SOLOMON ISLANDS

5TH NATIONAL REPORT

ON THE IMPLEMENTATION OF THE CONVENTION OF THE BIOLOGICAL DIVERSITY

MARCH 2014

Ministry of Environment, Climate Change, Disaster Management & Meteorology

Executive summary

The biodiversity of the Solomon Islands, in general, is in good health. Low human population density, uninhabited islands, difficulties to access and use natural resources, and customary and legal protection, in various ways, can help explain this. Threats to the country's biodiversity are mainly localized and vary across islands, biomes, ecosystems, corridors and taxonomy. In recent years habitat destruction and overexploitation of wildlife has had enormous pressure on all types of biomes. Uncontrolled and poor waste management practices have also been considered a threat to biodiversity. Emerging issues such as invasive species and climate change could only exacerbate these pressures. Coupled with capacity constraints or inadequate capacity (financial, human resources, technological and institutional capacity) to implement mandates and enforce legislation, biodiversity loss thus results from multiple causes in quite a complex way.

Numerous published articles have clearly recognized and pointed to the underlying causes of biodiversity decline in the country. Most rural people heavily depend on biodiversity for their wellbeing and livelihoods and biodiversity loss will hit them hard, with a possibility that unabated biodiversity loss culminating in poverty, among the rural poor. Biodiversity constitutes a key source of income, spiritual attachment and health for rural populations (representing 85% of the total population) with a "subsistence" mode of life. Biodiversity also constitutes a powerful source of cultural identity. Destructive economic activities, most notably harvesting and exportation of exotic woods, which primarily rely on ecosystems and ecosystem services, have direct repercussions on the Gross Domestic Product and rate of employment. Robust ecosystems perform a vital role in preventing the occurrence of extreme natural events, such as flash-flooding, which can cause considerable human and economic losses.

Since the ratification of the CBD by Solomon Islands in 1995, following the increasing concern over the country's biodiversity loss and their management, there has been more attention and momentum gained in keeping this in check. The instituting of the Environment and Conservation Division with its mandates under the Environment Act 1998 provided the administrative mechanism for addressing biodiversity loss. In 2010 the

country's biodiversity was given a boost with the development and endorsement of the NBSAP. Faced with capacity constraints, the Environment and Conservation Division relies on line Ministries, provincial government, local NGOs, and international partner NGOs to deliver environmental services to the people. The importance of the NBSAP for biodiversity conservation is it brings diverse institutional and individual interests together in support of promoting and integrating environmental goals across sectors. Enhancing the level of environmental knowledge within the wider society including relevant sectoral agencies is absolutely needed. It is generally accepted that traditional resource management methods and practices have lost their vigour with biodiversity education and management putting more emphasis on scientific based evidences.

In terms of marine biodiversity, species like tuna has been and continues to contribute significantly to the economic and institutional development of the country. Dolphins, dugong (Dugong dugong), turtles and fish (sharks, coral reef fish) also have similar economic and institutional importance, nationally, regionally and globally.

In the coastal and terrestrial environment, poor land use management has been and continues to degrade the coastal biodiversity, inland water biodiversity and terrestrial biodiversity. In most cases people view coastal land and aquatic environment as dumping ground and human waste disposal sites.

Most coastal marine invertebrates and their terrestrial counterparts are still poorly understood. Their distribution, taxonomy and their potentials for agriculture and aquaculture development require further research investments. Sea cucumber, the only commercial echinoderm has now been overharvested and placed under export restrictions. The Ministry of Fisheries and Marine Recourses (MFMR) has made a breakthrough, culturing the peanut sea cucumber and mark the turning point for culturing of native commercial species. There has been significant erosion in agro-biodiversity as current practices succumbed to and favours introduced species. Agricultural development sets the cornerstone for development and employment, which shows the potentials and importance of agro-biodiversity for economic development. Cocoa and coconut are the most used crops throughout the country. The eating habits, the standard of living, the cultural interactions

and the shift in the staple diets have encouraged changes in the production systems. The fact that most rural people consume local food does not suggest that they view local food to be healthy but, rather, is caused by financial difficulties.

As alluded to earlier habitat destruction particularly from logging and mismanaged subsistence farming continue to impact heavily thereby diminishing the Solomon Islands terrestrial and coastal biodiversity richness. Their impact on inland water biodiversity is the most poorly known since inland biodiversity has been marginalised over the past successive years. Therefore the current knowledge of Solomon Island's hydrology, inland water ecosystem, their biodiversity and the ecosystem services are largely underexplored and poorly understood.

With respect to biodiversity management interventions, in particular for coastal biodiversity the Solomon Islands has many protected areas mostly governed by community based resources management arrangement. Most received initial assistance from international NGOs and University. An emerging protected area network (Solomon Islands Marine Managed area (SILMA) has been very focal in advocating for marine protected areas. It becomes a central forum for NGOs, GOs and CBOs collaboration in marine and coastal biodiversity managements. Its registration under the charitable trust Act ensures its activities gