 1000 islands in a double chain located on the Pacific's rim of fire between the Pacific, Australian and Asian tectonic plates (Hunnam *et al.* 2001). It is situated north east of Australia stretching about 1600 kilometres from the east of Papua New Guinea (PNG) to the north west of Vanuatu. The easternmost province is Temotu with its islands much closer to the northern end of Vanuatu than to Honiara, and the western islands (Shortland islands) are just a few kilometres from PNG. The six main islands include Guadalcanal (the largest island where Honiara the national capital is located), Malaita, Makira, Isabel, Choiseul and New Georgia. Including other smaller islands, the Solomon Islands has a total land area of approximately 30,407 square kilometres; it has 4, 023 kilometres of coastline and about 0.8 million square kilometres of ocean. The bigger islands are mostly heavily forested and mountainous: rugged with deep internal valleys and many steep valleys descend into the ocean. The islands are surrounded by extensive barrier and fringing reefs and also host one of the world's largest lagoons (the Marovo lagoon). Some islands have expansive plains and active and or dormant volcanoes, low lying coral atolls and human-made islands and also other smaller islands. The main islands have large river systems and deltas. The Solomon Islands is the second largest country in land mass in the South Pacific, behind PNG.


Figure 2: Map of the Solomon Islands. Produced by: Max Oulton

## Climate

The Solomon Islands is a tropical country with ample rain and sun shine right through the year. The average temperature ranges between 27 and 28 degrees celsius. The annual average rainfall and temperature vary across islands and with time. As Figures 3 and 4 shows the average rainfall has decreased but the temperature has increased from 1952 through to 2008.

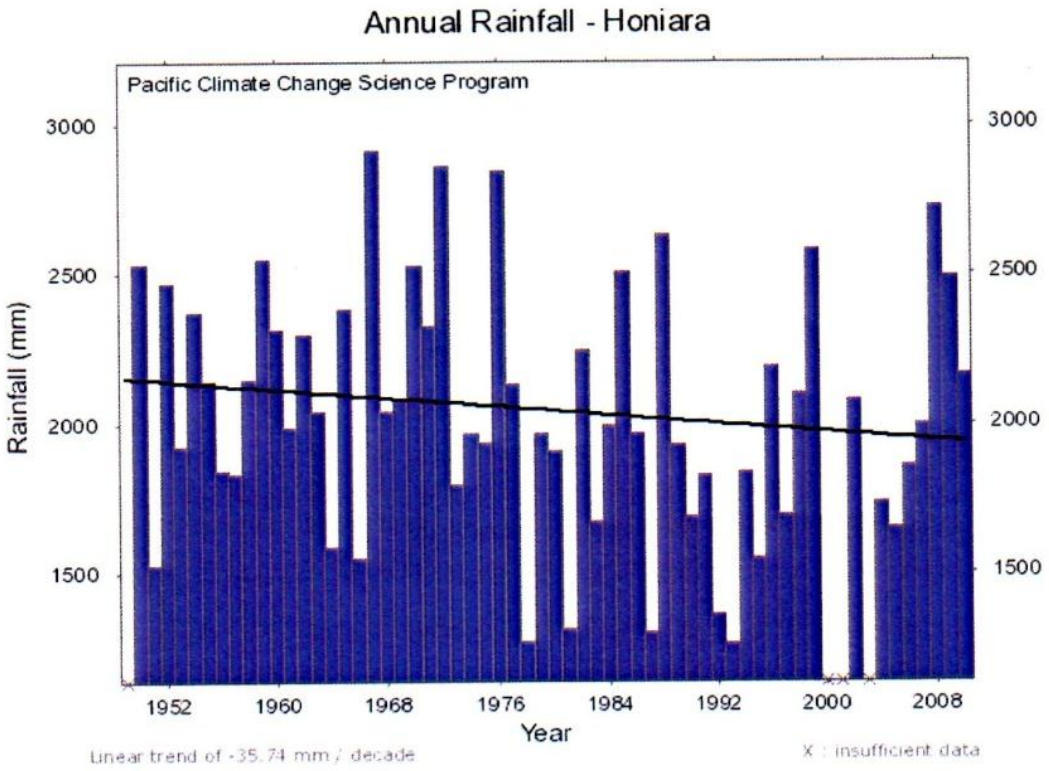


Figure 3: Annual rainfall for Honiara. Graph adapted from (Wickham 2012).

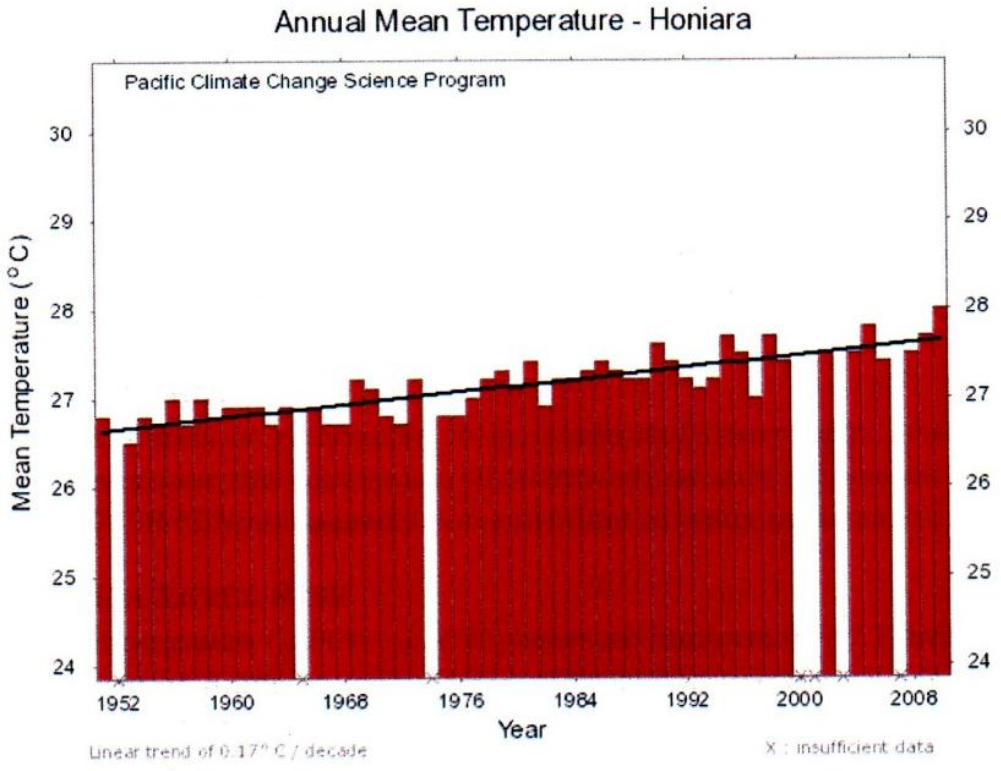


Figure 4: Mean temperature for Honiara. Graph adapted from (Wickham 2012).

Those living on atolls, low coral and volcanic islands have experienced erratic changes of weather patterns mostly as a result of the El Nino[3] and La Nina[4] phenomena. These climate-induced effects impact upon biodiversity and the food, water and health security of the people.

Between December and March is the time for the north-westerly monsoonal winds. May to October is when the south-east trade winds blow and when the Solomon Islands experiences high rainfall. The high rainfall often causes huge damage especially to the larger islands that often experience flash floods and landslides. Flooding and landslides have claimed lives and destroyed villages, food gardens and properties in the Solomon Islands. These are a common phenomenon that the people are faced with and which may increase in frequency and intensity in the future and cause significant production losses for the subsistence and commercial sectors. Hence, these vulnerabilities require effective adaptation strategies as part of the sustainability programme for the Solomon Islands that addresses environmental, social and economic aspects of development.

The Solomon Islands has recently completed its national climate change policy for 2012-2017 which should guide the government's actions on climate change-related issues. This policy is intended to "enhance adaptation, disaster risk reduction and mitigation capacity throughout the Solomon Islands that contributes to increased resilience and achievement of sustainable development goals" (Wickham 2012 13). Apart from this policy, there are other related policies like the agriculture, energy and forestry sector policies that are also relevant to climate change issues.

**Political structure**

The Solomon Islands was declared a British Protectorate in 1893 and remained a colony until 1978 when it gained its political independence. The Solomon Island retained a parliamentary democratic style of government from Britain based on the Westminster system of government where the monarch is the head of state represented by the Governor General. There are two government systems: the

[3] During an El Nino ocean surface water s are warmer than normal and the equatorial divergence is located well to the east of the pacific.
[4] La Nina is when the temperatures are cooler and equatorial divergence occurs across much of the region. Cyclones and high rainfall events are associated with La Nina periods.

national government headed by the Prime Minister and the provincial governments each of which is led by an elected Premier. Currently Solomon Islands has nine provinces.

The national government is comprised of the Legislature, Executive and Judiciary. The Legislature consists of a single chamber National Parliament which has elected Members of Parliament (MP) representing the constituencies. The Cabinet is made up of the Prime Minister as leader, with Cabinet Ministers who head the departments comprised of public servants. The Executive formulates policies and action strategies for implementation by the public servants. Each province is governed by a provincial administration and Council, and the provincial departments are headed by Council ministers. There have been numerous calls to strengthen provincial government administration but not much has been done and most policies are still controlled by the national government.

**Population**

The recent census conducted in 2009 puts the population of the Solomon Islands at 515,870 (Solomon Islands Government 2009 7) with an annual growth rate of 2.6 per cent (Secretariat of the Pacific Community (SPC) 2013b; World Health Organization 2013). A high proportion of the population lives in predominantly customarily owned land in rural areas (World Health Organization 2013).

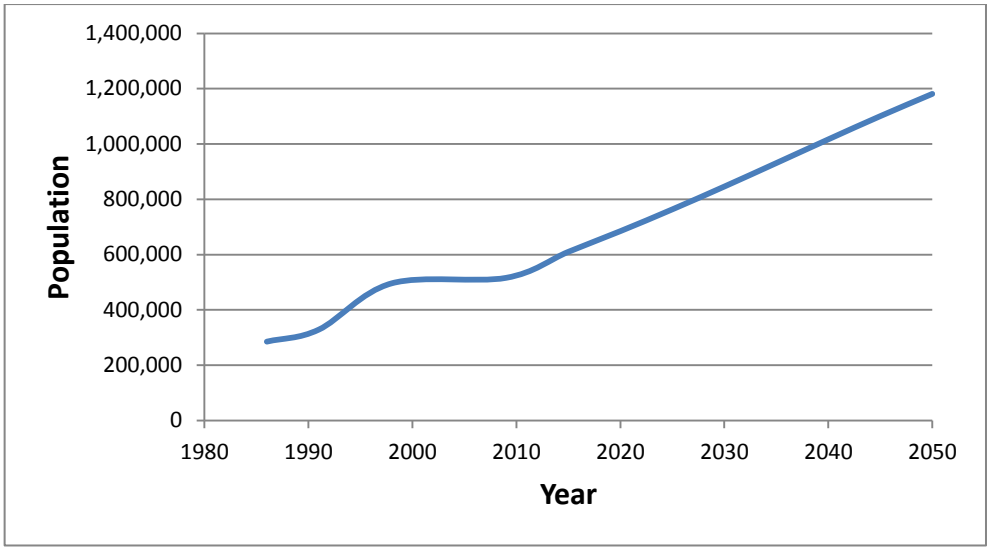


Figure 5: Graph showing recent population growth and projections for the Solomon Islands. Data sources: (Secretariat of the Pacific Community (SPC) 2013b; Solomon Islands Government 2009; South Pacific Regional Environmental Programme (SPREP) 1993)

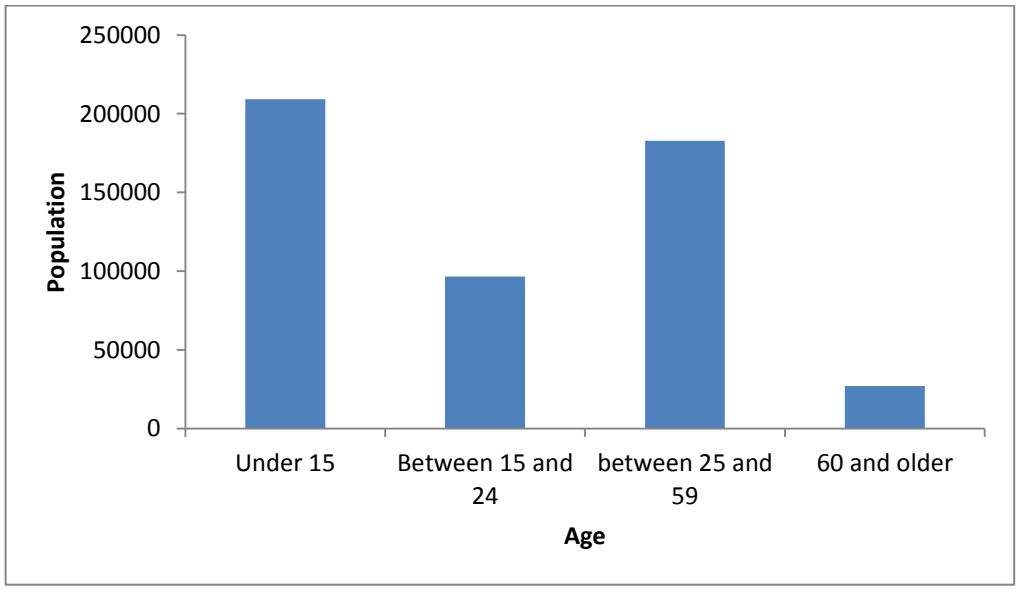


Figure 6: Graph showing population structure of the Solomon Islands. Data source: (Solomon Islands Government 2009)

The Solomon Islands population consists mostly of young people and according to the 2009 census data 41 per cent are under 15 years of age (Figure 6). When this generation of people are mature and reproduce they will quickly increase the population of the Solomon Islands. The ethnic composition is: 93 per cent Melanesian, 4 per cent Polynesian, 1.5 percent Micronesian, 0.8 per cent

European 0.3 per cent Chinese and 0.4 per cent others (Solomon Islands Government 2009) and they speak about 80 different languages (Hviding 2003) . The people are traditionally grouped into tribes, clans and lineages under the leadership of their respective tribal chiefs and what bonds them together is the connection between them and their land. The rural population mostly practices a subsistence way of life and contributes to the national economy through the production of copra, cocoa, timber and marine and fishery resources such as fish, sea cucumber and trochus to name a few. Urban growth is 4.7 per cent per annum and approximately 80 per cent of the urban population live in Honiara. The Solomon Islands is a Christian country and the predominant denominations are: Anglican, Roman Catholic, South Sea Evangelical Church, Seventh Day Adventist Church, United Church, the Christian Fellowship Church and a small population from other Christian and non-Christian churches.

**Economy**

Most exports are based on biodiversity and the critical challenge is to sustainably develop these primary sector industries to alleviate poverty and preserve the stability of society. Other factors, such as improvement of infrastructure, require strengthening of government institutions and policies, and leadership in related sectors. The Solomon Islands' economy has just recovered from the down-turn caused by the ethnic tensions and unrest that occurred from late 1998 until the intervention in 2003 by the Regional Assistance Mission to the Solomon Islands (RAMSI). In 2011 the economy grew by 10.7 per cent, the highest rate in two decades. This growth was possible due to various sectors' contributions including the forestry sector with an exceptional performance of a 4.5 per cent increase in exports followed by mining (1.7 per cent) and the non-forestry and non-mining sectors (agriculture, telecommunication and transport, fisheries and the construction sectors) at 4.5 per cent. Given that economic growth is largely based on an unsustainable logging industry, it remains fragile. The Solomon Islands is a signatory to various trade and economic agreements like the Cotonou Agreement which enables the government to access development assistance from the European Union (EU). Other aid still comes from traditional development partners like Australia, New Zealand and Taiwan (ROC).

## Current state of biodiversity

Biodiversity in the Solomon Islands is very rich but due to the very limited surveys completed the biodiversity taxa available are just the tip of the rich flora and fauna of the Solomon Islands. Biodiversity types are categorized as:

## Terrestrial ecosystems

The Solomon Islands is second to Papua New Guinea in terrestrial biodiversity in the Pacific region (Morrison *et al.* 2007). The rain forests of the Solomon Islands have high endemism of vertebrates, single-island endemics, restricted range mammals, and 69 bird species that are found nowhere else in the world (Olsen *et al.* 2001, as cited in Lipsett-Moore *et al.* 2010). Also, according to Mongabay (2013c) the Solomon Islands has 402 known species of amphibians, birds, mammals and reptiles of which 20.9 per cent are endemic, and 11.7 per cent are threatened. Furthermore, IUCN (2008) stated that the Solomon Islands has 87 species of reptiles along with 1,799 invertebrate, 77 mammalian and 19 amphibian species.

The vegetation types are diverse and include coastal strand forest, riverine forest (including mangroves), lowland forest, montane forest, and non-forest communities including seasonal dry forests and grassland (Kool *et al.* 2010; Lees *et al.* 1990; Morrison *et al.* 2007; Pacific Horizon Consultancy Group 2008; Pikacha 2008; Whitmore 1969). The Solomon Islands' rainforest is ranked in the Global 200 list with the highest category of "globally outstanding" (Olson and Dinerstein 1998). The rainforest has about 4,500 species of plants and is considered one of the world's great centres of plant diversity. Approximately 3,200 species of higher plants have been described, with 57 per cent of palms, 50 per cent of orchids, and 75 per cent of climbing *Pandanus* species considered endemic (Kool *et al.* 2010; Pacific Horizon Consultancy Group 2008). Furthermore, Mongabay (2013c) states, that the Solomon Islands has at least 3,172 species of vascular plants, of which 0.9 per cent are endemic, and that none of its landscape and seascape are protected under IUCN categories[5] I-V.

[5] Protected areas (PAs) categories systems: (Ia) strict nature reserve, (Ib) wilderness area, (II) National park, (III) Natural monument or feature, (IV) Habitat/Species management area, (V) protected landscape/Seascape, (VI) protected area with sustainable natural resources. The PAs

The described biodiversity is just part of the huge and as yet largely uncategorised biodiversity in the Solomon Islands and for precautionary purposes proper management is required for their protection. Apart from other existing legislation and policies such as the Environment Act 1998, Wildlife Protection and Management Act 2010 and Quarantine Act [Cap 106], forest resources in Solomon Islands are largely managed under the 1969 Forestry and Timber Act (renamed the Forest Resources and Timber Utilization Act 1984) with various amendments. The Ministry of Forests and Research (MFR) is responsible for the overall management of forest resources in the Solomon Islands, including implementation of the Forest Resources and Timber Utilization Act 1984. In 1999 the government produced the Forest Act 1999 which should provide for the improved management of forest resources and control of the harvesting of timber. This Act was passed in Parliament but unfortunately not gazetted, which means it cannot be enforced. Therefore, until today, the management of forest resources is largely under the Forest Resources and Timber Utilization Act 1984, despite this being widely criticised as outdated and inapplicable to the modern setting of the Solomon Islands.

**Aquatic and marine ecosystems**

The Solomon Islands is rich in marine biodiversity that supports many people for subsistence and livelihood purposes. About 90 per cent of the population depends on marine resources for protein and subsistence, and the artisanal fisheries' annual production has been estimated at SBD 60 million (Kile 2000). The estimated annual coastal fisheries production in the Solomon Islands is: for subsistence, 10,000 tonnes; and for commercial purposes, 1150 tonnes (McIntyre and Heileman 2005), indicating that most of these coastal fisheries resources are used for local consumption. The bigger islands have rivers that provide habitats for freshwater marine species, estuarine nursery habitats, and water supplies for the human population.

A rapid marine assessment conducted in 2004 by The Nature Conservancy (TNC) identified 485 coral species from 76 genera, across 66 sites, which placed the Solomon Islands in the Coral Triangle region (CTR) that is recognized as a global

categories systems progresses from more strict protection to less protection (International Union for Conservation of Nature (IUCN) 2013).

coral diversity hotspot and the "Amazon of the Seas". The CTR contains the highest diversity of coral reef fishes in the world with 37 per cent (2228) of the world's coral reef fish species (6000) and 56 per cent of the coral reef fish species in the Indo-Pacific region (4050) (Coral Triangle Initiative Secretariat 2009). The Exclusive Economic Zone (EEZ) of the Solomon Islands supports huge stocks of migratory species of tuna such as skip-jack, big eye albacore and yellow fin which are also important contributors to the Solomon Islands' economy. Companies that have fishing fleets in the Solomon Islands are National Fisheries Development (NFD) and Solomon Taiyo Limited (STL). The Solomon Islands is also part of the Western and Central Pacific tuna fisheries which is the world's biggest tuna fishery: in 2011 the total catch was worth US$5.5 billion (Secretariat of the Pacific Community (SPC) 2013a).

Coastal waters of the Solomon Islands have a wide range of macro invertebrate and fish species. The macro invertebrates include nineteen species of sea cucumber, four main species of crayfish, six giant clam species, three species of pearl oyster, trochus, and green snails (Kool *et al.* 2010). The Solomon Islands also has an estimated of 1019 coral reef fish species, many species of marine reptiles (including turtles, marine snakes and a single species of crocodile), and a varied collection of marine mammals including nine species of dolphins, eight species of whales and one species of dugong (Kool *et al.* 2010 ).

**Major biodiversity threats**

Biodiversity and associated ecosystems are now being increasingly threatened by climate change, logging activities and other unsustainable land use and fishing practices, invasive species, mining and natural disasters.

**Logging**

Many development practices have threatened the biodiversity of the Solomon Islands. However, the most prominent threat is from the logging industry which started around 1961 and has accelerated over recent decades. From the 1960s to the early 1980s most of the logging activities exclusively took place on government land or customary lands that were leased by the government. From the 1980s until today the industry has shifted to customary land (which makes up about 87 per cent of the land in the country) (Kabutaulaka 2000). At the moment

the annual rate of log extraction is four times the sustainable extraction level and has not been able to be restored to a sustainable level despite various unsuccessful attempts by successive governments. The logging industry has impacted on the fresh water, terrestrial and marine ecosystems by way of soil erosion, sedimentation in the reef systems and degradation of water quality that often result in the loss of biodiversity.

According to FAO[6] (as cited in Mongabay 2013c) 79.1 per cent or about 2,213,000 ha of the Solomon Islands is forested and contains 182 million metric tonnes of carbon. Within that 49.9 per cent (1,105,000 ha) is classified as primary forest, the most bio-diverse and carbon-dense form of forest and 27,000 ha is planted forest (Mongabay 2013c). Sinclair Knight Merz's article "Solomon Islands national forest resources assessment: 2011 update," indicates that the annual log export volume since 2006 is approximately 1.45 million cubic metres or almost six times the sustainable yield. Further, a forestry officer interviewed indicated that the sustainable rate is 300,000 cubic metres per year and yet the current harvest rate now is four times this figure. Between the years 1990 and 2010 the Solomon Islands lost an average of 5,550 ha per year or a total forest cover of 4.8 per cent (Mongabay 2013c). Undertaking sustainable logging practices in the Solomon Islands is very difficult because of:

> … poor state policies, but also because (i) the land tenure system, and (ii) the logging industry, produce a culture characterised by the rapid monetisation of certain sectors of society, increasing corruption at the political level, and the emergence of a new elite group in the villages. This new elite group is nearly always financed by logging money and backed by logging companies (Kabutaulaka 2000 89).

[6] Food and Agriculture Organization of the United Nations

Figure 7: Logs harvested and ready for shipment (left), and a river polluted by soil sediments caused by logging activities (right). Photos source: Author.

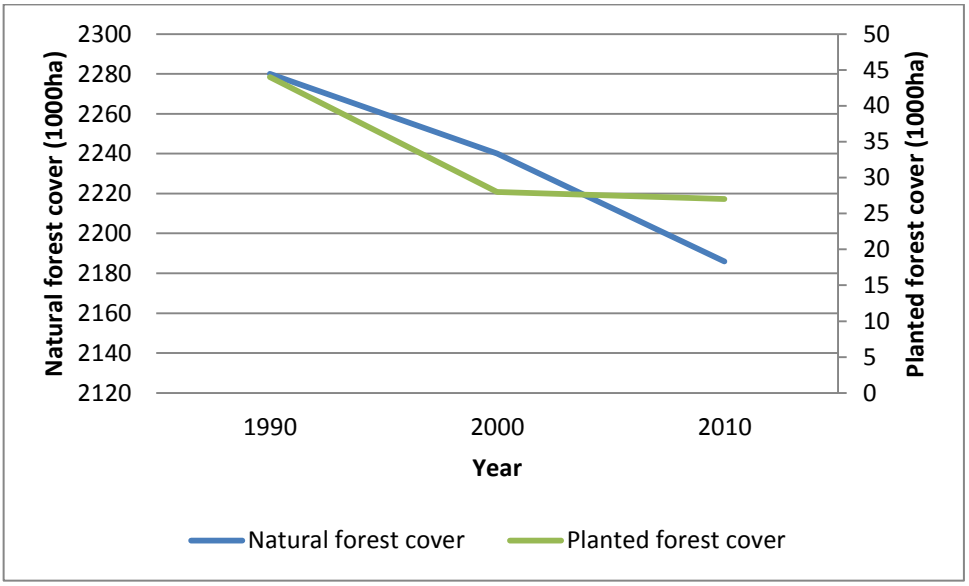


Figure 8: Graph showing trends in forest cover in the Solomon Islands. Data source: (Mongabay 2013a)

Sustainable management of forest resources is very limited given that the reported volume of logs harvested has been increasing over the years and, as described, exceeds the sustainable rate by a considerable margin. Figure 8 shows the decreasing trends of both natural and planted forest cover in the Solomon Islands. This reflects the heavy reliance on the logging industry by the government,

coupled with other factors such as corruption. Therefore, considering the trends in the development of forest policy indicates that most of the decisions are based on politics and economy priority rather than on scientific evidence.

**Unsustainable land use and fishing practices**

Unsustainable land use practices such as large and small-scale plantations (oil palm, coconut, cocoa and coffee), gardening and human settlements are among the immediate threats to biodiversity in Solomon Islands. These threats mainly result from increased of population and changing economic demands.

Most of the population live in the coastal areas, depending on fish and marine resources for protein and also to meet their economic needs. According to McIntyre and Heileman (2005 33) 89.7 per cent of the annual coastal fisheries production in the Solomon Islands is for subsistence purposes and only 10.3 per cent is commercial. The use of explosives and poisonous substances to kill or capture fish often indirectly destroys other marine species and has negative impacts on the coral and the reef ecosystems.

**Alien invasive species**

Alien invasive species have been highlighted in many national and international reports as one of the major threats to biodiversity in the Solomon Islands. Terrestrial and aquatic invasive alien species, though not well documented, are becoming a threat to the Solomon Islands' environment and biodiversity through modification of local habitats and their ecological relationships and biodiversity. The Pacific Horizon Consultancy group (2008) reported on invasive alien species of plants, micro-organisms and aquatic vertebrates and invertebrates. These species have been brought in for agricultural, forestry and ornamental purposes but now are causing problems to biodiversity in the Solomon Islands. Fasi (2009 ) describes 20 invasive ant species found in the Solomon Islands that are now threatening biodiversity. One emerging issue now confronting the Solomon Islands is the threat set off by the African giant snail, especially to the agricultural sector (Pacific Horizon Consultancy Group 2008; Sherley 2000; Solomon Islands Government 2011). The Solomon Islands has been doing all it can to avert the spread of this snail, but at the moment these efforts have shown little success. This species not only poses a threat to the agricultural industry but also to the

livelihoods and survival of people who mostly depend on biodiversity. Already there is evidence of increasing destruction caused by this snail to food crops in many parts of Honiara.

**Climate change and natural disaster**

The Solomon Islands has experienced a variety of extreme weather events that are probably caused by climate change. It is possible that sea-level rise is occurring and other climate extremes are happening more frequently. An example is the experiences of the outer islands atolls, including Ontong Java, that now have their water sources and gardens being intruded on by salt water. Also, there are places experiencing water sources drying up completely or at certain times of the year (Pacific Horizon Consultancy Group 2008; Solomon Islands Government 2011). Furthermore, climate change is a threat to the fresh water and estuary fisheries in the Solomon Islands by way of changes in water temperature, river flows, salinity, dissolved oxygen and turbidity (Gehrke *et al.* 2011). Burke (2012) argues that by the 2030s all reefs in the coral triangle will be threatened by ocean warming and acidification that in turn will cause thermal stress and coral bleaching and eventually may kill corals and other associated species.

Figure 9: Water source for the Naro community which is vulnerable to saltwater intrusion and drying up during dry season. Photo source: author.

The Solomon Islands is prone to natural disasters. Examples are the earthquake and tsunami which struck the western Solomon Islands in 2007 with 52 people losing their lives. Reefs were destroyed and in certain areas on the island of Ranoga reefs were uplifted, exposing the corals to the air (Burke 2012). The most recent disaster happened in February this year (2013), in the Temotu province, in which several people died, and coral reefs and sea grasses which provide habitat and nursery grounds for fish were also destroyed.

**Mining**

Mining is a significant potential threat in the Solomon Islands. At the moment Gold Ridge Company is the only mining company operating in the Solomon Islands but considering the vast number of prospecting activities in various parts of the country mining is likely to expand. Gold Ridge mine is an open pit which involves removal of the top soil and so affects the biodiversity on it (Pacific Horizon Consultancy Group 2008). Mining waste will be a huge problem given that the government does not have the necessary capacity to monitor big

developments like this. The effects of chemical wastes released from mining activities to fresh water systems and marine and terrestrial ecosystems pose a major threat to biodiversity. Sumitomo Company has discovered a viable deposit of nickel in certain areas of Isabel and Choiseul provinces. The company is now collaborating with the government of the Solomon Islands for a possible full-scale mining operation.

**Conservation planning in the Solomon Islands**

In the quest to protect and sustainably manage the environment and its biodiversity, successive governments have introduced legislation and policies. This commitment was reflected in 1990 when the Solomon Islands ratified the SPREP convention, and in 1992 the Solomon Islands signed Agenda 21, the United Nations program of action for sustainable development. In 1993 the Solomon Islands adopted the National Environmental Management Strategy (NEMS). An important development happened in 1995, when the Solomon Islands ratified the CBD which means that it was committed to having 10 per cent of its land in protected areas by 2010 and another 10 per cent of its marine area by 2012. However, a 2009 report showed that Solomon Islands was only protecting 0.5 per cent of its land and sea scape areas (Ministry of Environment Conservation and Meteorology 2009) and there was no guarantee it would achieve its targets.

The Solomon Islands NBSAP was developed in 2010 as a response to its commitment to the CBD. The NBSAP outlines a framework to ensure the sustainability of biodiversity in the Solomon Islands and is coordinated by the MECDM (NBSAP will be further discussed in the next section). Despite not achieving the NBSAP targets the development of the NBSAP shows an attempt by the Solomon Islands government at efficient and effective conservation planning. Conservation planning by definition is the:

> process of locating, configuring, implementing and maintaining areas that are managed to promote the persistence of biodiversity and other natural values…To be effective, however, conservation planning must deal better with two types of change. First, biodiversity is not static in time or space but generated and maintained by natural processes. Second, humans are altering the planet in diverse ways at ever faster rates (Pressey *et al.* 2007 583).

The constitution is the supreme law in the Solomon Islands and it empowers the National Parliament to make laws. There are various National Acts of Parliament and there are also Provincial Ordinances which incorporate provisions relating to conservation planning (see Chapter 1, the rationale section) but they, however, are not sufficient to cater for the biodiversity issues that are being faced. The attempt to involve many sectors in planning for biodiversity protection in the Solomon Islands shows the breath of the nature of conservation issues in the Solomon Islands (this will be discussed in more detail in Chapter 6). One example is that 83 per cent of provincial land is customarily owned by various local tribes (Wairiu 2007). Hence, they should effectively participate in the management of their own land resources.

**Solomon Islands National Biodiversity Strategy and Action Plan (NBSAP)**

The NBSAP is the principal instrument for the implementation of the CBD agreement in the Solomon Islands. The NBSAP should align and strengthen the protection of biodiversity in the Solomon Islands to ensure that its implementation is supported by other cross cutting policies. It has the following vision and mission.

**Vision:**

"Solomon Islands' unique and endemic biodiversity will remain our natural and cultural identity. Make others know and see our pride in protecting and conserving our biodiversity, sustainably managed for the better livelihood of our nation now and for the future" (Ministry of Environment Conservation and Meteorology 2009 27).

**Mission:**

"To protect, conserve and promote Solomon Islands unique and endemic biodiversity through sustainable management and utilization for better livelihood and prosperity of all Solomon Islanders" (Ministry of Environment Conservation and Meteorology 2009 27).

Article 6 of the CBD requires Solomon Islands to:

(a) Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes which shall reflect, inter alia, the measures set out in this convention..: and
(b) Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies (United Nations 1992 5).

Article 6 (b) is vital for the effective implementation of the NBSAP policy. However, this is very complex in the Solomon Islands' context given the fragmented nature of its government institutions. Therefore, it requires cross-sector assessment of biodiversity, information sharing and good leadership that provides proper coordination among the sectors or agencies[7]. Articles 10 (a) requires integration of sustainable use and conservation of biodiversity into the national policies, and Article 26 requires Solomon Islands as an individual party to the CBD to produce national reports on its actions regarding implementation on the CBD (Secretariat of the Convention on Biological Diversity 2013).

The process of integrating conservation into the decision-making across all sectors of the economy and policy making framework, is very difficult to achieve in the NBSAP implementation, but it is an obligation as Solomon Islands is a party to the CBD (Secretariat of the Convention on Biological Diversity 2013).

**Overview of the NBSAP and CBD alignment**

The Solomon Islands' NBSAP was initially initiated in 1996 but unfortunately was not completed due to various challenges it faced. Nevertheless, the experiences acquired and the documents produced helped complete the current version of the NBSAP policy. The current version of the NBSAP has 12 themes with related goals and objectives (Ministry of Environment Conservation and Meteorology 2009). Table 1 provides an outline of the NBSAP and its alignment with the CBD Article.

[7] Chapter 6 provides detailed discussions of the NBSAP policy integration.

Table 1: Outline of the NBSAP and CBD Article alignment

| NBSAP themes | NBSAP strategy goals | CBD Articles and sections |
|---|---|---|
| **1: Mainstreaming biodiversity** | Ensure the commitment of Solomon Islands government and stakeholders to conserving and managing biodiversity is integrated into national legislation, sectoral plans, policies and programs | Article 6 (b) |
| **2: Species conservation** | Unique plant and animal species are given appropriate levels of protection and are managed sustainably with a better informed public of the significance of the species | Article 8 (b) (c) (d) (f), 9 (b) (c) and 13 (a) (b) |
| **3: Protected area system** | Solomon Islands is fully committed to a national PA system by developing appropriate legislation | Article 8 (b) (c) (d) (f) |
| **4: Management of invasive species and genetically modified organisms** | To ensure the biodiversity of Solomon Islands is protected from introduced species through legislation, monitoring, research and awareness | Article 8 (h), 9 (b) (c) |
| **5: Benefit sharing and access to genetic resources** | To ensure that access to genetic resources are properly managed and controlled as well as the benefits from the use of our genetic resources are fairly shared through appropriate legislation, ordinances and access protocols. | Article 15 (1) (2) (4) (5) (6) (7) |
| **6: Financial resources** | Sustainable financing mechanisms are in place so that biodiversity is effectively managed for long term sustainability of the environment. | Article 20 (1) (2), 21 (4) |
| **7: Human resources and capacity building** | Empower stakeholders to effectively participate in the conservation and sustainable use of biological resources | Article 13 (a) (b), 18 (4) |
| **8: Research, monitoring and information sharing** | To ensure that people, resource owners and the public are better informed of the importance and values of biodiversity through research, with improved monitoring systems for information sharing | Article 17 (1), 18 (1) (20 (4) (5) |
| **9: Agro biodiversity** | To ensure that agro-biodiversity species of Solomon Islands are conserved and sustainably managed with a better informed public of the importance of agro biodiversity | Article 8 (a) (b) (c) (f) |

| | | |
|---|---|---|
| **10: Climate change** | To ensure that pressures, impacts and mitigation measures of climate change are adequately supported and addressed to conserve the country's biodiversity | Article 6 (b) |
| **11: Waste management** | To effectively manage wastes to minimize or prevent negative impacts and non-biodegradable waste on the biodiversity of Solomon Islands. | Outside of CBD Article |
| **12: Alternative energy use** | Promote alternative sources for all Solomon Islanders which will reduce impact on biodiversity | Outside of CBD Article |

**Summary**

The Solomon Islands is an island country rich in biodiversity. Most people live in rural village settings practicing subsistence life styles and depend very heavily on biodiversity. There are various threats to biodiversity in the Solomon Islands which include logging, unsustainable land use and fishing practices, alien invasive species, climate change and natural disasters, and mining. In response to these threats the Solomon Islands has over the years developed various policies and is party to many international and regional conventions and agreements. The most significant international agreement that the Solomon Islands is party to, especially for biodiversity conservation and protection, is the CBD. This agreement provides for the development of the NBSAP, which the Solomon Islands developed and implemented in 2009. Despite most of the goals of the NBSAP not having been achieved, it is an important document that can be further reviewed and from which experience can be gained to further improve conservation planning programmes.

# Chapter Three: Literature Review

## Introduction

Conservation planning has been getting increased attention at the political and community level in recent years. This chapter explores the basis of this interest by reviewing literature relating to conservation planning and its relationship with the NBSAP. There are three major themes to this chapter: (1) sustainability; this theme discusses the development of the concept of sustainability, weak and strong sustainability and how they relate to natural resource management, and measurement of sustainability; (2) conservation and development; this includes human practices and their effects on conservation initiatives, and further discusses how conservation and development can be successfully integrated to enable protection of biodiversity while still considering human needs, and (3) community-based natural resource management; this theme discusses the use of traditional management systems to conserve natural resources in comparison with the government management system. It further considers the effectiveness of community-based systems in the management of natural resources.

## Sustainability

The growing recognition of environmental problems has led to the establishment of international conventions and treaties which ignite political engagements and the establishment of social movements. This is because of the global realization of the adverse environmental effects of patterns of production and consumption, resource exploitation and industrialization, pollution and population growth. Hence, the international community has come to realize the need for sustainable management of natural resource. This idea grew out of the "limits to growth" debate during the 1960s and 1970s, and is exemplified by the Club of Rome's report (Meadows *et al.* 1972). This report challenged the traditional assumption that the natural environment would continue to provide an unlimited resource for the human population and economic growth, and could assimilate ever growing quantities of waste and pollution products from industrial society (Meadows *et al.* 1972).

The international discussion on sustainability started in1972, around the same period as the "limits to growth" debate. The United Nations Conference on the Human Environment was held in Stockholm and focussed on the link between environmental problems and economic development. A major development happened in 1987 when the United Nations World Commission on Environment and Development (WCED) produced a report entitled "Our Common Future", commonly referred as the "Brundtland Report", which connects environmental protection issues to global economic growth and development (Sitarz 1993). In 1992 the United Nations Conference on the Environment and Development (UNCED) held the Earth Summit in Rio de Janiero, Brazil. In this conference, environmental protection was regarded as an essential partner to economic growth. Actions needed to accomplish these objectives are contained in documents such as the Rio Declaration and Agenda 21, which set out core goals for global sustainable development. A follow-up to Earth Summit was held in June 1997 in New York, and assessed progress on the commitments made at Rio in 1992. Then in 2002 the Rio plus 10 conference on Environment and Development was held in Johannesburg, South Africa, to provide an assessment on issues of sustainable endorsement at the Rio Summit 10 years earlier. The latest conference was again held in Rio de Janeiro, Brazil, for assessment of the 20 years progress since Rio 1992, and also for renewal of the commitments of party nations. Progress on the Rio commitments was discussed. At a global level it was revealed that in terms of conservation and sustainable utilization of plants and genetic resources there had been some progress, but the most restricting factor was lack of funding (United Nations Conference on Sustainable Development Secretariat 2012).

Sustainable development provides the conditions for achieving sustainability. Sustainable development has different meanings but the most used definition is provided in the report 'Our Common Future' by WCED in 1997 which describes it as "…development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development 1987 43). The aim of sustainable development is "to contribute to the protection and utilization of resources by people within the regenerative capacity of the earth…" (Ghosh *et al.* 2006 263). In this regard, sustainable development provides a broader, more integrated notion of the

environment-development dilemma. It regards growth and wise management of environment as complementary aspects of effective human development, and the focal concerns of this definition are human needs and the idea of limitations.

Ecologically Sustainable Development (ESD) has four dimensions: economic, environmental, social and institutional systems (Diesendorf and Hamilton 1997; Harding 2006; International Union for Conservation of Nature (IUCN) *et al.* 1991; World Commission on Environment and Development 1987). ESD has principles which include conservation of biodiversity and ecological integrity, conservation of cultural diversity, improvement of individual and community wellbeing, intergenerational equity, intra-generational (social) equity, stakeholders' participation in decision making, and recognition of the 'precautionary principle' (Diesendorf and Hamilton 1997; Harding 2006). This approach is important especially in the Pacific Island countries where the majority of the communities practice mixed subsistence and commercial lifestyles, by continued harvesting of natural resources (terrestrial and marine) for their daily existence and as a source of income. Therefore, sustainability initiatives are needed to address the limitations on these natural resources in order to continue to provide for the community.

Sustainability was originally related to biological and physical resources but now has been extended to include "social and economic goals" and it "aims at meeting a broad range of human needs and aspirations, including health, literacy, and political freedom and as well as purely material needs" (Farrell and Hart 1998 6). These three goals are "interdependent, integral parts of a single system, and should be treated or considered together" (United Nations Conference on Environment and Development Secretariat 2012 10). There is no single meaning of sustainability, it is viewed differently by profession, life style, gender , cultural background and academic disciplines (Glaser *et al.* 2012) but in relation to the biological and physical resources it commonly means the goal "of improving the quality of human life while living within the carrying capacity of supporting ecosystems" (Farrell and Hart 1998 7). Sustainability in this sense, according to Vig and Kraft (2012), is not only a societal objective but a long-term focused objective that captures economic, social and environmental concepts. On the other hand, sustainable development calls for "openness, communication, broad

participation, iterative processes, sufficient institutional capacity and the need for a coherent framework" (Wright and Kurian 2010 400). Sustainable development in this case is a framework for achieving sustainability (Harding 2006).

Sustainability is defined and implemented differently by individuals to achieve their own needs and may disadvantage others in sustainably meeting their needs and livelihood (Redclift 2005). In the Solomon Islands context, factors that ensure sustainability of rural livelihoods include: widespread subsistence livelihood skills, a good physical environment, strong social networks, community cohesion and cultural strengths and adequate/appropriate physical infrastructure. These factors are important in community biodiversity conservation programmes in the Solomon Islands, given that more than 80 per cent of the people depend directly on biodiversity for their survival and livelihood.

Sustainability is commonly categorized as either weak or strong, as follows:

> Weak environmental sustainability… derives from a perception that welfare is not normally dependent on a specific form of capital and can be maintained by substituting manufactured for natural capital, though with exceptions.
>
> Strong sustainability… derives from a different perception that substitutability of manufactured for natural capital is seriously limited by such environmental characteristics as irreversibility, uncertainty and the existence of 'critical' components of natural capital, which make a unique contribution to welfare. An even greater importance is placed on natural capital by those who regard it in many instances as a complement to man-made capital (Daly 1991, as cited in Ekins *et al.* 2003 168)).

The idea behind the paradigm of weak sustainability implies an economic value principle. Weak sustainability does not differentiate the forms of capital (such as natural capital e.g. trees, water, land and habitat, human-made capital such as houses and labour capital) and the benefits they generate. All these capitals with their benefits are considered the same (Ekins *et al.* 2003). Weak sustainability suggests that if the quantity of natural capital is decreasing through the process of creating human-made capital, total capital can be maintained and this still fulfils the criteria of sustainability (Málovics *et al.* 2008).

Strong sustainability applies the principle of environmental conservation and requires that the properties of the physical environment must be maintained. The

stock of natural capital remains constant over-time (Costanza 1991, as cited in Hediger 2006). It does not imply preservation of all stocks, especially non-renewable resources such as minerals. However, it calls for actions such as regeneration of renewable resources (e.g. forest and marine resources) and recycling of waste materials. And these types of actions require "investment in" areas like "technology processes and human capital and improvement of institutions and social organizations" (Hediger 1999 1125).

Strong sustainability recognises that while destruction of man-made capital is rarely irreversible, the loss of natural capital via "species extinction, climate change or even the combustion of fossil fuel" (Ekins *et al.* 2003 169) is indisputably irreversible. Ekins *et al.* (2003) further argues that even the manufactured capital requires natural capital for its production and this means that there can never be a complete substitute for resources. But according to Redclift (2005 223) sustainability is "no longer primarily a question of maintaining, and enhancing, existing environmental resources; it is about engineering new ones". It is referred as 'post-sustainability discourse', and is extra-territorial in nature (Redclift 2005).

Sustainability has challenges which include:

> Growth in human populations and prosperity translates into increased conversion of natural ecosystems to agricultural, industrial, or residential use, but also into increased demand for ecosystem inputs, such as fresh water, fiber, and soil fertility, as well as increased pressure on the capacity of natural ecosystems to assimilate our waste, including air and water pollution as well as solid waste… Maintaining ecosystems, whether through protected areas or through some other mechanism, requires expenditure of resources… (Pagiola *et al.* 2004 1).

Tropical countries (including the Solomon Islands) have high levels of biodiversity but unfortunately protecting their biodiversity has often been hindered by many pressures. Examples are: (1) weakness in government institutions which have policies that encourage deforestation, (2) corruption is no longer considered a bad practice and has become part of the bureaucracy, and (3) because of poverty people are forced into doing unsustainable activities for survival (Du Toit *et al.* 2004 1). Political corruption often limits the success of conservation projects by reducing effective funding levels and distorting priorities.

(Smith *et al.* 2003). Hence there is a need for the development and implementation of policies that reduce effects of political corruption[8]. It is very difficult to destroy corruption (Larmour 1997) and one action required is scaling up or empowering of institutions like the offices of the Ombudsman, Leadership Code Commission and the Public Prosecutor.

The reason for protecting biodiversity is noteworthy. The world's population was 6.1 billion in 2000, 6.6 billion in 2007, 6.8 billion in 2009 and 7.06 billion in 2012 and by 2050 the population is likely to be 9.3 billion (Population Reference Bureau 2013). This growth has caused more lands to be cleared in order to cater for the growth and building of new cities, towns and other settlements. In addition, the gap between rich and poor is widening world-wide and it calls for players like governments and other institutions to develop integrated policies that cater for economic development and protection of biodiversity as well as the social benefits that are important for sustainability advancement. Poverty, food insecurity, high death rates and high birth rates are still big problems in poor developing countries including the Solomon Islands.

> The pace of growth poses enormous challenges for many of the poorest countries, which lack the resources not only to keep up with demand for infrastructure, basic health and education services and job opportunities for the rising number of young people, but also to adapt to climate change (United Nations Population Fund 2011 6).

The number of people "without satisfactory sanitation in the developing countries rose by nearly 300 million in the 1980s" and "about 1-1.5 billion people are affected by water-related diseases…" (Beckerman 1992 489). These experiences are often found in the more populated areas where the forest and the natural ecosystems of the area have been destroyed.

**Sustainability measurement**

Feedback on policies' progress and conversations amongst the stakeholders are essential processes in order to learn, then repair and redesign the policy or systems and are part of the evaluation process for the measurement and analysis of factors that are causing policies' success or failure. This involves careful design of the

[8] Smith *et al.* 2003 explains that political corruption means the unlawful use of public office for private gain.

research in order to identify factors that are actually caused by the policy and not by other factors. Agenda 21 is sustainability's blue print, and chapter 40 acknowledges the importance of indicators to the achievement of sustainable development and consequently the need to call on all countries to develop sustainable development indicators.

> Methods for assessing interactions between different sectoral environmental, demographic, social and developmental parameters are not sufficiently developed or applied. Indicators of sustainable development need to be developed to provide solid bases for decision-making at all levels and to contribute to a self-regulating sustainability of integrated environment and development systems (United Nations Conference on Environment and Development Secretariat 1992, section 40.44).

There are different types of indicators and they are often developed for specific reasons, but in general terms they mean "signs or signals of complex events and systems. They are bits of information pointing to characteristics of systems or highlighting what is happening" (Hardi and Barg 1997 8). Furthermore, sustainability indicator is a "deceptively simple policy tool. It captures and measures a particular aspect of sustainability policy in an easily communicated form, allowing monitoring and the subsequent 'steering' of policy, whether by internal management or external political pressure" (Rydin *et al.* 2003 581). Sustainability indictors "… show the links between social, environmental and economic goals to better understand how to achieve economic growth that is in harmony with-rather than at the expense of-the natural systems within which we live" (Farrell and Hart 1998 30).

> Indicators are multi-dimensional, multi-disciplinary indices with sub-themes developed with care to evaluate and measure the status of an area in terms of progress towards sustainability. They serve as experiential, quantitative and qualitative bases for the assessments of policy performance and are able to indicate a desired change in policy direction, if required. Indicators also give the possibility of finding new and valuable correlations, thus providing a basis for future planning actions (Ghosh *et al.* 2006 264).

Indicators can be quantitative or qualitative and can be classified into two broad types: (1) system indicators, and (2) performance indicators (Ehler 2003; Hardi and Barg 1997; Innes and Booher 1999; Innes and Booher 2000).

> System indicators are summary ‘of individual measurements for different issues characteristic of the ecosystem and the human/social system and communicate the most relevant information to decision makers… . Performance indicators are tools for comparison, incorporating a descriptive indicator and a reference value or a policy target. They provide decision makers with information on how they are doing with regard to local, national or international goals, targets and objectives (UNEP and DPCSD 1995, as cited in Hardi and Barg 1997 9).

Performance indicators[9] assist the policy maker or implementers of the policy to understand the outcome of implementation and relationships between the policy’s activities (Innes and Booher 1999). The policy implementers, or any interested party, will be able to use the indicators to identify if the policy is implemented or moving in the right direction or not, and if specific actions are needed for change in policy strategies or implementation processes.

The NBSAP is a strategic plan and according to Brody and Highfield (2005) a strategic plan should be flexible in its implementation. In a strategic plan “deviation from a plan’s original design is a normal consequence of policy implementation… policy statements are meant to undergo modification in response to uncertain political and socioeconomic conditions” (Brody and Highfield 2005 160; see also Faludi 1997)[10] and performance indicators are relevant in order to measure change that may take place.

In the Solomon Islands the current weak regulatory approaches and concern by the government with short term economic growth have failed to effectively address the principle of sustainability quickly enough to offset environmental or biodiversity impacts. Sustainability has not progressed in the Solomon Islands in a coordinated and partnership approach over the past years. Successive governments have largely ignored the Agenda 21 commitment and have not provided the necessary leadership to guide and support the sustainable development goals.

**Conservation and development**

The relationship between conservation and development has been very contentious over the years, but what most people should agree on is that human

[9] Examples of performance indicators are provided in the articles: (Lane 2006); and (Ehler 2003)
[10] Conformance evaluation is provided in article: (Ruming 2012)

beings need nature or biodiversity. Some common examples are "… provision of ecological services such as climate regulation, soil formation, and nutrient cycling; and from direct harvest of wild species for food, fuel, fibres, and pharmaceuticals. In the face of increasing human pressures on the environment, these benefits should act as powerful incentives to conserve nature, yet evaluating them has proved difficult because they are mostly not captured by conventional, market-based economic activity and analysis" (Balmford *et al.* 2002 50).

The number of protected areas is increasing worldwide and since 1911 has increased by more than 120,000 (World Database on Protected Areas 2013). However, in 2002 the world's terrestrial and marine reserves covered only 7.9 per cent and 0.5 per cent respectively of the Earth's land and sea area, already below the minimum safe standard considered necessary for the task of maintaining biodiversity (Balmford *et al.* 2002 952). Therefore both marine and terrestrial biodiversity now face huge threats despite being important sources of food, income and ecosystem services to billions of people globally.

More than 60 per cent of the world's reefs are under immediate and direct threats (Burke *et al.* 2011). Burke *et al* (2011) go on to say that the threats may include "… overfishing, coastal development, agricultural runoff, and shipping. In addition, the global threat of climate change has begun to compound these more local threats to coral reefs in multiple ways. Warming seas have already caused wide -spread damage to reefs…" (Burke *et al.* 2011 1; see also Jones *et al.* 2004; Veron *et al.* 2009). The CTR[11] has "76 per cent of all coral species, 37 per cent of all coral reef fish species, 53 per cent of the world's coral reefs, the greatest extent of mangrove forest in the world, and spawning and juvenile growth areas for the world's largest tuna fishery" (Coral Triangle Initiative Secretariat 2009 5). According to (Burke 2012) in the CTR:

> More than 85 per cent of reefs are rated as threatened, with nearly 45 per cent at high or very high risk. Overfishing, including destructive fishing, is the most pervasive and damaging threat, affecting nearly 85 per cent of reefs. Destructive fishing-the use of explosives and poisons to kill or capture fish-is common throughout much of the Coral

[11] Region along the equator between Western pacific and Indian Ocean, covering all or parts of the six countries: Indonesia, Malaysia, Papua New Guinea, the Philippines, the Solomon Islands and Timor-Leste.

> Triangle Region…Threats emanating from land-based sources contribute significantly to overall threat as well. Watershed-based pollution threatens 45 per cent of the region's reefs, while coastal development threatens more than 30 per cent (Burke 2012 13; see also McIintyre and Heileman 2005).

Even the water systems are facing problems, "… whether they be giant rivers, streams, or oxbow lakes, are almost as rich in animal species as the rainforests that surround them. But they, too, are increasingly threatened by human activities, including pollution, siltation resulting from deforestation, hydroelectric projects, and over-harvesting of resident species" (Mongabay 2013b).

In the last 8000 years about 45 per cent of the earth's original forest cover has disappeared, and annually an estimated 13 million hectares is lost to deforestation (Secretariat of the Convention on Biological Diversity 2010). For tropical forest, the FAO estimates that "10.4 million hectares… were permanently destroyed each year in the period from 2000 to 2005, an increase since the 1990-2000 period, when around 10.16 million hectares of forest were lost annually. Among primary forests, annual deforestation rose to 6.26 million hectares from 5.41 million hectares in the same period" (Mongabay 2013a; also see Secretariate of the Convention on Biological Diversity 2011). The biodiversity level is often higher in minimally disturbed or undisturbed forest and decreases in disturbed areas (Gibson *et al.* 2011). Yet, according to the Collaborative Partnership on Forests (2012), primary forest[12] is being lost at the rate of 0.37 per cent annually. The author goes on to say that this loss of forest not only contributes to the level of greenhouse gas emissions but also to the reduction of biodiversity and the cultural values that people associate with biodiversity.

Programmes that only consider economic goals in reality constrain the sustainability of environmental resources. Altieri and Masera (1993 94) state that many conventional developments succeeded at the expense of "deforestation, soil, industrial pollution, pesticide contamination and the loss of biodiversity (including genetic erosion)… and are not reflected in the economic indicators. … there is no clear system to account for the environmental costs of such development models". Altieri and Masera (1993) further argued that this

[12] This means old growth forest that experiences little or no human disturbance.

development is limited in ability to effectively promote equitable and sustainable development and referred to it as 'growth with poverty'.

Despite international and domestic support, poverty, food scarcity, malnutrition, health deterioration and environmental degradation continues to increase (Altieri and Masera 1993) and may result from differences in "cultural, economic, land ownership and social factors…" (Keppel *et al.* 2012a 256). Institutional weakness is another factor that may contribute to the destruction of biodiversity (Du Toit *et al.* 2004 1).

Any strategy for achieving Sustainable Rural Development (SRD) must address the principle of development priorities which considers "… reduction of poverty, adequate food supply and sufficiency, natural resource conservation and empowerment of local communities and the effective participation of the rural poor in the development process" (Altieri and Masera 1993 95). In this regard, knowledge of the environment and the ecological processes (Altieri and Yurjevic 1989) must be made available to the stakeholders involved with conservation activities.

In conservation and development related projects, socioeconomic goals often take priority (Arambiza and Painter 2006) with resulting neglect of the implementation of conservation activities. Another problem arises when the objectives of conservation and development activities contradict each other. This may risk achieving either only one, or neither of them. Foley *et al.* (2005) argued that it is really the challenge of "managing trade-offs between immediate human needs and maintaining the capacity of the biosphere to provide goods and services in the long term". To put it another way, it is the search for win-win strategies that not only meet human welfare needs but also the needs of natural ecosystems (Salafsky 2011 973). Many NGOs and other stakeholders try to address this through strategies like payment for ecosystem services (Wunder 2007) and use of conservation easements[13] (Merenlender *et al.* 2004; Rissman 2011).Three strategic options for integrating conservation and development are: (1) have an integrated mix of conservation and development; (2) use development means in

[13] This is the power invested in the qualified private land conservation organizations or the government to use or enforce on a specific land area. It involves signing of agreements between the land owners and the land trust, or the government and involves payment of grants.

the service of strict conservation ends and; (3) explicitly link the project's conservation ends to broader development ends (Salafsky 2011 978). The author goes on to say that the best choice is option (2).

In this regard, (Salafsky 2011) argues that the big mistake committed by NGOs, governments and other institutions is they provide development and livelihood incentives for humans as a goal of their work and not as a means for conservation ends (Salafsky 2011 976). Salafsky then concludes that:

> If a conservation project adopts strict conservation ends, this does not mean that the team members can ignore development concerns. Instead… they need to consider human needs in the context of the threats and contributing factors at the site as well as in terms of their strategies (Salafsky 2011 976).

Integration between conservation and development requires the involvement of multiple stakeholders such as land owners, conservation implementers (e.g. NGOs) and the government. As a result, partnership is one factor that needs to be considered in order to: "(1) construct a lasting alliance based on explicit recognition of where their interests do, and do not, coincide; (2) work together to negotiate successfully with external threats to their shared interests; and (3) learn from one another, so that both parties have become stronger, and both understand that they are effective working together in pursuit of their shared interests than either would be alone" (Arambiza and Painter 2006 22). Also there is a need for:

> Capacity building and information exchange among stakeholders… A coordinated and integrated approach, focussing conservation resources on national priorities, is essential to achieve efficient conservation. This will need to include active involvement of land owners, a sociocultural understanding of target communities, improved collaboration between the various stakeholders, provision of sustainable alternative economic activities, and commitment to long funding cycles for projects (Keppel *et al.* 2012a 256).

**Community-based natural resource management**

Community-based natural resource management (CBNRM) has received increasing attention over the years because of the frequent failure of contemporary science-driven and state sponsored top-down conservation approaches (Aswani *et al.* 2007; Veitayaki 1997). In this section the concepts that will be primarily referred to are: community, resources, and CBNRM. Therefore, it is important

they be defined at this juncture. More than 50 years ago Hillery (Kumar 2005) found 94 definitions of community in the scientific literature, which all captured combinations of space, people and social interactions. On this same theme Talen (2000 174) implied that community "… involves the interrelationship between the individual and the individual's social structure. As a generic term, it often concatenates both social interaction, referred to as the social component of neighboring, and an affective component, the psychological sense of community…".

Because of that, CBNRM in this context means a traditional management system to conserve natural resources, which is not government induced. In today's modern context CBNRM closely relates to the concept of decentralization of government functions to promote both democratic and development objectives (Lane and Corbett 2005). Resources can be physical, like mineral ores, fish, forest, and human; or non-physical such as work capacity and knowledge. Also resources can be further broadly classified as non-renewable and renewable. The first definition of CBNRM is as an approach that "… seeks to encourage better resource management outcomes with full participation of the communities and resource users in decision making activities, and the incorporation of local institutions, customary practices, and knowledge systems in management, regulatory, and enforcement processes. A response to the limitations of a resource management paradigm emphasizing technical expertise, a focus on western forms of science, and bureaucratic centralization… . It involves forest and water resources, wildlife, fisheries, coastal areas and protected areas" (Armitage 2005 703). A second definition characterises CBNRM as "local practices that are designed to regulate the use, access, and transfer of resources. Customary management practices, which have been crafted through generations of human interaction with the environment, are informed by indigenous ecological knowledge and are culturally embedded in customary land and sea tenure institutions" (Cinner and Aswani 2007 202).

According to Li (2002), CBNRM is the best conservation option because it involves people who own and live with the resources and whose livelihoods depend on it. The community understands the biological values and the importance of conservation practices through their own cultural traditions and

practices (Cinner and McClanahan 2006). Therefore it is likely to be more interested in the sustainable use and management of resources than either the state authorities or distant corporates that are often considered to have more interest in the economic benefits. Alternatively, other authors imply that CBNRM is not always resilient to influences from factors such as indigenous socio-cultural transformation, economic development, urbanization, Christianity, community leadership, modernization, technology, government and donor policies, and the threats from factors such as population growth and urbanization. (Aswani 2005; Berkes *et al.* 2000; Cinner and Aswani 2007). There are various types of traditional institutions in the communities and "some have strong institutions that have dealt well with change. Most are probably too weak to resist the temptation to overuse their resources or to overcome outsiders seeking to exploit or control the resources" (Barrett *et al.* 2001 499). However, Cinner and McClanahan (2006) argue that CBNRM can still provide some protection against environmental and social and economic changes. The level of protection will greatly depend on the level of influences toward the CBNRM regime and the synergies of the members of the community.

Traditional conservation practices and taboos were practiced by many traditional local communities in Pacific Island countries and in other parts of the world long before the introduction of modern conservation practices. These practices are used to limit or control access to the resources, which may mean restriction of fishing gear, fallow systems, seasonal or temporal closure, and permanent closure (Ostrom 1990; Ruddle 1995). A CBNRM is more flexible and economical compared with a top-down contemporary approach. According to Veitayaki (1997), traditional conservation is 'custom', unwritten and passed down the generations orally. But these customary practices of oral transmission of information have gradually improved as a result of adapting to western education and technologies. It has been used for centuries in the management of resources in many communities (Aswani 2005). The traditional practices are normally unwritten and culturally accepted and have been extensively used in solving issues such as disputes within the community.

Especially in remote places, where government influences are less evident, traditional conservation practices are the only primary governing system used by

local people in managing their resources. But in other places, where governmental institutions do exist, these two governing systems may either be discordant or co-exist as 'legal pluralism' within one geographical area (Clarke and Jupiter 2010). Both theoretically and practically, there are barriers which hinder the amalgamation of traditional conservation practices with contemporary resource management. This is because despite their commonalities there are always differences between these two systems. For example, "customary reef closures are generally temporary, as opposed to the permanently closed marine reserves advocated by Western science and conservation" (Cinner and Aswani 2007 209). Furthermore, Cinnner and Aswani (2007) argue that traditional management regimes cannot be effectively protected against economic and social threats, among others. This is despite the constitution and legislation in most Pacific Island countries which have recognized customary tenure systems (Clarke and Jupiter 2010; Lidimani 2006). Hence, to not recognize the traditional tenure systems or not involving traditional land owners, especially in planning and management of conservation projects, may result in ineffective management and poor outcomes for the programme or project.

It is considered to be ethically right that when dealing with local resource owners "… the conservation practice requires open discussion about the legal rights and responsibilities of resource owners and other stakeholders…" (Clarke and Jupiter 2010 103). In fact, local communities often like to support conservation activities that reflect their traditional conservation practices, local ecological knowledge, and customary tenure system where the conservation activity has met their priority needs (Clarke and Jupiter 2010; Ruddle 1998). Forests and reefs are commonly referred to as common property, and are normally depended on by local communities for survival and livelihoods over many centuries if not millennia. Therefore, the socioeconomic factor must be integrated into the conservation programme (Cinner 2007 1036). In situations where socioeconomic conditions are poorly addressed or not captured in the conservation programme, the affected people will no longer be likely to have respect for the conservation programme (Ostrom 1990).

Community's participation in natural resource management in today's modern setting has many constraints. An Australian Aboriginal example was shown in the

study of 'the Tyranny of localism: Indigenous participation in community environmental management', in which it was discovered that the indigenous community's agency is constrained by three factors:

> First, the efficacy of Indigenous participation is limited by language and cultural barriers, geographical isolation, lack of resources ... Secondly, there is a tenurial factor. The widespread dispossession of indigenous groups means that their participation in environmental policy inevitably involves the assertion of custodial, cultural and other interests in lands now designated as publicly-or privately-owned. Their participation and claims are therefore contested by other social groups. Thirdly, research into indigenous participation in biodiversity conservation has shown that insufficient access to organizational resources has impeded indigenous participation (Gillespie *et al.* 1998, as cited in Lane and Corbett 2005 149).

In many instances the local communities have tried to protect their environmental assets such as air and water from destruction by industries but due to lack of capacity were often unable to complain effectively (see Guha 2000). An example is the forestry sector, where timber contractors or logging companies have more power to influence forest related issues than the forest dwellers themselves (World Commission on Environment and Development 1987 46).

In the Solomon Islands:

> Central government's[14] ability to regulate the natural resource decisions of customary landowners is limited by their perceived resource sovereignty. This creates a situation in which it is widely perceived that government has limited regulatory power and in which the regulatory efforts of the national government are resisted at the local level. In turn, this causes the national government to largely devote its environmental policy and management activities to: (i) raising community awareness, (ii) providing frameworks or strategies for improved environmental management by local landholders (community-based environmental management (CBEM), principally), and (iii) licensing extractive industries (Lane 2006 16-17).

Therefore despite deficiencies and constraints encountered by the CBNRM system, the "authority, land and marine tenure, custom and tradition, enforcement, beliefs, conflict and dispute settlement protocol" (Berkes *et al.* 2000 126) have proved that, in the Pacific Island countries, CBNRM is a priority model for natural resource management.

[14] It is used interchangeably with the national government and they mean the same

**Summary**

Sustainability is an important concept in biodiversity protection and while it has different meanings the common focus is for people to be able to continue enjoying a resource while recognizing its limitations. Protection of biodiversity is noteworthy because of people's dependency on it. However, biodiversity has often been selfishly destroyed and threatened, mainly because of weakness and corruption within government institutions and other bureaucracies or systems, as well as from socio-economic pressures. This problem relates to the concept of conservation and development, and a significant question must be asked. How can conservation provide benefit to the original resource users? It has been found that in an attempt to respond to human needs, the integration of conservation and development has often been unsuccessful, causing negative impacts on biodiversity, resource owners or both. This requires a management approach that creates a win-win situation. The involvement of the community in decision making related to the conservation programme is of paramount importance despite the weaknesses that these communities may have with respect conservation. The literature indicates that biodiversity protection requires an effective integrated management approach that combines the needs of both the resource beneficiaries and the ecosystem, within the carrying capacity of the environment.

# Chapter Four: Methodology

## Introduction

This chapter describes the components of this research by examining the NBSAP and its problems. The chapter begins by discussing the nature of qualitative research. This is followed by discussion on policy evaluation then the importance of using case studies and its application to this research. I then outline the major methodologies used, including semi-structured and focus group interviews, field notes, document analysis and literature review. Finally, I discuss the ethical considerations which cover access to the institutions and the participants, risks associated with the participants' involvement, my own ethics in undertaking the research, and reflection on the study.

## Qualitative research

Qualitative research is an encompassing term in social science research. It focuses on "words rather than quantification in the collection and data analysis… and emphasizes an inductive relationship between theory and research, in which the emphasis is placed on the generation of theories" (Bryman 2004 20). Denzin and Lincoln (2008) defined qualitative research to mean an activity that places the observer in a position to interpret phenomena. In the quest to acquire accurate information qualitative researchers often "empathize and identify with the people they study … to understand how those people see things" (Taylor and Bogdan 1998 7).

Palfrey *et al* (2012) argued that while researchers want to be objective there will always be elements of subjectivity in the research which makes empirical evidence uncertain and contestable. However, not all methods have the same level of subjectivity and the preferred ones are those that conform to the aim (Palfrey *et al.* 2012) and nature of the research (Strauss and Corbin 1998). From another view point, the application of statistical equations to people's words and acts may make the research lose sight of the human side of social life (Strauss and Corbin 1998; Taylor and Bogdan 1998). Moreover, quantitative approaches often fail to capture the complexity of social processes. As a result, qualitative research is now increasingly used in research areas such as program evaluation and policy

research (Taylor and Bogdan 1998). This study focuses on the NBSAP policy setting; therefore it was appropriate to use qualitative research methods.

**Policy evaluation**

Policy is a broad and versatile word but in its most general sense it means what governments want to do or not to do in order to have a good society (Colebatch and Parkin 1998; Dye 1972, as cited in Shaw and Eichbaum 2011). In the past, the term was scarcely used in institutions other than government authorities (Colebatch and Parkin 1998 5). However, with regard to the NBSAP policy it would be more appropriate to specifically categorize it as a public policy given that it was created by a public authority for public application (Colebatch and Parkin 1998 4). Hence, the NBSAP is "a set of interrelated decisions taken by a political actor or group of actors concerning the selection of goals and the means of achieving them within a specific situation where those decisions should, in principle, be within the power of those actors to achieve" (Jenkins 1978, as cited in Howlett *et al.* 2009). Evaluation, in a practical sense, is what enables human beings to "evolve, develop, improve things, and survive in an ever-changing environment." (Davidson 2005 1).

Evaluation is one form of research that uses an:

> objective process of understanding how a policy or other intervention was implemented, for whom, how and why... Good quality evaluations generate reliable results which can be used and quoted with confidence. They enable policies to be improved or justify reinvestment or resource savings. They can show whether or not policies are delivering as planned and resources being effectively used (HM Treasury 2011 11).

However, evaluation is intended to improve services (Dahlberg and McCaig 2010 16; Palfrey *et al.* 2012 27). Hence, to specifically define evaluation is not easy given that it has many forms (Palfrey *et al.* 2012 27). Even the data collection methods are not uniform, and they often depend on the type of evaluation, the nature of the question and the objectives of the study.

What is important, however, is for the evaluator to identify and apply the most appropriate evaluation type to the specific research question. As already discussed this is policy evaluation research. Such research is often categorized into three

categories: administrative, judicial and political evaluation, which differ in the way they are undertaken, the actors involved and the resulting effects (Howlett and Ramesh 2003). Administrative evaluation is the focus of this study in that it "ensures that policies are accomplishing their expected goals and at least possible cost and with the least possible burden on individual citizens". This type of evaluation is subdivided into five different types: "effort evaluation, performance evaluation, adequacy of performance evaluation, efficiency evaluation and process evaluation" (Howlett and Ramesh 2003 211).

**Effectiveness evaluation**

This study employed the "adequacy of performance" evaluation approach which is also commonly referred as effectiveness evaluation (Howlett and Ramesh 2003 221). Effectiveness evaluation is goal oriented and its purpose is not only restricted to the effectiveness study but may also capture the essence of "efficiency and economy of an intervention" (Palfrey *et al.* 2012 27). This general application of evaluation studies confirms the argument of Lunt *et al.* which assumes that any particular type of evaluation will often have more than one purpose (Lunt *et al.* 2003 84).

Nevertheless, effectiveness evaluation involves comparison of the goals and objectives of the policy with the results or output in order to determine whether the policy has achieved its goals (Howlett and Ramesh 2003 211; Mickwitz 2003) or it needs to be adjusted (Howlett and Ramesh 2003 211) to suit the current environment. It has been argued that:

> In a strict effectiveness evaluation the focus is only on the effects and the goals, and thus the implementation process may be deliberately ignored. In such cases the role of the intervention theories is limited to linking the effects to the policy. If however, the evaluation perspective is slightly broader, the evaluation, even an effectiveness evaluation, is also intended to be used as a learning tool to improve the implementation process. In such cases intervention theories may be crucial in order to locate the key activities that could be improved (Mickwitz 2002 82).

In carrying out the research I applied the performance principle evaluation approach, given that the NBSAP is a strategic policy. Hence, the effectiveness of the of the policy was not only measured on the condition of the conformance of

the outcomes with the goals and objectives; but also, on whether the policy was used in the facilitation of the decision making (Faludi 1989; Faludi 1997). As one might expect; the weaknesses of performance evaluation are: "that it exacerbates uncertainty… lacks transparency due to the discretionary nature of planning decisions…; and finally, that it involves significant administrative costs and capacity limitations in the absence of formalised standards" (Steele 2011 206). Nevertheless, the performance evaluation approach was still appropriate to be applied in this research given the nature of land resource ownership and conservation policy implementation in the Solomon Islands.

**Case study research**

Case studies are a research method used to find answers to questions. Case studies can be single, specifically bounded investigations involving an individual, a group of people within an organization or a community at large (Gillham 2000 1); or multiple case investigations within a larger study such as on a whole community (Gillham 2000 1; Patton 2002 97).Case study research has the ability to incorporate other methods or evidence, such as direct interviewing of the participants on issue, documentation analysis and direct observation (Gillham 2000; Yin 2009 11) and often has a range of strengths and weaknesses (Gillham 2000 13).

Case studies have a strong relationship with qualitative methods (Patton 2002 97) in areas such as direct observation and unstructured interviewing, which are particularly helpful in the detailed examination of a single case. Case studies satisfy the principles of qualitative research, in that they include the logic of designing, collecting, analysing and explaining the issue being researched (Yin 2003; 2009), meaning that they are not only a data collection strategy or method but instead cover the whole research process. After all, case study research is often part and parcel of both qualitative and quantitative research depending on the research strategy (Bryman 2004 49).

> The case study aims to understand the case in depth, and its natural setting, recognizing its complexity and its context. It also has a holistic focus, aiming to preserve and understand the wholeness and unity of the case. Therefore a case study is more a strategy than a method (Punch 1998 150)

In a case study researchers often intensely study a single case so as to generate theoretical concepts (Bryman 2004 52). A case study uses multiple data collection methods including observations, interviews, narrative reports, questionnaires and numerical data (Neuman 2011 42; Punch 1998 153).

The question is: How can a single case be generalized? (Punch 1998 153). This usually depends on the context and purposes of the project (Denzin and Lincoln 2008; Patton 2002); and especially on how the data are being analysed. The first step is conceptualizing, where the phenomena are named in relation to aspects of what is being studied (Punch 1998 154; Strauss and Corbin 1998 103), followed by the assertion of judgement or opinion (Punch 1998 154).When generalizability is a goal of the research, the data analysis should be conducted at an adequate level of abstraction. This is because the more abstract the concept, the more generalizable it will be.

Neuman argues that:

> case studies are likely to produce the best theory because of the in depth detail of the specific case… Second when examining specific cases, the intricate details of the social processes and cause-effects relations become more visible. The increased visibility allows us to develop richer, more comprehensive explanations that can capture the complexity of social life (Neuman 2011 42-43).

This study employed the case study research approach focusing on the evaluation of the effectiveness of the NBSAP policy. The study only involved those who were part of either the policy formulation or its implementation. The research was conducted in Solomon Islands' Pidgin, which the researcher is also fluent in, with the exception of three participants who spoke English.

**Data collection and analysis methods**

The data collection used more than one source of information to ensure that the data were valid and acceptable. This type of strategy is called a triangulation of mixed methods (Neuman 2011 165) where the strengths of one data collection system can compensate for the weakness of another approach (Patton 2002 306).

**Primary data sources**

Interviewing was the main data collection method in this study. Interviewing is believed to provide comprehensive information on "the attitudes, opinions and experiences of people involved in a policy..." and the participants are able to "explicitly explain their views, decisions or actions, describing what has shaped them" (HM Treasury 2011 92). Interviewing can deal with questions relating to "personal experiences and meaning-making of personal or more general issues (social problems, political changes, historical events for example)" and may include those who are "implementing a policy…, those receiving a policy, and also stakeholders with interest in the policy" (HM Treasury 2011 92).

The three types of interview are unstructured, semi-structured and structured (HM Treasury 2011 92; Punch 1998 175). These interview types are linked to the different phases of theory development, from theory building to theory testing methods (Wengraf 2001 61).

Limitations may include misrepresented or misleading responses of the interviewee. In interviewing it is very difficult to determine that what is said during the interview is actually what the interviewee experiences or believes about the issue (Taylor and Bogdan 1998 91). This situation may result from "personal bias, anger, anxiety, politics and simple lack of awareness since interviews can be greatly affected by the emotional state of the interviewee at the time of the interviewee " (Patton 2002 306). However, Taylor and Bogdan (1998 92) state that such limitations can be reduced by simply getting involved with the interviewees and spending time with them in their local settings. Also during the interview the interviewer should provide an environment in which interviewees are able to talk and express their views and ideas freely.

The interviews for this research were conducted over a period of two months from 5th November 2012 through to 15th January 2013. The data collection was however, affected by the illness and eventual death of my father. My father was hospitalized soon after I arrived in Honiara to undertake my data collection research, and considerable time was needed for his care. Hence, the collection of data was only done on an ad hoc basis; this is the main reason that it took me longer than originally planned to complete the data collection and the research

project. My initial plan to conduct data collection in the Western Province was cancelled and instead all interviews were undertaken in Honiara and the Guadalcanal province.

***Semi structured interview***

This study employed semi-structured interviews, which have guiding questions but also the flexibility to allow questions to be altered, reframed or further probed (HM Treasury 2011 92; Merriam 2001).

The interviews were one to one with the key actors in the conservation development programmes; specifically the NBSAP policy. There were eight interviews including two females and six males between the ages of 30 to 50 years. Those identified as key players because of having high levels of power and interests in the NBSAP policy were considered top priority for the interview. The selection was largely through stakeholder analysis (SA) of power-interest relationships. Prior to the actual interview the issues to be discussed were explicitly outlined, and were referred to as an "interview guide, but the interviewee has the leeway to reply" (Bryman 2008 438) and express his or her own views including background information on the topic of discussion. In this case the questions asked were not necessarily uniform among the interviewees because of the experience and knowledge specific to each individual interviewee.

The interviews were audio recorded and later transcribed for analysis. The time frame for the interviews was approximately 30 minutes for each one but at times it was increased or decreased depending very much on the nature of the discussion. It was discovered that those with more knowledge and experience tended to need more time and this prolonged the discussions.

The strengths of the semi-structured interview are: (1) the interviewees are likely to be able to provide information that they may not be comfortable to divulge in a group setting (Dahlberg and McCaig 2010 119; Palfrey *et al.* 2012 57); (2) the method is flexible enough that it allows the interviewer to investigate further for more information should it be important to the study. The interviewer will be able to get detailed information on the issue. The semi-structured interview, however, requires experience and skill. There are often situations whereby further probing

might be required in depth or to obtain detailed explanation of an issue (Dahlberg and McCaig 2010 119).

***Focus group interview***

The focus group interview involves people who have similar backgrounds or experiences on a particular issue. The intention is to explore in greater detail a particular theme or topic (Bryman 2004 346) to extract ideas, thoughts and perceptions, and link the findings to the area of study (Holloway 1997 73). A focus group interview should not be confused with a group interview, which often has a theme or topic that spans very wide areas and is not focussed (Bryman 2004 346). However, the distinction is small and often they are used interchangeably.

The composition of focus groups vary and the suggestions include: at least four interviewees (Bryman 2008 473); between 6-10 people (Dahlberg and McCaig 2010 120; Patton 2002 385); and 12-15 people (Babbie 2007 308). The interviewees should have similar experiences or characteristics (Holloway 1997 73) and also the topic they are to be interviewed on should be strictly defined (Bryman 2008). The total interview should take from one to two hours (Dahlberg and McCaig 2010 120; Patton 2002 385) but in reality the duration of the focus group sessions depends on the contributions of the interviewees.

The main strength is that the method allows participation of several participants in a single interview to capture data that may not be obtainable in a one to one interview. The focus group interview is socially oriented and involves sharing of ideas and information (Babbie 2007 309; Holloway 1997 75). Also there is a high chance of the generation of new and spontaneous ideas through the sharing of individual ideas and information. In this sense the participants' thoughts and ideas are stimulated and build on each other's comments (Palfrey *et al.* 2012 57). The focus group interview also enhances the quality of data because the information provided has often been checked by other participants in the group (Patton 2002 386). Lastly it is cost-effective and quicker to undertake because it involves several participants within a single interview (Babbie 2007 309; Holloway 1997 76; Patton 2002 386).

The major weakness may be the requirement for special skills from the moderator to control the interview. This is especially important if there are disagreements

among participants, and to make sure the discussion is not dominated by the most vocal participants (Babbie 2007 309; Patton 2002 387).

As with the selection of the semi-structured interviews the selection for the focus groups was largely through stakeholder analysis of power-interest relationships. They were informed in advance about the interview topic and the objectives of the discussion (Holloway 1997).The participants selected did not necessarily know each other or have any kind of relationship outside of the interview but were selected based on their inputs to the development of the policy and vertical representation of the participants involving the government, public institutions, NGOs, and local communities. The average duration of the interview was one hour but could be more or less depending on the nature of the interview. The interview was audio recorded for transcription and analysis later.

There were two focus group interviews with four and six participants each respectively. The first interview was hosted in Honiara and composed of representatives from government ministries, NGOs and private business sectors. The second was conducted at Naro village and the participants included the Tavanar marine and terrestrial conservation association of Naro community staff and tribal members. The first interview group was entirely male and the second included one female participant. All group members were between the ages of 30 and 70. The older participants were part of the Naro community interview.

***Field notes***

Field notes are the written observations of the researcher while out in the field. They include experiences, what is heard from people and also some analysis of the situation.

**Secondary data sources**

Secondary data are data that were pre-recorded for other purposes but were later found to be relevant to the study. Such data may be of three types: “expressive documents, mass media reports, and official records. Each of these can be placed on a continuum going from low to high reliability, and from low to high pre-quantification” (Forcese and Richer 1973 179-180). Most of the data were

collected from official records and only a very few came from mass media reports such as newspapers.

***Documentary Data***

Documents are written texts that serve as a record of an event or fact (Flick *et al.* 2004 284). In this study the documentary data was collected in conjunction with the semi-structured and focus group interviews and the field notes. According to Dahlberg and McCaig, thorough and careful analysis of the documentary data should show the trends, such as development of issues or changes (Dahlberg and McCaig 2010 124). Likewise Punch argued that documentary data was important in the triangulation of data collection (Punch 1998 190). Triangulation is important because "different methods have different strengths and different weaknesses. If they converge then we can be reasonably confident that we are getting a true picture. If they don't agree then we have to be cautious about basing our understanding on any one set of data" (Gillham 2000 13).

Secondary sources of data included Ministries' corporate plans, policies, strategies, reports, legislation and news from the newspapers. Reports from environmental NGOs were also collected and analysed. Furthermore, national and international literature data searches were conducted via the internet, especially on the University of Waikato search catalogue and data-base, Google Scholar search engine and other data bases including Web of Sciences etc.

The documentary data has limitations in that it may be "incomplete or inaccurate" and the data may be "notoriously variably in quality and completeness, with great detail in some cases and virtually nothing in others" (Patton 2002 307). However, these discrepancies were minimized by using a variety of data collection methods such as interviews, field notes and documentary data to provide the most nearly complete picture and understanding of the issue studied.

**Analysis of data**

The data collected was analysed using the grounded theory framework. This framework uses a "systematic set of procedures to develop an inductively derived grounded theory about a phenomenon" (Strauss and Corbin 1990 24) incorporating categorization, theme coding and comparison (Glaser and Strauss

1999) as pre-requisites to theory building. The final processes involved reviewing and sorting out of themes or categories to determine the linkages that exist between them. The next stage was the integration of themes in order to develop statements that discussed how the themes related to each other. As Strauss and Corbin (1998) noted, without integration there might be themes and descriptions but no theory to show the relationship among the themes. Integration is the most difficult stage of the data analysis.

**Reliability and validation**

Reliability in a qualitative research setting is very difficult given that the research often involves "people's subjective interpretations of complex situations". This compels the researcher to employ more than one type of data collection method "such as observation, structured, unstructured or semi-structured interviews and data sources …" (Palfrey *et al.* 2012 68). When considering reliability the concern is how many of the errors actually result from the data collection methods and analysis (Dahlberg and McCaig 2010 15) rather than from the phenomenon being studied (Zusman 1979 31). If the same study is carried out by other researchers under the same circumstances and the findings are the same or at least consistent, then the findings are regarded as reliable (Palfrey *et al.* 2012 68). Therefore, reliability in this situation is a means of measuring internal consistency and consistency over time (Punch 1998 99). But to undertake replicated studies in policy making is very unpopular and requires a concise methodological process and analysis that leave less room for ambiguity.

Reliability can be improved by correctly documenting the data and how it is collected. The interviewer should also be open to interpretations from other participants rather than being restrictive (Palfrey *et al.* 2012 68). In addition, interviewers should not introduce their own opinions or interpretations of the question as this will contribute to reducing the reliability of the study (Olsen 2012 15). In this study I translated my original English questions into Solomon Islands' Pidgin, the language most commonly used amongst different ethnic groups in the Solomon Islands. The Pidgin and English versions were given to three people who spoke pidgin fluently for reviewing purposes, to reduce the degree of ambiguity in the questions.

In evaluation research the two most common forms of validity are internal validity and external validity, which are used to describe the strength or otherwise of the evaluation design (HM Treasury 2011). Internal validity "refers to whether the results are a true reflection of the impact on the individuals being studied" (HM Treasury 2011 131). This requires the selection of proper indicator/s to measure the concept/s under consideration (Palfrey *et al.* 2012 66), and is the process I used to measure the implementation of the NBSAP policy.

External validity is concerned with the extrapolation/generalization of the results/findings. It means "whether the result of the study can be generalized to other groups and/or in other contexts/conditions" (Palfrey *et al.* 2012 66). This however, is very difficult to achieve given that there are often different stand points on the interpretation of data. Another potential problem is that the results obtained from those included in the study are not necessarily representative of the wider population (HM Treasury 2011 133) in this case the conservation community.

**Ethical considerations**

Ethical considerations were of paramount importance in this study as it involved people who often had different interests and views (Babbie 2007) on issues they were confronted with. This can result in conflicts of ideas and actions that can eventually place the proposed initiative in jeopardy. Because of this, the information gathered in the field was kept confidential and secure at all times. Documents such as recordings, written notes and photos were kept in a secure lockable suitcase while I was in the field and I was the only person with access to it. Since returning from the field, the information has been securely stored in my lockable office cupboard and will continue to be until it is destroyed five years after publication of the thesis. The information stored on my computer is protected by the use of a password, which has not been shown to any another person. Also, as required, the identities of the informants were protected by the use of pseudonyms.

### Access to participants

The participants were contacted via email and telephone and were interviewed at the agreed venue, date and time. All the other requirements, such as consent, were sorted out prior to conducting the interviews.

### Informed consent

The participants' consents were granted by way of signing the written informed consent form, which they performed "freely, without coercion" (Tolich and Davidson 2011 156). However, in a situation where the participant had consented but refused to sign the form for personal reasons, the details of the fact that he or she had agreed to participate were recorded. The participants were also provided with written information explaining the purposes of the interview, the methods of the research and their rights to participate and withdraw from the interviews (see appendices 4, 7, 8, 9 and 10). The written information was in English but additional explanation was provided in Solomon Islands Pidgin to anyone who found English difficult. The participants were told to keep a copy of the form for their reference should they wish to contact me for further information or if they had any doubts regarding the research.

### Potential risk to participants

The research was not sensitive and therefore unlikely to cause any direct risk to the participants. Despite that, the governmental ministries, NGO institutions and communities are quite small, and it was possible that the participants involved could be identified. Because of that, to the best of my ability the information received was kept confidential and the anonymity of all participants has been protected at all times. The participants were also told that should they feel to be at risk, they could withdraw their consent within a period of four weeks from when they were interviewed.

### Conflict of interest

The result of the research was entirely based on my research findings and as much as is possible not influenced by my experience with the policy or by my employer's interests. Also, participation by the participants was entirely voluntary,

and necessary measures were taken to ensure the protection of their rights and privacy.

**Cultural sensitivity**

The research was undertaken in the Solomon Islands and it observed the culture and norms of Solomon Islanders, especially those who were involved in the study. I am a Solomon Islander and so have familiarity with the local traditions and customs and am also able to converse fluently in Solomon Islands Pidgin.

**Reflection**

My seven years' experience working with the Ministry of Environment as a conservation officer gave me good knowledge about conservation policies in the Solomon Islands. In fact, I was involved at times in the consultation stage for the NBSAP policy formulation. My involvement with conservation policies in the Solomon Islands, I believe, caused participants to avoid providing me with false information. However, there was one participant who was not willing to provide me with detailed information and always said that "the question was sensitive". In this situation I either skipped the question or asked probing questions before being able to get the information I needed. Despite this, the other participants were all comfortable with the questions asked. It was useful to employ both focus groups and semi-structured interviews as my data collection methods. I believe that if the latter type of participant had been involved in the focus group interview he would not have been willing to provide information.

I also realized that apart from participants who were directly involved in the policy formulation most of those interviewed either knew very little or had no knowledge about the NBSAP policy. This made the focus group interview very helpful. The number of participants in each focus group interview was based on the concept that smaller focus group should be involved when the topic is controversial and larger groups with a topic that is less controversial and/or the researcher is looking for more suggestions (Bryman 2004). This requires a preliminary survey which should be done prior to the actual undertaking of the research in order to identify such issues and to apply the data collection method that would suit the situation. However, in this research due to the time and financial factors involved, this step was not adequately undertaken.

## Summary

This chapter provides the research plan and procedures of this research. The use of five different types of data collection methods in this research means the strength of any method should address the other methods' weaknesses, and strengthen the reliability and validity of the data. The next chapter discusses the findings.

# Chapter Five: Results

## Introduction

This chapter briefly discusses the findings of the research. The findings are intended to answer the research question: Is Conservation planning policy in the Solomon Islands effective in addressing current and future environment-related challenges? The responses of the participants are as much as possible used in their original contexts, and quotes are included to show the originality of the responses. Pseudonyms are used for all participants to protect their identity. The chapter further illustrates the eight themes that have emerged from the thematic analysis of the data. The themes are: collaboration and coordination; commitment to policy implementation; stakeholders' interests; capacity and resource deficiencies; biodiversity threats; environmental and conservation policy integration and alignment; environmental and conservation politics and power, and lack of environmental and conservation leadership.

Interviews were conducted in two parts: first, the semi-structured interviews with individuals and secondly, the focus groups. All were conducted in Honiara and Guadalcanal province in the Solomon Islands. The participants represented Solomon Islands government Ministries, environmental NGOs, private environmental consultants, and the local Naro community. The participants were either involved in the formulation and implementation of the NBSAP or were a target of the NBSAP policy implementation.

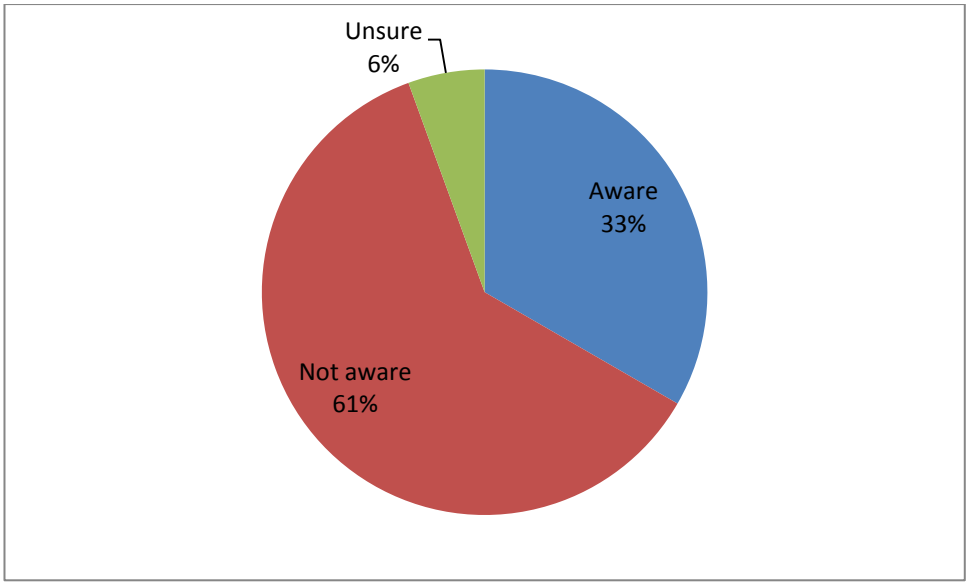


Figure 10: Graph showing participants' awareness of NBSAP policy

**The emerging themes:**

Described below are the eight themes that emerged from the data analysis and which the NBSAP needs to address. The methodology of data collection and analysis has been provided in chapter 4.

**1. Collaboration and co-ordination**

Many participants stressed that the NBSAP lacked ownership especially at government level. The participants argued that collaboration and coordination of the NBSAP policy are not effective enough. As pointed out by Arciniegas and Janssen (2012 332), collaboration enables stakeholders to reach useful decisions. Along the same line, Healey (1998 1533) stated that "partnership and collaboration symbolises a blurring of the boundaries between the public and private sectors, between state, market, and community." Most of the participants acknowledged the existing elements of collaboration and coordination among the stakeholders; however, they felt that there is still a need for further improvement. This was evident when 61 per cent of the interview participants were found to be not aware of the NBSAP policy. Jonathan stated that "… the only places fully aware of the NBSAP are: the environmental NGOs, the Conservation unit of the MECDM and the Ministry of Fisheries and Marine Resources (MFMR). It could be improved with better dialogue …". This dialogue is supposed to include the

government ministries, environmental NGOs and others that are deemed relevant to the policy implementation. Despite this set-back, Jonathan indicated that one good thing which happened lately that had not been there ten years ago was the stronger relationship that now exists between the NGOs working on environment and the government. This can be further improved and strengthened. However, he also argued that this had happened even prior to the establishment of the NBSAP policy.

Peter stated that "collaboration is a good approach because a number of activities are highlighted on the NBSAP policy and along with other projects have overlapped with the responsibilities of other line ministries… . It's a good principle and concept to encourage an integrated approach in collaborating with different parties…". Collaboration includes different professions and "science policy" implementation as in this case, as Rey *et al*. (2010) stated, needs the collaboration between scientists and decision makers.

Peter pointed out that the real concern is that the effectiveness and efficiency of collaboration is really challenging, given that it deals with people who often have different perceptions and attitudes. The participants agreed that this needs to be further improved. In this regard, the participants identified three factors that may have caused the ineffectiveness and inefficiency of collaboration and co-ordination of the NBSAP policy in the Solomon Islands:

The first factor is lack of resources and that relates to themes six and seven of the NBSAP policy: financial resources, and human resources and capacity-building respectively. According to many participants these are still lacking and need to be improved. It will be further discussed in theme four.

Second, the stakeholders are just doing their own business and paying little or no attention to the NBSAP policy. It was found during the interviews that this could be caused by aspects of collaboration that are not clearly understood by the stakeholders or which they had not been informed about. Peter argued that "while everybody is nodding their heads they are doing it in a very superficial way. The details of the collaboration were not promoted enough". Hence, it requires effective negotiation amongst the stakeholders.

The third factor is inadequate involvement of stakeholders who are supposed to be engaged: an example is the resource owner. Also the participants felt that collaboration should also involve the private sector and companies which are influencing biodiversity in the Solomon Islands. An example of such a sector would be the logging companies.

It was argued that better dialogue is vitally important and should include the relevant key stakeholders and government ministries. Jonathan stressed that other government ministries had not been really involved or were not performing to expectations on the NBSAP policy process. The government was not doing enough in the coordination, resourcing and implementation of the NBSAP policy. Most of these tasks are being done by environmental NGOs. However, to the participants this is of paramount importance, given that environment issues cut across all sectors and should be every one's business. Agnes suggested that there is a need for additional "consultation and bilateral or follow-up engagement with the stakeholders after the policy-frame work has been formulated, to come up with priority activities and actual commitments on the implementation process by the stakeholders". This may only happen through better dialogue and good leadership. Simon stressed that good leaders are those who "have vision, plan, and are constructive and creative". This will be further discussed in theme seven: lack of environmental leadership.

**2. Commitment to policy implementation**

Most participants pointed out that there is a need for better and improved commitment from the: MECDM as the coordinating Ministry, the other line Ministries, and NGOs that are implementing the policy. However, in some participants' view the NBSAP provides a holistic or collaborative approach; the policy involves government ministries, NGOs and other stakeholders in protecting biodiversity. In such a view, John argued that the NBSAP is a "national action plan and the Solomon Islands government should be committed to addressing it". Vagasi also said that "NBSAP is the national commitment of the Solomon Islands towards the CBD. It is a mandatory obligation to the countries that are party to the CBD…"

Timothy commented:

> The Solomon Islands makes environmental commitments internationally at forums like the UNCBD and United Nations Framework Convention on Climate Change (UNFCCC) and the government needs every stakeholder to do the work on the ground. NBSAP is the roadmap that guides the government and the NGOs alike to make sure that what is done fulfils the government's international commitments and its national policy.

Commitment of the Solomon Islands to NBSAP policy implementation is stressed in theme one: "Ensure the commitment of the Solomon Islands government and stakeholders to conserving and managing biodiversity is integrated into national legislation, sectorial plans, policies and programs" and theme three: "The Solomon Islands is committed fully committed to a national protected area system by developing appropriate legislation".

But the objectives, actions and assumptions of the themes provided are not really supported by evidence from the participants. There is only weak evidence to show that the goals have been upheld. For instance, Agnes stated that MECDM still fails to have staff stationed in the provinces. Furthermore, there is very weak evidence to show that the NBSAP policy was cited in the actions of cross-sectorial decision making. Nevertheless, Jonathan argued that:

> … it would be quite difficult for the NBSAP to come up with a recipe to determine who should do this. But I think it is generic enough so that the government or the NGOs would be able to fit in within themselves.

Overall the participants believed that there is a need for effective commitment by stakeholders of the NBSAP policy. Here, Timothy affirmed that stakeholders' commitment to the NBSAP policy is crucial for the government to fulfil its national and international commitments. An example of international commitment is the CBD agreement. Timothy further noted that in the Solomon Islands' context, biodiversity is life and death, particularly for the population living in rural areas that depend directly on biodiversity for their livelihoods and survival. Therefore environmental protection is a moral obligation.

Generally the participants agreed that the formulation of the NBSAP policy was comprehensive enough, despite the comment from Peter that there was a need for more engagement with local resource owners. Agnes elaborated further:

> With the NBSAP policy we tagged names of the responsible agencies with certain action to lead as an open book, thinking that they would commit but they did not. Instead what we should have been doing was to include the commitment of the agencies in the framework itself… for the last three years since implementation of the NBSAP there have been gaps in commitment.

The participants provided reasons for the lack of commitment. First was lack of resources: this can be in the form of human, technical or financial resources. According to Agnes, human resources are very important for the coordination of conservation activities within the MECDM. She argued that at the moment the MECDM does not have enough staff to coordinate the policies implemented by the Ministry.

Second is lack of enforcement. Mary said that even the MECDM as the coordinating Ministry was not taking a proactive role to enforce the policy. Hence, both Mary and Agnes said that the stakeholders responsible should be held accountable for what is expected of them. The important question is: can the government be forced to commit to the NBSAP? The other question is what would be the consequence of not complying?

The final reason given was lack of priority by the stakeholders in implementing the policy. Kolasa admitted that:

> Stakeholders have their own priority issues, and the environment or biodiversity protection might not be important to them. But however, it all comes back to budget issue which often determine the priorities or major targets of individual ministries and organisations or institutions.

The participants stressed the importance of strengthening the capacity of government institutions as well other stakeholders, and increased provision of resources like funding.

**3. Stakeholders interests**

Most of the land in the Pacific is customarily owned. In the Solomon Islands about 90 per cent of the forested land area is under customary ownership (Convention on Biological Diversity 2012). This is of paramount importance, especially with policies involving land resources, which should take into account the land owners' interests. Peter argued that "we can plan, and look good on paper,

but when it comes to implementation and policing that is where the problem lies". The utilization component of the policy is important and especially the question of "conservation for what? The communal nature of land ownership makes conservation very difficult because of the land owners' varied interests. It is very difficult to satisfy all requirements. Peter therefore warned that to establish protected areas, the Solomon Islands "would have to go through a long process of consultation and that takes time. … it is not easy because it would have to be communal in nature".

Section 8 of the Solomon Islands' Constitution provides for protection from deprivation of property. However, land can be acquired under section 8 (2) (viii) for the purpose of carrying out any work relating to soil conservation or conservation of other natural resources. In addition, the preamble of the constitution declares that the natural resources of the Solomon Islands are vested in the people and the government of the Solomon Islands. This signifies recognition of customary law and in turn the recognition of customary ownership of land, and does not erode the rights of the resource owners. This is also evident in section 10 (7) (c) of the Protected Areas Act 2010 which recognises resource owners' rights to consultation prior to the establishment of protected areas, and not foregoing their continuous benefit from their resource. In some situations the interests or policies of the donor may clash with that of the government and threaten sustainability of policy implementation. This may happen when conservation activities or policy implementation are funded and/or implemented by NGOs and donors and very minimal contribution comes from government. According to Jonathan:

> … if you total up all the finances that go into conservation and then you draw a pie chart of how much money comes from government, NGOs and donors, I think the government contribution is still very small. Large parts of conservation projects in the Solomon Islands are still externally funded. I think the government wants to show some commitment but I think the national purse does not have the capacity to distribute as much money; so whether we like it or not we will still have our conservation activities externally funded and I think that is the nature of being a developing state.

Even the government's interest has a big influence on biodiversity conservation in the Solomon Islands. Logging activity is a clear example and according to Kolasa

the volume of logs harvested in the Solomon Islands has already exceeded the sustainable harvesting rate of 300,000 cubic metres and now is four times higher than the sustainable rate. According to Kolasa, the government was already alert to this development in the forestry industry. He said:

> The CBSI and the MFR produced reports for the government on issues affecting the forestry sector. But it comes back to the Forestry Act which is out dated and has been used since1969. Many of the provisions of this Act are already out of date and do not recognise the current issues the Solomon Islands is facing… . Also at the moment the logging industry is the major revenue earner for the government.

On a similar note Peter said "if the government totally bans the logging industry then it might not have enough income/revenue…". This may indicate that the Solomon Islands is caught up in a "boiled frog syndrome"[15]and is struggling to avert its biodiversity crisis.

**4. Capacity and resource deficiencies**

All the participants in this study suggested that there was need for capacity and resources for the government, conservation institutions and organizations while noting that it is the government that always has the biggest lack of capacity. Capacity and resources are captured under several themes of the NBSAP policy: Examples are objectives one and two of 'theme: Financial', and then objective four of 'theme: Species conservation'. According to the participants, shortages of capacity and resources still prevail despite attempts by the NGOs and educational institutions and the government in particular. In the case of The Nature Conservancy (TNC) Timothy said, "If you look at the themes of the NBSAP you find that we do not have the capacity to successfully implement all of them". Jonathan argued that this is what MECDM experienced for a very long time before it was upgraded to a Ministry: prior to this the Environment and Conservation division was only a small component of a bigger ministry responsible for mining and forestry. Jonathan further commented that despite the good things now happening within the MECDM, the Environment and

[15]This metaphor simply means people do not notice incremental change going on around them until it is too late. Like the doomed frog in its slowly warming water, the Solomon Islands fails to act until its fate is sealed. Because of its economic commitment it cannot do away with the logging industry as at the moment there are no lucrative alternatives to act as substitutes.

Conservation division is still under constraint because only a small part of the Ministry is directly responsible for conservation activities.

The participants concurred that the government was not doing enough on NBSAP policy implementation, or providing resources for the initiative. Thus, Timothy warned that "if the NGOs pack up and go today it would definitely leave a very big gap…". In addition, Timothy stressed that the shifting of the NBSAP policy implementation was due to a change in the organisations situational capacity from when the policy was first formulated. On this line of reasoning Timothy explained difficulties TNC faced when trying to implement the NBSAP policy. He said, "… with the geographic information system (GIS) and financial sustainability on the NBSAP policy that are assigned for TNC to implement since we now don't have the necessary capacity these two components of the NBSAP policy would now be affected". In this situation the NBSAP needs to be re-enacted and adjusted (Faludi 1997), rather than concluding that it has failed to implement the activity. On another note Agnes believed that the MECDM should build the "capacity of the provincial governments to implement the activities of the NBSAP policy. Also we should provide the provincial governments with sufficient funds and technical capacity. Furthermore, at least the MECDM should have staff in all the provinces". Because of insufficient involvement of the government, implementation of, and assistance with, conservation activities relating to the NBSAP policy are predominantly provided by NGOs.

In addition, the participants who were aware of the policy agreed that the goals and objectives are not realistic. For example, Jonathan commented "the goals are good and so are the objectives but unfortunately in my view a lot of those, considering our economy and resources, they are not realistic…". But despite that Jonathan further argued that they are important to set the Solomon Islands on a course or direction for the future.

According to the participants, 'resource' means: human, financial, technology and equipment resources. For example, Jonathan said "many times we might require certain levels of technical knowledge". Mary commented "many communities need technical training for biodiversity monitoring and the equipment to use…".

Tom specifically mentioned two issues: "one is funding and second the resources (e.g. human resources) to do the action… for example, when we undertook the national sea cucumber (Holothurian spp) survey we were not able to cover the entire area that we earlier anticipated…".

The participants all noted that NGOs are spearheading conservation activities in the Solomon Islands and also are not exempted from the same financial constraints that are always experienced by the government. Agnes recalls that "For the past years there was no dedicated funding for the NBSAP policy and even the MECDM did not have a specific budget dedicated to biodiversity conservation… . Funding for biodiversity was not clear in our budget".

Human resources and technical capacity are two important constraints for the NBSAP implementation. Jonathan argued that "… when dealing with biodiversity the first place that anyone needs to start is to know what is it that you want to manage… but if you don't have the proper people identifying what is to be managed and the different relationships that exist between all parts of this biodiversity, then how can we move forward with our action?" In regard to the undertaking of the EIA[16] for logging activities, Kolasa said the MECDM "does not have the work force to carry out the job considering the number of logging operations. Often they have contracted it out to others to do it". It was found that the Environment and Conservation division only has 12 staff responsible for environment and conservation issues in the country.

**5. Biodiversity threats**

According to Wein 2006 and WWF (2003, as cited in Ministry of Environment Conservation and Meteorology 2009) the Solomon Islands is now categorized as among the ten most threatened forest eco-regions in the world.

Most participants agreed that the Solomon Islands' biodiversity is now under immense threat. According to Jonathan many people "regard money as more important than biodiversity. … even the politicians do the same thing by considering the revenue they will get from the project and do not put more consideration on the environmental consequences that will happen as a result".

[16] Environment Impact Assessment

Jonathan further elaborated that no matter what we put as a dollar value on biodiversity, that is only a potential value and if it does not appear in the balance sheet, people will not pay attention it. The following are the most common threats mentioned by participants:

### *A. Deforestation*

The increase in development practices has caused major threats to the Solomon Islands' biodiversity. This study found that one major threat to the Solomon Islands' forestry sector is deforestation, which is mainly caused by the logging industry. However, John and Peter argued that the causes of deforestation should not be restricted to large scale logging but also should include agricultural developments such as oil palm, cocoa, coconut and coffee plantations and small holder operations like food gardens and human settlements. These have continuously reduced forests and vegetation in the Solomon Islands and the NBSAP strategy should also focus on these areas. Likewise, in an overview of tropical deforestation Geist and Lambin (2002 143) found that among others "the underlying driving forces are fundamental social processes, such as human population dynamics or agricultural policies…".

Simon said that "in 2012 the volume of logs harvested was about 1.4 or 1.5 million cubic metres and this indicates that the environmental adverse impacts are still increasing" and as such development destroys biodiversity and habitats. Studies in 2003 and later in 2006 suggested that with the uncontrolled increases in natural logging activity, only a very few virgin forests now remain in the Solomon Islands and they are predicted to be exhausted by 2015 (URS 2003). Reasons why this may happen are:

i. The annual reports for 2010 and 2011 of the Central Bank of the Solomon Islands reveal that the logging industry is the major revenue earner for the government. The total banning of the industry would affect the government's income generation. The government therefore is deemed to be vulnerable to pressures from logging developers.
ii. Simon in particular argued that this may also be caused by weak leadership within the MFR, and especially from the more recent

commissioners who tend to encourage the logging industry by just approving applications.

iii. Another issue raised concerned the ineffectiveness of the Forestry Act 1969. According to Kolasa, the Act is outdated and does not address current issues in the Solomon Islands. Kolasa further revealed that the MFR is only facilitating the process of issuing licences and it was up to the land owners who negotiate with the logging industry. The Forestry Act does not provide the legal mandate and power to control this activity.

### *B. Corruption*

Many participants were concerned about high levels of corruption in the Solomon Islands. They said that people in the villages were often deceived by self-serving and corrupt people who told the local village people good stories about developments such as logging that in the end did not happen. Simon argues that:

> These corrupt people know the weak side of the people and attack from there… Also in our ministry there were times we just knew that the legislation was violated or we could have applied the law to control the illegal activities there but again if our bosses still insist then we just comply.

This type of action is a hindrance to the implementation of the NBSAP policy. According to Simon such directives have put government workers in the very awkward position of working against their professional consciences, because if they don't comply they might lose their jobs.

### *C. Human exploitation of resources*

The participants argued that the high rate of deforestation in the Solomon Islands is mainly caused by human exploitation, population increase, economic demand and the shifting cultivation type of gardening. Jonathan noted "fishing practices like dynamite where the target species is fish but in the process of dynamiting you'll be killing a lot of other organisms". Likewise Peter also argued that:

> … the Solomon Islands' population has increased by (2.8 or 2.3 per cent annual growth) and so we would expect small holder activities to increase like the food gardens and settlements and bit by bit the forest is cleared. And even areas that may be eyed for conservation activity can be areas ideal for settlement as well and people often just clear the

area and settle. All these are contributing to deforestation and do not help to promote biodiversity protection.

The cultivation of land for subsistence purposes is very common in the Solomon Islands. According to Nakano (1992 114) cultivation of land for subsistence purposes is referred as "horticulture" or "gardening". Participants noted that cultivation of lands for subsistence purposes causes huge impacts to the biodiversity and vegetation of the Solomon Islands. This happens in situations where the "threshold of forest cover had been crossed, the fallowing could no longer maintain soil fertility and the resilience of the system eroded" (Folke *et al.* 2002) and is therefore indirectly affecting biodiversity. Pearce *et al.* (1990 101) argued similarly that "many shifting cultivation systems, particularly developed by indigenous populations, can remain sustainable unless population expands, which requires either the opening of new land or a reduction in rotation periods" and which is the exact situation occurring in many communities in the Solomon Islands. Pressures on subsistence systems may also be caused by land being transferred to commercial agriculture such as coconut plantations.

### *D. Climate change*

The Solomon Islands is not exempt from the effects of climate change and this is an important issue, but it was rarely mentioned in my interviews. In fact, only three participants discussed it. According to both William and Simon, climate change is the driver of the changes in rainfall patterns, frequency of cyclones and the rise of sea level in the Solomon Islands. They argued that many Solomon Islanders who are living on the smaller outer islands are now being threatened by rising sea levels. According to Agnes, for the government this "takes priority over biodiversity" and the problem requires integration with the NBSAP policy.

## 6. Environmental and conservation policy integration and alignment

The integration of the NBSAP policy into the policies of other sectors is important in order to improve the NBSAP. Chapter 8 of Agenda 21 calls for the "integration" of developmental and environmental issues into appropriate policies (Mickwitz and Kivimaa 2007 68). In this study most participants mentioned the need for integration and alignment of the NBSAP policy and legislation relating to biodiversity protection into that of other sectors. Kolasa for example, argued that:

> … the MECDM has its own Act and some areas of that Act are not enforceable by us… there is no connection to our Act and policy. Especially with our outdated 1969 Forestry Act … . Therefore all other government Ministries should work together.

This really is a horizontal linkage between and among many different institutions and public sector agencies. According to the participants, enhancement of the protection of biodiversity is contingent upon appropriate institutional arrangements between those agencies responsible for coordinating the development and the management of biodiversity in the Solomon Islands. While some resource management functions are delegated to peripheral institutions much power is still retained by the central government. Examples of centrally-based resource agencies include: Forestry, Lands, Environment and Conservation and Agriculture. Jonathan said:

> Considering the issues with agriculture, lands planning or in the resource exploitation sectors like mining and forestry, you will find greater linkages between these issues. Hence, greater discussion and collaboration might really help with the sectors dealing with the issues.

Equally significant are the vertical interagency institutional linkages between key resource and public sector agencies with the national government and their counterparts in the provinces and as well as NGOs and communities. The national -provincial-local-NGO arrangements are crucial for biodiversity protection and development activities.

Peter argued that the "NBSAP's link with the other initiatives like the climate change, disaster…link is important so that when NBSAP undergoes a review it can take stock of the existing initiatives and actions of the NGOs and others". This is important given that many strategies of the NBSAP are actually implemented by other agencies and sectors, and working with these other sectors in addressing the biodiversity issues is of paramount importance.

However, as noted, 61 per cent of the participants were not even aware of the existence of the NBSAP policy. One participant recalled that in his Ministry he was responsible for the formulation of the policy and should have been made aware or been involved in the formulation of the NBSAP policy. John said "When I came to know of the NBSAP policy I felt that we should also have a copy so that we could use it as well". Direct mention of the NBSAP policy within the policies

of other sectors like agriculture and forestry just did not happen. Changing this requires good leadership, especially from the MECDM as well as other stakeholders.

**7. Lack of environmental and conservation leadership**

Social and environmental issues are becoming more complex and challenging and hence require effective leadership (Portugal and Yukl 1994).This is especially important for climate change and economic issues, which are causing problems in sustainability of biodiversity. In the Solomon Islands government structure, ministries are normally led by a hierarchy of Minister-Permanent Secretary-Undersecretary-Director and then a range of subordinate officers. However, this may be different for other institutions such as NGOs and private organisations. Despite that, they should always have an officer able to lead the organisation or institution. According to Peter, environmental leadership in these institutions is lacking. He argued that "… everybody recognizes, and I think that's the underlining thing, the need, merit and the benefit of collaboration but as I say that is only one side of the coin: the other side is leadership to forge or make the collaboration effective". This type of leadership is sometimes missing in government ministries and other institutions. Often subordinates are left without good and clear directives about which direction to take on important issues.

Even at the community level there are leaders, but what is now becoming evident is corruption within leadership. According to Simon:

> … the influential people in the community often make decisions that supersede the decisions/concerns of the majority of ordinary people who may want to conserve their resources…it is the elders or the influential people who are in the leadership positions in the community who need to be scrutinized. When these types of people have spearheaded the negotiation, already they are in a position to convince the ordinary community people not to mention the money that they have access to.

Simon continued "if in the past we were able to control logging of that nature then I believe we can still do it today. However, what is lacking is the power to enforce those things or the push behind… . There were times we experienced hierarchical directives from our bosses that often put us in an awkward position and due to

such incidents our Ministry was often criticised publicly". This type of behaviour is often encountered in many government institutions.

**8. Environmental and conservation politics and power**

Political influence is an important factor in policy implementation. In this study the participants all recognized the important role played by political bodies in the Solomon Islands. The forestry sector is one of the major revenue earners for the government and according to Kolasa, "political influences in the forestry sector are one problem. One incident involved [a foreign diplomat] and our boss here in the Solomon Islands and the Commissioner of Forests. They gave directives but the Commissioner did not give in to issue the logging permit...". Another example was shown in the article 'Dilemmas and challenges in forest conservation and development interventions: case of northwest Pakistan', in which one senior forest officer told of his experience "… whenever we catch an illegal logger, my telephone and personal mobile phone start ringing with the calls from the political persons who want the release of the offenders" (Shahbaz *et al.* 2011 476).

This is one of many indications that those administering the policies serve their own interests. At the moment the MFR has started to review the Forestry Act 1984 and this has taken a very long time as was discussed in detail in Chapter 2. According to Simon, they were instructed by the Permanent Secretary to "continue with the Forestry bill to patch up areas we have missing in our policy and to strengthen the environmental protection component of the Act. But we still don't know if it will actually go through parliament".

It was also noted that it is important for the NBSAP to be linked to the political priorities of the government but acknowledged that there are problems with fluctuation of political priorities which are often caused by changes of government. Vagasi argued that the NBSAP policy should be "linked to the ministry's corporate plan and central to it in the Solomon Islands' 2010 to 2020 National Development Strategies (NDS)... . We need to translate the NBSAP policy into our laws in order for it to be resilient to issues like government changes". This is especially noted in Pacific Island countries where government is often unstable and sometimes a new government's policies may not address previous policies.

The adoption of the NBSAP policy at the political level was critical for its implementation. Timothy said "… what I like about the NBSAP is every premier is a signatory to the document. Therefore the commitment not only concerns the national government but is inclusive of the provincial governments as well", but instead it was found that little outcomes has been achieved. Other participants argued that whilst political adoption is essential, when ownership and commitment is absent then it is likely that the policy will still be ill implemented.

**Summary**

This chapter describes various areas that have affected the implementation of the NBSAP policy and which need to be improved. Lack of collaboration and coordination appear to be a hindrance given that the government does not have all the resources and capacity needed to implement the NBSAP policy. The implementation of the NBSAP policy requires collective efforts from all the stakeholders. Lack of commitment is an area that needs to be addressed because the fact that the stakeholders have endorsed the policy does not necessarily mean that they are committed. This may be influenced by their individual interests and capacities which include, among others, financial and human resources.

Biodiversity is critically important in the Solomon Islands given that a large proportion of the population lives in rural areas and depends very much on biodiversity for survival. Further to that, the economy of the government is largely based on aspects of biodiversity such as timber and fish resources. The lack of environmental and conservation leadership is seen as another problem that hinders the effective enforcement of the NBSAP and other legislation and policies relating to it. At times, the power of politics is severe and is an extremely influential factor.

The next chapter discusses the findings in light of the literature review, with particular reference to the effectiveness of the Solomon Islands' NBSAP policy. This chapter has provided a thorough discussion of some themes that will be further examined in Chapter 6.

# Chapter Six: Discussion

## Introduction

This chapter discusses the commonalities of the findings and literature review chapters. There are six themes: (1) biodiversity issues, (2) conservation-development dilemmas, (3) conservation stakeholder networks, (4) NBSAP policy integration, (5) conservation leadership and (6) sustainability. The discussion shows that biodiversity in the Solomon Islands requires an immediate intervention to salvage the ineffective implementation of the NBSAP. The NBSAP needs to adopt a collaborative approach that integrates the Solomon Islands' local contexts.

## Biodiversity issues

This research found that the Solomon Islands is rich in biodiversity compared with other neighbouring Pacific Islands countries (PICs) and that its population which lives mostly in rural village settings, continues to depend on these natural resources for its livelihood and survival. Biodiversity is important in other ways such as for plant pollination, pharmaceutical and traditional medicines, timber, fuel and non-timber ecosystem products. Studies carried out in 62 different countries showed that wild meat and fish provide more than 20 per cent of all protein and further, that plants and animals provide 20-30 per cent of all rural peoples' income in developing countries (Kaimowitz and Sheil 2007; Vedeld *et al.* 2004). Therefore local people cannot survive without biodiversity: it is part of their lives. Both terrestrial and marine biodiversity in the Solomon Islands are vulnerable to threats caused by deforestation, corruption, over-fishing, coastal development and pollution and climate change related effects. These effects are mostly felt in the rural areas and it is the local people who really suffer from environmental destruction because they may substitute for environmental losses only to a very limited extent. It is regrettable that many local resource owners and the government, who are already aware of these threats, have failed to adequately address them. This may be due to economic demands where money is regarded as more important than biodiversity. If the value of biodiversity does not appear on the balance sheet they opt for the easy money or for short term benefits. This shows that their understanding of biodiversity is limited to its economic value and does not consider the services provided by biodiversity. According to Pearce *et al.*

(1990) the natural environment does not just have use values such as hunting, recreational and educational purposes but it also has non-use value that needs to be included in order to comprehend the total economic value of conserved resources. This 'un-used value' of biodiversity is what is often not considered by people and the government alike and so they neglect biodiversity protection. Ecosystem services should be promoted in the NBSAP policy implementation in order to change the perspective and approach of especially the local resource owners.

When it comes to deforestation in the Solomon Islands it is not only restricted to the logging industry but is also influenced by other factors such as unsustainable land use practices (e.g. food gardening) and development activities including unplanned human settlements. According to Geist and Lambin (2002) it is wrong to blame the problem of deforestation exclusively on shifting agriculture and the logging industry. Deforestation instead has a stronger relationship with increases in human population and bad government policies that neglect biodiversity protection and prioritise economic goals. Population increase has caused more demand for resources, coupled with changes in economic needs such as payment of school fees and other basic necessities such as food and household products. The increase of logging activities in the Solomon Islands even after the implementation of the NBSAP is linked with declining biodiversity including plants, animals and other species that are part of the forest ecosystems.

The life style of people in the Solomon Islands has changed in recent years and certainly since the arrival of western influences. Specifically, village people now rely heavily on money for daily living and survival. It is different from earlier years when they only practiced a subsistence type of life style. In the Solomon Islands people need money for various basics such as school fees, food and other needs such as clothes, kerosene and soap. Hence, due to the very limited options for income generation they often rely heavily on the available biodiversity. The damage caused to the environment and local biodiversity was not a big concern to them until it began to impact on them. Peter commented "… because of the pressure for basic necessities like food security and income generation, the attitude of people often overrides their good thoughts and perceptions and despite knowing it is wrong they continue with their bad practice of unsustainably

harvesting resources or inviting the logging companies into their lands." In fact, they don't seem to be concerned at the thought that depletion or inaccessibility of their resources will make life difficult or will further impoverish them. According to Wells and Mcshane (2004 514) halting or mitigating of biodiversity loss requires changing the behaviour of people and is the only way conservation can be realistic (Bride 2006) . This should be an ultimate focus of the NBSAP policy and it should have a strategy to achieve it in the NBSAP itself or as a supplement to it to address this problem.

As discussed in Chapter 2 this research found that logging is a major income source for the Solomon Islands and is one reason the government is reluctant to ban or reduce the operation of the industry. According to Peter "If the government totally bans logging that might affect its revenue generation," Kolasa also commented:

> The problem the MFR is facing is it is only facilitating the process of issuing of logging licences and it is up to the land owners who have the power to either invite the logging company into their lands or not… . Examples are: (1) the log harvest is already four times the sustainable rate but we can't stop it. In fact, the CBSI and MFR have produced reports to the government on this issue but it comes back to our Forestry Act 1969 which is already outdated and no longer applicable to address the current issues (2) our policy puts buffer strips of 50 metres inland for rivers and 25 metres for streams which are supposed to be conserved for protection but unfortunately these areas have been entered by logging activities.

The Solomon Islands' government is aware of the difficulty that is facing the forestry industry but is doing little to address it. Marine resources are facing similar problems from factors such as over-exploitation, climate change, invasive alien species and the fragmentation, degradation and destruction of habitats. As observed earlier, effects of logging activities, especially sediments have often ended up in the sea causing damage to corals and other marine habitats, which fish and other marine life depend on for survival and reproduction. Hence, we can surmise that these threats are slowly pushing the Solomon Islands' ecological systems much closer to the threshold level, the stage where the reinforcing feedback of nature itself will fail and ecosystem services like clean water system will be lost. A participant said "… at one time I was a licensee to a logging company that operated on our land and at that time we received royalties but as a

result we now have lost everything, our land and water systems are all destroyed, our water is now muddy but since we have no other option we are still using it. When the logging operation had finished, all the royalties and other benefits finished and what we have now are destroyed land, polluted water and other negative impacts." The question is how long will the Solomon Islands government continue to be sluggish in its action in addressing these threats? The resilience of the ecological system to be self-organizing and build its own capacity in order to adapt to external pressure is limited and requires effective management and policy like NBSAP to address it. The slow to-appear results of sacrificing ecosystem services or the environment should not be a reason for decision makers to continue to be complacent about this issue. How long and how far this slow response by the NBSAP policy will continue, as nature progresses towards the threshold before it is locked into failure, is a question yet to be answered. Environmental change is usually gradual and smooth and so is easily missed or ignored. More research is needed in order to investigate this process. It is one area that the NBSAP policy has failed to adequately address.

The NBSAP policy lacks adequate monitoring strategies and indicators to effectively monitor its implementation. Over the period of three years since its implementation there has been no monitoring of the NBSAP policy, which is a great set-back to the implementation of NBSAP. Monitoring is critically important to provide feedback on the policy implementation process and should adequately involve the policy administrators as well the implementers of the NBSAP activities. The research found that most agencies supposed to be implementing the NBSAP policy were not even aware of the policy and therefore awareness even within the traditional partners of the MECDM is still lacking and needs to be improved.

Politicians are rarely involved in the conservation stakeholders' network. However, they are important in policy development and implementation especially when it comes to the resourcing of the policy. For example Jonathan said "One factor that reduces the ability to implement the NBSAP is the lack of political will. There are many conservation issues that need to be addressed at the provincial level that have not been done because of the lack of capacity to do it. An example is with the MECDM, after a very long time before we had a Ministry

that is specifically responsible for environmental protection". This shows a lack of priority on environmental issues by the Solomon Islands government or more specifically by the politicians. Most politicians are not scientists but instead are administrators and political scientists and the like, but should be made aware of, the benefits of and negative impacts on; our biodiversity and ecosystems. The NBSAP policy should provide a supplementary strategy for doing this. Direct involvement of politicians is important in today's politics because:

> Politicians are rarely elected for protecting the environment, but rather for what they do to improve the economy, human security and human health. Therefore, if we are to successfully promote the importance of conserving biodiversity to decision makers and the wider public, which we have failed to do so far, we need to link biodiversity loss to the issues of most concern to current decision-makers, i.e. the economy, security and human health. We also need to link the implications of biodiversity loss to the Millennium Development Goals (MDGs; which include reducing poverty and hunger)… . We have to link the conservation and sustainable use of biodiversity to the development issues that policy-makers and the majority of the general public care about. This can be done by linking ecosystem services, i.e. the provisioning, regulating, supporting and cultural services to key development issues (Watson 2005 471).

This research found that the Solomon Islands relies very much on its physical capital such as forest and fishery resources for its economy and consequently has failed to adequately consider the importance of the environment and biodiversity, which has led to increases in poverty in the country. When biodiversity is destroyed the poor or rural people are the ones who suffer the major consequences. Hence, the protection of natural capital or biodiversity is of most benefit to rural dwellers or the poor.

It is not realistic to save every species from extinction, given the limited resources and the current economic development approach of the Solomon Islands government. What is important is for the implementers of the NBSAP to come together and prioritize what needs to be urgently addressed given the direction in which the Solomon Islands is heading. The priorities should also take into account "human health, wellbeing, and culture…" and in addition "conservation activities designed to meet people's basic needs deserve more attention" (Kaimowitz and Sheil 2007 567). The primary goal of the NBSAP is to conserve the Solomon Islands' unique and endemic biodiversity for better livelihood and prosperity for

all Solomon Islanders. Unfortunately, very little is known about the spatial aspects and dynamics of this biodiversity to justify interventions. A few independent studies have been carried out by individuals and other stakeholders (Boseto *et al.* 2008; Fasi 2009; Green 2006; Kratter *et al.* 2001; Lees *et al.* 1990; Pikacha 2008; Read 2013; Read and Moseby 2006; Sulu 2011), especially on marine biodiversity, but little work has been done on terrestrial biodiversity which the NBSAP should take into account to balance conservation activities in the Solomon Islands. The inadequacy of biodiversity assessment is a common experience in other developing countries because of their limited resources and capacity. Jonathan commented "When we talk about biodiversity the first thing we need to do is to know what we should manage. In our case where we don't have proper people to identify what is to be managed and the different relationships that exist within the biodiversity, then how can we move forward with the NBSAP implementation?"

There is an urgent need for the Solomon Islands' government to provide the necessary leadership roles to properly coordinate biodiversity and not to just piggy-back on work done by other institutions and individuals. Clear understanding of biodiversity and its ecosystems should enable the government to prioritize the actions needed and the aspects of biodiversity to protect. Prioritization of action is important to efficiently utilize the limited resources available. The NBSAP can be further improved by using strategies that encourage building of research capacity within the government institutions dealing with biodiversity issues (e.g. MECDM; MFMR; and MFR) and also by providing resources and funding to existing NGOs that have spearheaded conservation activities in the Solomon Islands. While NBSAP has some good policies there is insufficient support of conservation-related concerns to enshrine them in law. In the Solomon Islands the legal system is complicated in that customary practice and statutory legislations are not really harmonized and the NBSAP implementers should integrate this reality in their various activities. Hence, there should be action in place to address the issue in order to reduce the gap that exists.

**Conservation-development dilemmas**

The findings revealed evidence of dilemmas that exist between conservation and development despite numerous interventions by international donors and

organizations to protect the terrestrial (e.g. forest) and marine (e.g. coral) resources. The research found that the continued depletion or threats to biodiversity are strongly related to economic needs that disregard environmental issues. Hence, it requires strong linkages between conservation and socio-economic processes and also changes of behaviour and attitudes of people, which is a real obstacle to conservation according to the research findings. Conservation activities face various difficulties in the Solomon Islands and one is that resource owners often overlook benefits from biodiversity or ecosystems such as 'ecosystem services'.

The MECDM is the focal Ministry in the Solomon Islands' government for conservation (as per Environment Act 1998, Wildlife protection and Management Act 1998 and Protected Areas Act 2010) but there are also other actors involved in conservation activities. They include traditional land owners, international development agencies, implementing agencies (often NGOs), the state (provincial governments and the national government), private sector and Community Based Organizations (CBOs). Often stakeholders have different rights, priorities and interests in conservation, making it difficult to achieve collaboration. Traditional land owners are among the main stakeholders in conservation because they own most of the land in the Solomon Islands. Often they expect their interests to be considered but this is not always the case, despite the fact that conservation activity cannot be implemented without approval from the land-owning community (Keppel *et al.* 2012b). This research found that when land-owners receive inadequate benefits they tend to resort to illegal or controversial activities that often undermine the goals and objectives of the project. Theme 5 of the NBSAP deals with 'benefit sharing and access to genetic resources' but was not implemented. Working with local communities is difficult because they are not homogenous but consist of different groups and actors even within one community and they have different agendas and interests that, according to one participant, cause them to act divisively at times.

NBSAP policy is an example of a strategic plan and should be flexible in its implementation. Therefore it is not a blue-print policy intended for the end state of physical development (Brody and Highfield 2005). One problem that the NBSAP faces is that when its implementation deviates or shifts from its original plan there

is insufficient management capacity and budget resources in place to respond accordingly. It is too narrowly focused on delivering preconceived solutions within a limited time period: an average of three years, which is too short considering the available resources, capacity and nature of conservation implementation in the Solomon Islands. The stake holders should be involved to analyse the policy for prospective issues facing the implementation process and to develop possible adaptive strategies which would enable the NBSAP policy to be responsive to the changes. The implementation of the NBSAP policy needs to be driven by the local people where the activity is undertaken and hence should be flexible, in order to render genuine change that not only caters for biodiversity protection but also for the people who depend on it. It is unfortunate that most stakeholders who were assigned to implement certain aspects of the policy have not been informed, and this may be one reason the NBSAP is not integrated into the respective policies. More attention was instead paid to the planning of the policy itself than to its implementation, which is in fact the most important component of the policy process.

This study found that areas such as land use planning for settlement, gardening, and conservation areas selection are needed to be addressed. Many people were already aware of the importance of conservation, but the problem lies with people's attitudes. This is caused by pressure resulting from food security and the need for income generation that forces them to adopt short term survival tactics that lead to further damage to the environment, so they become their own enemies. Peter commented that people's bad attitudes often override their good thoughts and perceptions and caused them to engage in unsustainable harvesting and destructive developments using their resources. According to Simon "we informed people about the protection of their environment but as soon we left they just went back to their old unsustainable practices". Village elders and chiefs were often reluctant to stop their people from continue using the resources even knowing that the stock is depleting. They have the perception that if they were restrained then how they would survive. One issue is that people have limited ability to substitute the resources they are using and also lack proper resource planning so that they commit most of their area to conservation and are left with either a small area or nothing to utilize. The conservation approach in the

Solomon Islands requires sustainable resource utilization by local people, as provided in the IUCN category VI "protected area with sustainable use of natural resources" (International Union for Conservation of Nature (IUCN) 2013). This category of protected area requires working with the resource owners rather than fencing them out from their resources and should strengthen local support for conservation activities. Monitoring is important so that resources are not depleted or degraded. Monitoring was emphasized in theme 8 of the NBSAP as 'research, monitoring and information sharing'. However, this research found that there was virtually no monitoring done on the NBSAP policy implementation despite evidence that substantial amounts of information were available from other agencies and hence a process for their collation should have been prioritized in the NBSAP implementation. Despite the fact that most conservation actions were done not because of the NBSAP, they may still relate to NBSAP's activities and objectives and are still important for monitoring purposes. It is also noted that there may be difficulty in accessing this type of information in situations where the agencies are protective because of their distrust of each other (Yaffee 1994). However, this can be fixed by legislating policy that deals with reporting purposes. One option that can be considered in the NBSAP policy is to compensate or provide incentives to the resource owners for strict protection of their biodiversity or resources (Kaimowitz and Sheil 2007). However, while this is important it should be carefully implemented to not divert from the focus of the conservation programme, to protect biodiversity so it continues to provide benefit to the resource owners and not to create expectation that will not be sustainably maintained.

Experience in West Africa showed that "development practitioners have employed the notion of poverty-induced environmental degradation to argue that the continued expansion of export-oriented cotton production is the best way to reduce poverty and encourage conservation in the region (because of the wealth it would generate for potential environmental efforts)…" (Gray and Moseley 2005 10). But any conservation policy should promote reduction of poverty, food security and environmental integrity (Gray and Moseley 2005 10) as is important for the NBSAP policy. It is evident in this research that the government, combined with a few powerful elites and institutional failures are the primary

factors that are forcing ordinary Solomon Islanders to continue to degrade their biodiversity resources. Deforestation in the Solomon Islands is closely linked to direct and indirect effects of the logging industry that is largely associated with foreign companies and the current forestry policy in the Solomon Islands is supporting this action and undermines the goals of the NBSAP policy. The implementers of the NBSAP cannot sit back and expect the MFR to address its own problem and it needs the efforts from other sectors. The local resource owners may not have the necessary capacity to effectively manage their own resources such as forests and fish and may need external help when they are faced with economic, social and other pressures as already discussed.

This research found that trade-offs had not been adequately addressed in the NBSAP policy implementation but is important for the sustainability of biodiversity in the Solomon Islands. Strong sustainability requires that the total stock of natural capital remains constant (Hediger 1999; 2006; Pearce *et al.* 1990) and is the priority approach for the conservation of biodiversity. However, may not be really applicable in the Solomon Islands context given the limitation of human technical capacities, resources and funding. Hence, the concept of trade-offs, despite their possible contribution to weak sustainability is relevant in the Solomon Islands. It is vital to save some biodiversity compared to losing all. The examples of strategies that may be considered are: whether to protect those that are at lowest risk, or are in immediate danger (high risk) (Game *et al.* 2008), and or those that people highly depend upon. Decisions like this needs collaborative discussion, scientific evidence and concurrence by the relevant stakeholders.

**Conservation stakeholder network**

This research found that a conservation stakeholder network (CSN) is important for effective implementation of NBSAP policy. It was noted that while there was evidence of existing CSNs there is still a need for further improvement, given that about 61 per cent of the participants were not aware of the NBSAP policy. Solomon Islands Locally Managed Marine Areas network (SILMMA) is an example of a CSN and NBSAP can build on this. Networking is an act of bridging organizations and it provides forums that facilitate interactions of conservation knowledge and coordination of tasks amongst agencies or actors locally,

nationally and internationally. Networking enables stakeholders to cooperate to share information and resources and build trust to resolve conflicts that may arise from conservation actions. Top-down resource management is not suited to this approach to resource governance or management where more emphasis is on the planning or policy development and less attention is put on the actual implementation: the NBSAP should avoid this approach. The NBSAP management should instead merge planning with implementation and monitoring as part of a constantly rotating implementation cycle (Wells and McShane 2004 516). Given that most conservation activities are carried out by NGOs and there is little coordination by the MECDM as coordinating agency of the NBSAP, the conservation approach in the Solomon Islands is biased towards outsiders' interests because of the funds they provide for the NGOs. There was no evidence to indicate collaboration by the NBSAP management with the conservation donors and this is important for the realignment of interests. Resource management in the Solomon Islands is complex due to customary land ownership, the geographical make-up of the country and the scarcity of resources. The government needs to look beyond a single entity (e.g. government agency) and embark on effective partnership with relevant conservation stakeholders and the NBSAP can be an effective vehicle for this action. Involvement of different actors in the NBSAP policy implementation to deal with the complexities of interrelationships between environment, social and economic systems can be adequately addressed in the networking forum. This study found that government lacked scientific capacity and that this is instead concentrated in the NGOs. Since there was no proper platform of coordination in existence, this opportunity to collaborate was not being effectively used. NBSAP policy should have a clear framework of networks in the science-policy platform on ecosystem services and biodiversity to close the knowledge gaps that have existed amongst the conservation stakeholders. This should integrate science and economics with policies needed to conserve biodiversity and requires effective communication of information amongst the conservation stakeholders.

Networking assumes: "(1) relationships among actors are important; (2) actors are interdependent rather than autonomous; (3) a relationship between actors represents a flow of material or non-material resources; and (4) network structures

enhance or inhibit actors' ability to act" (Wasserman 1994, as cited in Vance-Borland and Holley 2011 278)[17]. This type of networking should involve government ministries, environmental NGOs, tertiary institutions (e.g. University of the South Pacific (USP) and Solomon Islands National University (SINU)), CBOs and others. It should involve vertical inter-agency institutional linkages between key conservation stakeholders at international, national, provincial and local community levels. This means involving different professions and expertise. Horizontal linkages are complementary in nature and also mean the involvement of the same professions and expertise. But what is commonly accepted is to include "various stakeholders, and by fostering the development of relations among them, the chance for collaborations and joint actions increases" (Bodin and Crona 2009 368) and it exposes untapped ideas. However, stakeholders often come with strengths and weaknesses and so involvement of the right stakeholders is needed to adequately compensate for each other's weaknesses in areas such as biodiversity survey capacity and provision of conservation-related information. For instance the MECDM at the moment does not have the necessary technical capacity to undertake biodiversity surveys or the resources to reach the community and to make them aware of the importance of conservation. When the Solomon Islands' government is faced with inadequate human capacity, financial resources and technical knowledge, effective networking can promote collaboration, coordination and sharing or exchange of information and resources. Networking provides avenues where policy can be transmitted to and clarified with other stakeholders. It is important that networks should not only involve people with the same knowledge but also other actors that have different expertise such as scientists, policy makers, lawyers, and also those in the development industry (e.g. logging industry) as well as lay people.

Studies show that "excessively high network density can lead to homogenization of information and knowledge which results in less efficient resource use and/or reduced capacities to adapt to changing conditions" (Bodin and Crona 2009 368). But NBSAP policy requires engagement of other stakeholders because of the cross-cutting nature of the policy that needs to involve other departments and

[17] Wasserman, S. 1994: *Social network analysis: Methods and applications* (Vol. 8): Cambridge university press.

sectors. The laws of economics provide that "division of labour according to relative ability improves outcomes" (Gutiérrez *et al.* 2011 500). Conservation stakeholders' networks will strengthen collaboration amongst various conservation actors with the capacity to effectively implement the NBSAP policy. John (a government officer) explained, "we need to build a collaborative approach and not only rely on our own officers but build the collaborative approach in order to tap into the capacity of other people who know and can do the job better than our officers". Lebel *et al.* (2005) and Pressey and Bottrill (2009) (as cited in Cohen *et al.* 2012 377) suggested that "networks of actors that cross geographical and administrative scales can be particularly important for strengthening and extending management outcomes". Also Mary said that there was lack of coordination amongst the government Ministries on conservation activities. She affirmed "I don't see anyone taking that leadership role". With regards to networking, actors who are not part of the network are also important and should be involved in the consultation process when the need arises. This should build the capacity of the network stakeholders and especially the MECDM in order to effectively coordinate the implementation of the NBSAP policy.

Conservation activity may affect resource owners as they rely heavily on biodiversity resources for their livelihood and survival and to not involve them may cause them to act against the conservation programme. The resource owners' involvement will cause them to take ownership of the conservation programmes, and that contributes to better monitoring and surveillance (Gutiérrez *et al.* 2011 386). Pacific Island people have strong connections with their land and the land and people cannot be separated from each other (Campbell 2010). Hence, stakeholders' cohesion, trust, connectedness and communication in networks are important factors for successful networking (Gutiérrez *et al.* 2011 388) which should be factored into the NBSAP policy.

The research discovered that most conservation activities in the Solomon Islands are located in rural communities within the jurisdiction of provincial governments which are not adequately engaged despite their commitment by way of endorsing the policy. Hampress said "… our provincial government does not have a conservation programme and an officer responsible and also I am not sure of the coordination between the national and provincial governments. In our case we

don't have a good relationship with our provincial government and just directly consult with the national government" which shows lack of coordination between the provincial and national governments. This research found that these two levels of government need intervention to improve their capacity and policy integration and the NBSAP can be in the better position to do this.

Stakeholders' empowerment can improve collaborative management (Vance-Borland and Holley 2011 286) to build trust that should enable transparent negotiation for effective implementation of the NBSAP policy. Stakeholders are "those who affect (determine) a decision or action, and those affected by this decision or action (whether positively or negatively)… . Stakeholders are also categorized according to their relative influence and importance: importance refers to those whose needs and interests are the priorities of aid while influence refers to the power certain stakeholders have over the success of a project" (Grimble and Wellard 1997 176). This research discovered that there was no stakeholder analysis (SA) conducted at the initial development stage of the NBSAP policy. SA is important because individual actors have unique strengths and weaknesses. Therefore SA should have been conducted at the beginning of the NBSAP policy development to identify the major stakeholders, their interests, and their potential areas of interest conflicts and how these could be addressed. The interests and agendas of the resource owners should have been incorporated in this SA process and their involvement and commitment to the policy implementation ensured to help to prevent unrealistic expectations. Furthermore NBSAP policy should have policies to empower marginalized actors such as women, who are often left out of resource management in the Solomon Islands. Their values and knowledge should be captured in the decision-making process of the NBSAP.

This research found that the main reason local communities were doing conservation was because of depletion of their resources, and especially for 'food security' and they saw conservation as a means to enable their resource to be sustained. Hampress explained "since the communities did engage with conservation because of food security that should be the focus of the conservation programme and the livelihood projects only complementary". This is important because when the livelihood funding stopped the community became discouraged

and disregarded the conservation programme with the perception that their expectations were not met. Other studies (Hunnam 2002; Hviding 2003; Keppel *et al.* 2012b) argue that alternative livelihoods for the community need to be developed because as John explained "Solomon Islanders depend very much more on a cash economy than before" for their livelihoods. Also they want improvement of their standard of living in areas such as good education and health. These services like these should not be the focus of conservation programmes but through this network other responsible sectors should provide it. While taking this approach it should not be forgotten that "…lack of sufficient economic benefits for local communities associated with conservation, sometimes reduces the effectiveness of conservation efforts" (Keppel *et al.* 2012b 260). Hence, the affected people need to realize that the benefits of conservation outweigh open access or unsustainable use of the resources. This is when the ecosystem service becomes important but often this is either not realized or disregarded by the local resource owners and beneficiaries.

**NBSAP policy integration**

Integration[18] of NBSAP policy into other policy sectors should contribute to the achievement of sustainability in the Solomon Islands. Sustainability will be discussed in the preceding theme but briefly it covers environment, economic and social systems. Therefore, policy integration is important not only to the improvement of the implementation of NBSAP but also for the achievement of the broader sustainable development agenda. Specifically, integration of the NBSAP policy into other cross-sector policies should remove contradictions that may exist between the cross-sector policies and NBSAP so as to enable these other policies to support NBSAP implementation. NBSAP policy integration requires restructuring of government institutions and policies because at present the Solomon Islands' government institutions are structured in distinct policy silos such as environment, fisheries, lands, and forests and segregated from each other, or have clear separation of functions. This current policy structure contributed to the NBSAP policy ineffectiveness by segregating environmental issues from other

[18] Policy integration means incorporation of specific policy objectives and in this case the NBSAP policy objectives into other cross-sectoral policies. It is used interchangeably with mainstreaming to mean the same.

development-related issues. Also this research found that biodiversity conservation is too complex to be implemented by a single actor like the MECDM because it cuts across a variety of actors as already discussed. For integration to be successful it requires "clear and coherent policy tools, legislation, communication and information exchange channels" (Akhtar-Schuster *et al.* 2011 301) amongst the stakeholders. This action is like bridging them together in addressing the common goal of protecting biodiversity and overcoming the problem of lack of coordination.

The current approach of the NBSAP policy, which is inadequately collaborating with the economic and resource extraction institutions like Ministries of Mines, Energy and Rural Electrification (MMERE), MFR, and Finance, National Reform and Planning (MFNRP), is not encouraging. Kolasa (a forester) explained, "Environment related issues are cutting across into other sectors: an example is with the MFR, and each agency should do certain components of it rather than leave it to the MECDM alone to address". Conservation issues have strong linkages with other sectors such as Ministry of Agriculture and Live Stock (MALS) for soil planning and the MFR for the log harvesting plan. Environmental issues were not adequately integrated into the policies of these agencies and so they often disregard conservation issues and put all the responsibility onto the MECDM. Furthermore, it is very difficult to keep track of the implementation process and see the outcome resulting from the NBSAP policy. But these agencies often have certain capacities and resources that they can use to address these conservation issues in areas such as biodiversity mapping, forestry and land survey, the areas where MECDM lacks the necessary capacity and resources. Fragmentation of policies "displaces traditional venues of control and responsibility, congests and impedes decision-making, increases zones of conflicts, and produces unintended consequences" (Lane 2008 859). This integration should maximize the conservation outcomes and enable the NBSAP policy implementation to be effective because of the increased availability of expertise and resources.

Integration of NBSAP into other cross-sector policies is also vital for adaptive management of biodiversity. The difficulty, however, is that many of these regimes consider this action to be a threat to their existing management rather

than a catalyst for policy improvement. Conservation policy should instead improve on these other policies. However, integration of NBSAP policies requires "collaboration of a diverse set of stake-holders, operating at different levels, often through networks from local users to municipalities, to regional and national organizations, and also to international bodies. Sharing of management power and responsibility may involve institutional linkages among user groups or communities, government agencies, and nongovernmental organizations (NGOs)" (Folke *et al.* 2005 448).

This research found that NGOs and CBOs are playing an important role in the implementation of conservation programmes that relate to the NBSAP policy. But the challenge is that often they have varied objectives and approaches in addressing the issues and "without a clear institutional infrastructure for stakeholders to communicate with each other, there can be difficulties in working synergistically. Also stakeholders have different types of knowledge and understandings… making it challenging to reconcile perspective and priorities…" (Akhtar-Schuster *et al.* 2011 301) . This requires coordination of NBSAP's implementation and is one way to save money and time and increase the output performance of the NBSAP policy. Based on the idea of Akhtar-Schuster *et al.* (2011) one strategy would be to strengthen a focal point as is within the MECDM responsible for coordinating with other agencies or actors. Furthermore, staff members from other agencies should be nominated to act as integrated representatives to monitor, collate and report on information relating to the integration process. This requires an action plan that provides the framework to facilitate the inter-sectoral coordination and participation of the stakeholders (Akhtar-Schuster *et al.* 2011). The second approach is to "develop an agency or taskforce to pool expertise and advice from across government to work on cross-sectoral issues currently not accounted for in the departmental structure of government… such approaches can also work to overcome cultural barriers to integration: sectoral and departmental boundaries become fluid and permeable enabling further cross-governmental cooperation, and undermining rigid and carefully defended fiefdoms capable of only delivering sectoral decision-making" (Lane 2008 860). The agreement to cooperate may involve signing of memoranda of understanding or endorsement by the cabinet that binds the public sectors'

commitments (Roux *et al.* 2008). However, while the strategy may provide accountability and commitment to the NBSAP policy implementation it is not really promising in the Solomon Islands' context given its very limited resources. This research found that while some agencies may have the necessary resources to assist in the implementation of NBSAP policy, others are struggling and this is when integration is relevant.

The NBSAP policy should be integrated in two dimensions: (1) horizontal, (2) vertical. This research found that while elements of horizontal integration of conservation policy have happened, more effort is required on the vertical integration. This is because provincial governments often have limited capacity, resources and knowledge to adequately address conservation or environmental issues. Also almost all provinces do not have an officer responsible for environmental or conservation issues and this may disconnect the local communities from their respective provincial government authorities. The research found that many communities therefore directly liaised with NGOs or the national government rather than the provincial government authority. The provincial governments should be the first contact point given that they are with the community and should know the local situation better. Vertical environmental policy integration relates to coordinated integration of strategy or policy within and outside of governmental cycles that includes international, national, provincial, non-governmental institutions and communities. Therefore integration of NBSAP policy should span across these different organizations or agencies to influence the success of the integration of the NBSAP policy. Horizontal integration means coordination of environmental policy integration in different sectors or ministries within the same hierarchical level and in this case at the national level. This means that integration of NBSAP cannot be independently achieved by MECDM being the focal agency but instead needs integrated intervention of the policy across all sectors, including for example fisheries, forest, lands, agriculture, culture and tourism so it can be inter-enforceable amongst these agencies' policies. One participant recalled the disconnection of the policies of MECDM and MFR. This needs:

> … substantive and procedural cross-sectoral cooperation, collaboration and coordination and networking between

> environmental and non-environmental sectors, joint responsibilities and procedures, sharing of resources and lack of administrative fragmentation to design solutions to shared (or common) problems. … can be extended to the general case of policy integration (PI) to address the demands of contemporary ecologically, socially, politically, administratively and legally crosscutting policy problems" (Briassoulis 2004 12).

The indicators for horizontal integration may include:

> • the existence of a long-term sustainable development strategy (SDS);
>
> • the existence of a central authority specifically entrusted with the supervision, coordination and implementation of the integration process;
>
> • relatively clear designations as to sectoral responsibility for overarching goals;
>
> • timetables and targets;
>
> • periodic reporting of progress with respect to targets at both the central and central levels;
>
> • an active and monitored usage of Environment Impact Assessment (EIA) and Strategic Environment Assessment (SEA) for all governmental policies (Lafferty and Hovden 2003 15).

As already mentioned, the critical area where NBSAP integration really needs more attention is vertical integration. Some indicators to enable its improvement include:

> • An initial mapping and specification of the major environmental challenges (issues, actors) relevant to the sector;
>
> • formulation of a sectoral environmental action plan (SEAP);
>
> • consistent and regular employment of both EIA and SEA for all sectoral policy-decisions; timetables and quantitative, indicator-based targets stipulated in the SEAP (or elsewhere);
>
> • regular reporting of the state of environmentally relevant policies within the sectors (Lafferty and Hovden 2003 13).

Furthermore, elements to further consider in regards to NBSAP integration include:

> • The need for stakeholders in all related sectors to identify and reach agreement on what the key priority issues are. Preferably…such as those as low on the hierarchy…

> • At a strategic level, and based on a shared understanding of how each of the priority issues affect society, identify and clarify or confirm all the necessary types of interventions at societal, governmental and local level.
>
> • Identify and confirm the responsibilities and lead agents for actions related to the programme of interventions.
>
> • Explicitly communicate the vision and programme of interventions to all responsible and related sectors, particularly at operational levels; make additional allowance for those stakeholders who may enter the process part-way through.
>
> •At local levels, draw up an explicit sequence of coordinated implementation activities and clearly defines responsibilities for these activities according to the agreed priorities, preferably in the order in which those priorities appear as needs on the … hierarchy (MacKay and Ashton 2004 7).

This should enable successful development of the policy objectives with the buy-in and participation of numerous stakeholders on key priorities.

> "… at strategic level, and based on a shared understanding of how each of the priority issues affect society, the required interventions at the societal, governmental and local levels have been identified. … it now becomes important to take the cross-sector policy objectives one step further by communicating the vision that inspired their development to all responsible and related sectors to ensure buy-in at the operational level. Furthermore, at the local level a list of co-ordinated implementation activities needs to be drawn up to be implemented in order of priority, along with a set of clearly defined responsibilities" (Funke and Roux 2009 28).

**Conservation leadership**

Strong conservation leadership is an important factor for the success of the implementation of NBSAP policy in organizations, institutions or departments dealing with issues relating to the NBSAP policy. It can be done by subordinates, peers or top executives. "In a review of the empirical literature on watershed partnership by Leach and Pelkey effective leadership and management was the second most frequent factor for successful partnership after adequate funding" (Folke *et al.* 2005 451). But this research found that conservation leadership was lacking in the conservation sector in the Solomon Islands, especially within MECDM. Leadership should start from within MECDM as coordinating agency and then promoted to other sectors. Unfortunately this study found that there was virtually no system in place to monitor biodiversity and development activities

that affected biodiversity existence despite the MECDM being responsible for issuing development consents as provided under the Environment Act 1998. In other words MECDM has drastically failed to monitor and evaluate its own policy. The logging industry is one factor that severely affects biodiversity and MECDM should play a greater role in addressing the issue. But according to one participant MECDM was acting like rubber stamp by just issuing development consents that instead contributed to the destruction of biodiversity. This is an unfortunate situation and had occurred because the leaders within MECDM are not effectively coordinating the NBSAP policy and providing the necessary leadership required. NBSAP should have had greater influence on the MECDM so that the outcomes of its other policies reflected the NBSAP.

It was acknowledged by interview participants that there were communities that have their resources still intact without engaging with conservation partners like the national and provincial governments, NGOs or other agencies. Hampress argued that one success story is the Tangarare community who still have their resources intact because of strong leadership in their community. The traditional management of resources was mostly by the traditional chiefs and it costs less money, resources and effort to undertake compared with formal systems of conservation. Based on this finding, the NBSAP could work with responsible agencies to address this issue of further strengthening leadership in communities and other agencies dealing with NBSAP. Strong leadership was the most important attribute in fisheries industries in 130 co-managed fisheries in 44 countries with different levels of development (Gutiérrez *et al.* 2011 387). It was argued that the most important conditions for the successful management of fisheries are "presence of community leaders, strong social cohesion, individual or community quotas, and community based protected areas. Additional key attributes were enforcement mechanisms, long-term management policies ad influence of fishers in local markets" (Gutiérrez *et al.* 2011 387).

The coordination of the NBSAP policy is not only important for providing the avenue to create this network but also for maintaining it. Conservation leaders should capitalize on the network to identify hindrances and threats to NBSAP policy and biodiversity respectively and then find ways to either address these or find another approach to avoid the problem. The leadership of the NBSAP lacks

this strategic approach. This research found that there was a lack of clear strategic direction on the implementation of the NBSAP to address issues like unavailability of resources and shifting of conservation priorities. This may happen when leadership lacks the qualities of cooperation and coordination to effectively coordinate the NBSAP policy with other agencies. Hence, the implementation of NBSAP policy requires greater involvement of multiple leaders from other organizations and agencies (e.g. MALS, MFR, MFMR, TNC, WWF and World Fish (WF)). These leaders have individual responsibilities and qualities that the coordinating agency (MECDM) should be aware of and be able to deal with effectively.

Commitment at the political level to integrate conservation or the NBSAP policies into other cross-sector policies is still lacking in the Solomon Islands. For example, Agnes argued that since the implementation of NBSAP, over the last three years the MECDM had lacked commitment to implement the NBSAP and this was evident in the lack of prioritized activities of the MECDM that relate to the NBSAP policy. Also there is no specific funding committed to the implementation of the policy so how can the government be expecting implementation when there is no commitment of resources? The Solomon Islands government relies heavily on the NGOs to implement its conservation policies but provides only very limited support to them. This study also found that the support provided was not consistent or strategic enough to ensure the continuity and sustainability of NBSAP policy implementation. The study further noted that the actions of some leaders, even those within conservation and environment cross-sector agencies, had contributed in one way or another to the destruction of biodiversity. These leaders had neglected the biodiversity issue by paying more attention to individual and immediate benefits. In doing so, they disregarded the importance of environmental sustainability as an enabling factor for the survival of future generations.

The NBSAP should not be restricted by bureaucracy but be flexible enough to effectively accommodate emerging issues or uncertainties and threats that may affect its implementation. The study showed that many leaders' actions were not guided by the purpose of the NBSAP policy but were side-tracked by either personal or political interests or influences. These are major issues causing

ineffectiveness of many policies, including the NBSAP. In the Solomon Islands these problems are very complex to solve and progress requires collective support from other sectors. The study found that leaders spend too much time on unsolvable issues that were outside the scope or influence of the NBSAP or the conservation policies. This does not mean that these issues are not important but should instead be addressed by other relevant sectors. The leaders must be prompt and effective in decision making because delaying tactics put biodiversity at risk: a prominent example is the effects of the logging industry. The research further discovered that individual agencies implement their own conservation priorities without clear connection to the NBSAP policy, showing the weakness of the conservation stakeholder network. The strength of the network depends on the ability of key people within these agencies to effectively exchange information with each other and to identify common interests. Hence, leaders of the conservation agencies and especially from MECDM are important for this strategic interaction to elicit common goals in accordance with a clear and coordinated strategic plan to implement the NBSAP policy, which should create trust between these agencies. A further finding was that the conservation leaders are more restricted to their individual policies and also the long term goals and visions as with the NBSAP policy which required more years to complete. Examples are : (1) Review existing legislation and provincial ordinances to fully support biodiversity conservation and management within a period of 24 months, (2) Undertake research and inventory of agro-biodiversity in Solomon Islands within a period of 15 months. The Solomon Islands is lacking the necessary resources to implement such activities and would require more time in order to accomplish them. Hence, the goals are unrealistic considering the nature of the activity and duration of the implementation. In addition, the policy itself lacks the framework for the partner agencies to work together.

The goals and objectives of NBSAP need to be redefined to much shorter terms and explicitly show how they can be achieved and adapted to changing situations. Despite poor implementation of the NBSAP policy, conservation leaders in the Solomon Islands have not adequately prioritized intervention, which requires continuous monitoring, information sharing and evaluation. Since it was commenced in 2009, the goals and objectives of the NBSAP have not been

adequately communicated to the cross-sector agencies and the general public. These goals and objectives need to be communicated in language and practical approaches that people can understand easily. There is a great need for leaders to be persistent in advocating NBSAP policy and not be overcautious, which may lead to little action and increased loss of biodiversity to the point at which it may be too late to rescue. Leaders must break the constraints caused by the command-control approach that slow intervention, and adopt a collaborative approach instead. Local communities in particular should be made fully aware of the importance of environmental issues as they depend very much on biodiversity. The NBSAP policy should provide an avenue whereby the internal and external stakeholders can find ways to compromise on each other's problems and priorities. At present, many officers of the implementing agencies lack support, clear direction and tougher decisions from the leadership of their respective agencies. NBSAP should also have a monitoring system to effectively monitor the NGOs to ensure that they actually are implementing the NBSAP policy.

The NBSAP policy should be "flexible and adaptable and able to manage complex ecological systems and accommodate diverse stakeholders' interests and values. Institutions in the broadest sense mean the formal and informal rules that govern human behaviour" (Brown 2003 91). Also it should be able to fit into other institutions in terms of their interests and objectives. The current scope of the NBSAP should be able to accommodate the changing situations surrounding conservation activities in the Solomon Islands. Policy actions involve several tiers of stakeholders in various sectors across the Solomon Islands but implementation fails because of insufficient coordination.

> The ability to cooperate, coordinate and coerce, however, depend on the political institutions that determine who has a say and how they make decisions on natural resource use. Another essential ingredient is a commitment mechanism to facilitate these actions… . Political institutions also determine whether the state's ability to achieve efficient resource use, that is maximizing net benefits to the population at large, or to benefit specific groups while shifting costs to the rest of society (López and Toman 2006 123).

**Sustainability**

The NBSAP policy has been constructively examined in previous chapters and themes and particularly in Chapter 3, which provides detailed discussion of how it encapsulates the essence of economic, social and environmental development. Sustainability poses a great challenge in the Solomon Islands given that the national economy is largely dependent upon extraction of natural resources or biodiversity and a high proportion of the population also depends directly upon the same and this makes sustainability a very controversial subject in the Solomon Islands. Many conservation activities completely stop the resource owners from utilizing their resources. Realizing the difficulties faced, many people raise the question: conservation for what? They consider the future as something they are not part of and what is important to them is their present day needs like food security and income generation. These people have their own needs and priorities and every individual is struggling to survive, making conservation activity difficult. These people have little concern for either intergenerational equity or intragenerational equity and their focus is on them alone. People may see this as unjust, not only for future generations but also for the present.

How then can sustainability be factored into this context in the Solomon Islands? The common concepts of sustainability reflected in many studies are:

> that natural resources are finite and there are limits to the carrying capacity of the earth's ecosystems; that economic, environmental, and social goals must be pursued within these limits; and that there is a need for inter-and intragenerational equity (Farrell and Hart 1998 29).

The volume of logs harvested has exceeded the sustainable harvest level and based on Figure 8, the forest resource extraction rate in the Solomon Islands is far greater than that of restoration, which indicates the short term vision of the government on sustainability of biodiversity.

Sustainability practices in the Solomon Islands should be re-adjusted to consider the scarcity of resources, increasing economic development demands and traditional land ownership issues but must not lose focus on the concepts mentioned. It is important that the redesigning of the NBSAP policy provides the incentives for protecting ecological systems' resilience. The reason for this is that "… if human activities are to be sustainable we need to ensure that the ecological

systems on which our economies depend are resilient. …the resilience is maintained even though the limits on the nature and scale of economic activities thus required are necessarily uncertain" (Arrow *et al.* 1995 521). In the Solomon Islands there is clear indication of dynamic change in ecosystem resilience, and furthermore, the biodiversity thresholds are uncertain due to research limitations. It is important that the NBSAP policy enables the stakeholders and partners to have a clear understanding of ecosystem dynamics, and effective environmental governance that factor in local issues, and only then can sustainability of biodiversity be achieved in the Solomon Islands.

**Summary**

The research found that threats to biodiversity are either human-induced, such as deforestation, or from natural occurrences. However, the Solomon Islands lacks the necessary resources such as human and financial capacities to address the threats and it needs collective action. Resource owners also require conservation projects or programme to provide them with benefits when their biodiversity or resources are protected. Networking is one strategic approach that can be used to address the resource scarcity problem in the Solomon Islands. Through networks the knowledge and skills of different sectors can be utilized. Networking can be horizontal, involving sectors within the same hierarchical level, or vertical with sectors in or outside of government institutions. An effective NBSAP requires good leadership within and outside of the coordinating agency of the NBSAP. Lastly, nature has limitations and its exploitation must be done within the boundaries of its carrying capacity in order for it to be sustainable.

# Chapter Seven: Conclusion

This chapter provides the concluding remarks, suggestions and recommendations for further research on the evaluation of NBSAP or any related policies in the Solomon Islands. In this research I sought to discover what had happened in the field regarding the implementation of the NBSAP policy. I am familiar with the NBSAP policy because I have been involved with its formulation, but given the NBSAP's cross-sectoral nature, it is important to have the experiences and views of other professionals, the resource owners and the beneficiaries of biodiversity. The participants included policy makers, policy implementers and local community members, meaning that the research takes account of the complete NBSAP policy process.

The research found that the Solomon Islands is rich in biodiversity, and as discussed in Chapter 2 the Solomon Islands' rainforest is ranked in the Global 200 list in the highest category of "globally outstanding". Also, the Solomon Islands is part of CTR, recognized as a global coral diversity hotspot and the "Amazon of the Seas". Its population, which mostly lives in rural village settings, depends on biodiversity for its livelihood and survival, and the government depends upon biodiversity to maintain the country's economy. Biodiversity in the Solomon Islands continues to be lost and the benefits provided by biodiversity are now being threatened. Figure 8 (page 20) shows the decreasing trend in both natural and planted forest cover and reflects the losses of other species that are part of the forest ecosystems. The research found similar trends in marine biodiversity where people now find difficulty in accessing resources. The exploitation of biodiversity is no longer sustainable.

The research brings to light the ineffectiveness of NBSAP policy in addressing the current and future environmental challenges in the Solomon Islands. NBSAP, being a strategic plan, requires coordination of a multitude of actors in its implementation. However, this is lacking and evidence for this was the response from many participants interviewed that they were not aware of the NBSAP policy. This failure denies the opportunity for negotiation that should have happened among these actors regarding issues or changes relating to NBSAP policy implementation. Changes to decisions and/or actions by the actors are a

normal process in strategic policy implementation, but because of the lack of coordination and collaboration among these actors, these changes have not been adequately justified or conveyed to the coordinating agency or to other actors. The NBSAP should be the means to the end for other cross-sectoral policies and should play a subsequent role in the implementation of other policies. The research found that the actors showed little sign of taking account of the NBSAP policy in their respective decision-making, and there was no communication of where and why they have departed in their implementation from the NBSAP policy framework. The NBSAP policy should have been used as a reference regardless of whether the actions of other actors conformed or not with the NBSAP strategy, due to rapidly changing circumstances. Furthermore, there is evidence of insufficient management capacity and finance from the MECDM to adequately respond to these changes. Little attention was paid to the implementation component of the policy.

The research found that despite some priority actions indicated in the NBSAP policy, these actions lacked agreement from the relevant actors. There is a need for adequate involvement of responsible stakeholders or actors and/ or communication of the programme of intervention. In another words, most of the stakeholders have not received the messages provided under the NBSAP policy. This requires strong 'conservation leadership' that is currently lacking in NBSAP policy implementation. There was an indication from the research that this leadership was also lacking within the MECDM. An example involved the issuing of development consents as provided under the Environment Act 1998, where the MECDM was used as a rubber stamp, lacking a clear guideline and policy threshold to adequately safeguard or control actions that contradict the NBSAP policy goals and aspirations. Hence, there is a need for strong leadership within MECDM to harmonize its own policies so their implementations support each other. This problem is worsened when other actors or agencies implement policies that show little or no connection to the NBSAP policy. A contributing factor was the lack of monitoring of NBSAP policy implementation.

The issues require the NBSAP policy to be redesigned to not only address the many problems discussed in this research but to further provide incentives for protecting ecological system resilience. Furthermore, due to continually changing

situations regarding policy implementation, adaptive policy management should be used to enable the NBSAP and cross-sector policies to accommodate changes that may arise during implementation and thus improve NBSAP interventions over time. The ultimate goal of the effectiveness evaluation of the NBSAP policy is also to identify its potential to adapt to the changing environment in order to improve the NBSAP policy.

**Limitations to the Research**

There were several limitations to the research:

• The data sample collected was very limited given that it involved only a single province of the Solomon Islands. The Solomon Islands is a diverse country with different cultures and norms in different areas, and how conservation is perceived in one province or even in one community may be different from another. Therefore, it would have been preferable for the samples to be inclusive of all the provinces in the Solomon Islands. Unfortunately this was not possible due to the very limited time and funding available for the research in this case.

• The data collection was affected by the illness and eventual death of my father. My father was hospitalized soon after I arrived in Honiara to undertake my data collection research. The need to support my family and be with my father limited the geographical range I was able to investigate during the research period.

• There were people who had been contacted and agreed to participate but then declined to participate at very short notice. This prolonged the time taken for the data collection.

• Only three female participants were involved in this study. The other three female participants contacted were not able to attend. However, it would have been better to have more female participants involved to have a better gender balance of views on the issues discussed.

• Overall, I am satisfied with the responses received from the participants, because of the different data collection methods used and the involvement of a wide range of participants with a range of expertise and experience.

**Recommendations**

This study also identifies areas for further research:

• The NBSAP is a national strategic policy and future research should include other provinces in the Solomon Islands in order to get a fair representation of views.

• There is a need for evaluation of the NBSAP policy using a stakeholder analysis (SA) approach. This is important in that NBSAP implementation involves a wide range of stakeholders, and so to it is important to better understand ways to effectively manage these stakeholders. The SA is a tool that can be used to address this problem.

• There is also a need to undertake a cost-benefit analysis (CBA) study which can be used to calculate and make comparisons of the costs and benefits of the NBSAP policy. This study is important because of the limited resources, and particularly financial ones. The CBA should enable the NBSAP stakeholders or actors to effectively prioritize the NBSAP policy actions that provide maximum benefits to the people and the biodiversity.

• Finally, in any future research there is a need to balance or adequately close the gap between male and female participants. Studies have shown that females are highly affected by destruction of biodiversity and often face lifestyle challenges such as walking great distances to fetch water and to collect firewood. Their views are significant and should be included.

# Appendices

**Appendix one: Research permit application letter**

October 1, 2012

Under Secretary
Ministry of Education and Human Resources Development
PO Box G29, Honiara

Dear Sir,

Subject: **Research Permit**

I am Jointly Sisiolo, an officer with the Ministry of Environment, Climate Change, Disaster Management and Meteorology in the Solomon Islands but currently undertake further studies at the University of Waikato, New Zealand. As a requirement for my Master's thesis I evaluate the conservation planning policy effectiveness in the Solomon Islands, focusing specifically on the Solomon Islands National Biodiversity Strategy Action Plan (NBSAP).

I therefore apply for the research permit and attached is the completed research permit form and the research statements from my two referees. I am scheduled to commence the study on the 5th of November 2012 through to 31st of December 2012

Thank you for assisting me on this matter.

Kind regards,

Jointly Sisiolo
Master's Student
Faculty of Arts and Social Sciences
University of Waikato
New Zealand

**Cell Phone:** [redacted]
**Email:** js319@waikato.ac.nz

## Appendix two: Research permit

FORM – R.B

**THE RESEARCH ACT 1982**
**(No. 9 of 1982)**

**RESEARCH PERMIT**

Permission is hereby given to:

1. Name: Jointly Sisiolo
2. Country: Solomon Islands
3. To undertake research in (subjects): To evaluate conservation planning policy effectiveness in Solomon Islands
4. Ward(s): Honiara, Roviana
5. Province(s): Western
6. Conditions:

   a. To undertake research only in the subject areas specified in 3 above.
   b. To undertake research only in the ward(s) and Province(s) specified in 4 and 5 above.
   c. To observe with respect at all times local customs and the way of life of people in the area in which the research work is carried out.
   d. You must not, at any time, take part in any political or missionary activities or local disputes.
   e. You must leave 4 copies of your final research report in English with the Solomon Islands Government Ministry responsible for research at your own expense.
   f. A research fee of *SBD300.00* and deposit sum of *SBD200.00* must be paid in full or the Research Permit will be cancelled. (See sec. 3 Subject. 7 of the Research Act).
   g. This permit is valid until 31/12/2012 provided all conditions are adhered to.
   h. No live species of plants and animals may be taken out of the country without approval from relevant authorities.
   i. A failure to observe the above conditions will result in automatic cancellation of this permit and the forfeit of your deposit.

MINISTRY OF EDUCATION & HUMAN RESOURCE DEVELOPMENT

Signed: ..... Date: 18/10/12

**Minister for Education and Human Resources Development**

**Appendix three: Letter of permission to the head of Ministries and Organizations**

Email: js319@waikato.ac.nz

Date…….

……
……
……
Solomon Islands

Dear Sir or Madam,

Subject: Research Permission

I am Jointly Sisiolo, an officer with the Ministry of Environment, Climate Change, Disaster Management and Meteorology in the Solomon Islands and I am currently on study leave and undertaking further studies at the University of Waikato, New Zealand. I have already completed a Post Graduate Diploma in Environmental Planning, and am now pursuing a Master in Social Sciences (MSocSc). This research is a fulfilment of my Master's thesis; it will evaluate the effectiveness of conservation planning policy in the Solomon Islands, focusing specifically on the Solomon Islands National Biodiversity Strategy and Action Plan (NBSAP). I am interested in exploring the effectiveness of the NBSAP in addressing current and future issues about conservation in the Solomon Islands.

Your Ministry has been identified important in this area of study, and therefore I seek your permission to involve your staff. Those who volunteer to participate would be involved in either a semi-structured or focus group interview. They will

be given an information sheet about the study and a consent form to sign and return to me at the beginning of the study.

This study will comply with the research ethical protocols of the University of Waikato. The information the participants provide will be kept confidential and secure at all times. Documents like audio recordings, written notes and photos will be kept in a secure lockable suitcase while I am in the field and I will be the only person with access to it. When returning from the field they will be securely stored at my lockable office cupboard until such time when they are no longer needed before they are destroyed, which should be after five years. The information stored in the computer will be protected by the use of a password, which will not be shown to another person. Also, as required, the identity of the participant will be protected by the use of pseudonyms.

The data collected will be transcribed, analysed and will form part of my Master's thesis. Three copies of the thesis will be printed and it will be posted on the University of Waikato library website. The findings may further be used in journals, conferences, presentations and other forms of that nature.

Your approval to conduct this study would be greatly appreciated and I would be happy to answer any questions or concerns that you may have. If you wish to contact my supervisor, Associate Professor John Campbell, he can be reached on Ph: 07838 4466.

Yours faithfully,

Jointly Sisiolo

Master's student

University of Waikato

New Zealand

**Appendix four: Letter to the research participants**

[redacted]
Email: js319@waikato.ac.nz

Date…….

Dear Sir or Madam,

Subject: Research Participation

I am Jointly Sisiolo, an officer with the Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM) and currently doing postgraduate studies at the University of Waikato, New Zealand. As a requirement for the fulfilment of my Master's degree program, I am undertaking a research project to evaluate the effectiveness of the conservation planning policy in the Solomon Islands, focusing specifically on the Solomon Islands National Biodiversity Strategy Action Plan (NBSAP).

As a person involved in this area you are invited to participate. An information sheet is attached to this letter outlining the research procedures and participants' rights, along with the consent form and schedule of questions. I am happy to answer questions or concerns you may have regarding this study through phone and email provided. Alternatively, if you wish to contact my supervisor, Associate Professor John Campbell, he can be reached on Ph: 078384466.

I am looking forward to have your input on this study.

Yours faithfully,

Jointly Sisiolo, Master's student
University of Waikato, New Zealand

**Appendix five: Schedule of questions for Honiara base participants**

| | |
|---|---|
| Semi-structure | Focus group |
| | |

The interview is intended to be flexible and interactive and not restrict you to the questions provided and you are free to raise other issues and questions you may have. Also you are not required to answer all the questions provided. The questions are focused on clarification of goals and objectives, nature of implementation, outcomes and general questions.

a. Clarification of goals and objectives
    1. What do the terms 'NBSAP' 'biodiversity' and 'protected areas' mean to you?
    2. What do you think about the objectives and goals of the NBSAP?
        i. How realistic are they?
    3. To what extent have those agreed goals and objectives been achieved?
        i. If not achieved then why?

b. Nature of implementation
    1. How was the NBSAP policy formulated and implemented?
    2. What are yours and your organization's role in the implementation of the NBSAP?
        i. Is it clear in the policy that has the responsibility for implementing the strategies?
    3. What has your organization done so far to implement the NBSAP policy?
    4. What factors might influence your ability to implement the NBSAP policy?

5. What are the major threats to biodiversity conservation in the Solomon Islands?
    i. How have those threats been addressed?
    ii. Are the threats being stopped, controlled or is there no change?
    iii. How do you know that?
6. What do you think hinders conservation practices in the Solomon Islands?
7. Do you think the implementation of the NBSAP policy can reduce negative impacts on biodiversity? If so, then in what way?

c. Outcomes

1. Does the NBSAP policy make any change/improvement to conservation activities?
    i. Expansion of the protected areas?
    ii. Reduction in loss or degradation of natural values e.g. deforestation?
2. What is the quality of biodiversity protection, such as after and before the implementation of NBSAP?
3. What is your view of the coordination amongst different conservation actors (e.g. the national government, provincial governments, NGOs and the local community)?
4. How is the conservation activity being undertaken in terms of finance?
    i. Do the conservation programmes (e.g. CBO) receive any financial assistance from NGO, Government or other donors? If not then why?
5. Do you notice any changes of human behaviour/attitude in the community as a result of the implementation of SINBSAP? Explain.
6. Are the NBSAP policies effective/sufficient to protect the environment or biodiversity? Explain.
7. What are the achievements of the policy so far?

d. General questions

1. How do you feel about the NBSAP policy?

2. Are there ways you think NBSAP could be better improved?
3. Are there other existing policies or laws regarding conservation apart from NBSAP? How are those implemented or enforced?
4. Why are the local communities engaged in the conservation activity?
    i. Do they get any benefit from conservation? If not, why?
5. What are factors that the community thinks affect the conservation success?
6. How are protected areas managed in the Solomon Islands?

**Appendix six: Schedule of questions for Naro community participants**

| | |
|---|---|
| Semi-structure | Focus group |
| | |

The interview is intended to be flexible and interactive and not restrict you to the questions provided, and you are free to raise other issues and questions you may have. Also, you are not required to answer all the questions provided. The questions are focused on the nature of implementation, outcomes and general questions.

**a. Nature of implementation**

1. What is your role in the conservation programme?
   i. Is the responsibility for your programme clear?
2. What have your programmes done so far that may contribute to the achievement of the NBSAP?
3. What factors might influence your ability to implement your programme?
4. What are the major threats to the biodiversity conservation programme?
   i. How have those threats been addressed?
   ii. Are the threats being stopped, controlled or is there no change?
   iii. How do you know that?
5. Do you think the current conservation policies we have now can reduce negative impacts on biodiversity? If so then in what way?

**b. Outcomes**

1. Is there any change/improvement to conservation activities?
   i. Expansion of the protected areas?
   ii. Reduction in loss or degradation of natural values, e.g. deforestation

2. What is the quality of your biodiversity protection, for example since you started your programme?
3. What is your view of the coordination amongst different conservation actors (e.g. the national government, Provincial government, NGOs and the local community)?
4. How is your conservation programme being undertaken in terms of finance?
    i. Do you receive any financial assistance from NGO, Government or other donors? If not then why?
5. Do you notice any changes of human behaviour/attitude in the community since you started your programme? Explain.

**c. General questions**

1. Are there ways you think conservation policies could be better improved?
2. Why are you or your community engaged in the conservation activity?
    i. Do they get any benefit from conservation? Explain. And if not, why?
3. What are factors that the community thinks affect the conservation success?

## Appendix seven: Information sheet for semi-structure

University of Waikato
Faculty of Arts and Social Sciences
Private Bag 3105, Hamilton, New Zealand

I am a Master's student at the University of Waikato in the Faculty of Arts and Social Sciences. I am undertaking this research as a requirement for the fulfilment of my Master's thesis. My research will evaluate conservation planning policy effectiveness in the Solomon Islands, focusing specifically on the Solomon Islands National Biodiversity Strategy Action Plan (NBSAP). I am interested in exploring the effectiveness of the NBSAP in addressing current and future issues about conservation planning in the Solomon Islands.

You have been identified as a person of significant importance in this area and are invited to participate in this research, and your participation is entirely voluntary. However, if you participate, you will be engaged in a semi-structured interview that will take 30 minutes, but the time may vary depending on your input. The total number of participants for the semi-structured interview is ten and they will come from Government ministries, Non-Government Organizations, staff of Tavanar marine and terrestrial conservation association and tribal members. The interview is flexible, whereby I will provide issues to be discussed, but you also have leeway to express your views and ideas. The interview will be audio recorded and transcribed later for analysis.

**Participant's rights**

The University of Waikato has a very strict general ethical protocol for the researchers to adhere to. It provides various rights that you have, which include your right to:

1. Refuse participation or being selective on the type of questions that you wish to answer.
2. Withdraw your consent in part or full within the period of four weeks from when you were interviewed.
3. Be excused from answering any question that you wish to.
4. Ask questions at any time during and outside of the interview session.

**Confidentiality**

I consider the research to be not sensitive, and do not expect it to cause any direct risk to you. Despite that, the ministry, organizations or community you come from are quite small and may cause you to be identified. Nevertheless, to the best of my ability I will make sure the information I gather is kept confidential and secure at all times. The documents, like audio recordings, written notes and photos will be kept in a secure lockable suitcase while I am in the field and I will be the only person with access to them. When returning from the field, they will be securely stored in my lockable office cupboard for five years before they are destroyed. The information stored in the computer will be protected by the use of a password, which will not be shown to another person. Also, as required, your identity will be protected by the use of pseudonyms.

**Data collected**

The data collected will be transcribed, analysed and will form part of my Master's thesis. Three copies of the thesis will be printed and it will be posted on the University of Waikato library website. The findings may further be used in journals, conferences, presentations and other forms of that nature.

**Approval Statement**

This research project has been approved by the Human Research Ethics Committee of the Faculty of Arts and Social Sciences. Any questions about the ethical conduct of this research may be sent to the Secretary of the Committee, email fass-ethics@waikato.ac.nz, postal address, Faculty of Arts and Social Sciences, Te Kura Kete Aronui, University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240.

Researcher: Jointly Sisiolo
Cell phone [redacted]
Email: js319@waikato.ac.nz

Supervisor: Associate Professor John Campbell
Phone: 07838 4466
Email: jrc@waikato.ac.nz

## Appendix eight: Information sheet for focus group

University of Waikato
Faculty of Arts and Social Sciences
Private Bag 3105, Hamilton, New Zealand

I am a Master's student at the University of Waikato in the Faculty of Arts and Social Sciences. I am undertaking this research as a requirement for the fulfilment of my Master's thesis. My research will evaluate conservation planning policy effectiveness in the Solomon Islands, focusing specifically on the Solomon Islands National Biodiversity Strategy Action Plan (NBSAP). I am interested in exploring the effectiveness of the NBSAP in addressing current and future issues about conservation planning in the Solomon Islands.

You have been identified as a person of significant importance in this area and are invited to participate in this research and your participation is entirely voluntary. The focus group interview involves at least four participants who are interviewed on a strictly defined topic in an informal way. The participants have the opportunity to share and formulate ideas and views during the discussion. And for the purpose of this research there will be two interviews of between four and six participants in each session. The first interview is for the Government ministries and the Non-Governmental Organizations and the second one will involve the Tavanar marine and terrestrial association staff and tribal members. The session will take one hour depending on information output, and the time, venue and date will be agreed upon by all the participants. Also, the interview will be audio recorded and later transcribed for analysis.

### Participant's rights

The University of Waikato has a very strict general ethical protocol for the researchers to adhere to. It provides various rights that you have, which include your right to:

1. Refuse participation or be selective on the type of questions that you wish to answer.
2. Withdraw your consent in part or full within the four weeks period from when you were interviewed or participated in the focus group.
3. Be excused from answering any question that you wish to.
4. Ask questions at any time during and outside of the interview session.

**Confidentiality**

I consider the research to be not sensitive, and do not expect it to cause any direct risk to you. Despite that, the ministry, organizations or community you come from are quite small and may cause you to be identified. Nevertheless, to the best of my ability I will make sure the information I gather is kept confidential and secure at all times. The documents, like audio recordings, written notes and photos, will be kept in a secure lockable suitcase while I am in the field and I will be the only person with access to them. When returning from the field they will be securely stored in my lockable office cupboard for five years before they are destroyed. The information stored in the computer will be protected by the use of a password, which will not be shown to another person. Also, as required, your identity will be protected by the use of pseudonyms. However, since the interview involves more than one person I cannot fully guarantee the confidentiality of the information despite the protection measures that I will take.

**Data collected**

The data collected will be transcribed, analysed and will form part of my Master's thesis. Three copies of the thesis will be printed and it will be posted on the University of Waikato library website. The findings may further be used in journals, conferences, presentations and other forms of that nature.

**Approval Statement**

This research project has been approved by the Human Research Ethics Committee of the Faculty of Arts and Social Sciences. Any questions about the ethical conduct of this research may be sent to the Secretary of the Committee, email fass-ethics@waikato.ac.nz, postal address, Faculty of Arts and Social Sciences, Te Kura Kete Aronui, University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240.

Researcher: Jointly Sisiolo
Cell phone: [redacted]
Email: js319@waikato.ac.nz

Supervisor: Associate Professor John Campbell
Phone: 07838 4466
Email: jrc@waikato.ac.nz

## Appendix nine: Consent form for semi-structure

UNIVERSITY OF WAIKATO
FACULTY OF ARTS & SOCIAL SCIENCES

Name of person interviewed: _____

Contact details: _____

| Please complete the following checklist. Tick [ ✓ ] the appropriate box for each point | Yes | No |
|---|---|---|
| I have received a copy of the Information Sheet describing the research project. | | |
| I agree to participate in this interview. | | |
| I understand that I may withdraw my consent until four weeks after the interview. | | |
| I understand that I can decline to answer any particular question. | | |
| I understand that I can stop the interview at any time. | | |
| I consent to this interview being audio recorded. | | |
| I understand that I can ask to have the recorder turned off at any time. | | |
| I wish to remain anonymous. [This may be further clarified during the interview process.] | | |
| Any questions I have, relating to the research, have been answered to my satisfaction. | | |
| I understand that I can ask any further questions about the research that occurs to me during my participation. | | |
| I agree that the information I provide can be used for the purposes of the research as outlined in the Information Sheet. | | |
| I understand that I retain ownership of my interview and it is being used in this research with my consent. | | |
| I wish to receive a copy of the findings. | | |

Participant: _____ Researcher: Jointly Sisiolo

Signature and date: _____ Signature and date: _____

**Appendix ten: Consent form for focus group**

UNIVERSITY OF WAIKATO
FACULTY OF ARTS & SOCIAL SCIENCES

Name of person interviewed: _____

Contact details: _____

| Please complete the following checklist. Tick [ ✓ ] the appropriate box for each point | Yes | No |
|---|---|---|
| I have received a copy of the Information Sheet describing the research project. | | |
| I agree to participate in this interview. | | |
| I understand that I may withdraw my consent until four weeks after the interview. | | |
| I understand that I can decline to answer any particular question. | | |
| I understand that this focus group will be audio-recorded | | |
| I undertake to keep everything I hear in the focus group confidential | | |
| I wish to remain anonymous. [This may be further clarified during the interview process.] | | |
| Any questions I have, relating to the research, have been answered to my satisfaction. | | |
| I understand that I can ask any further questions about the research that occurs to me during my participation. | | |
| I understand that I retain ownership of my interview and it is being used in this research with my consent. | | |
| I wish to receive a copy of the findings. | | |

Participant: _____Researcher: Jointly Sisiolo
Signature and date: _____Signature and date: _____

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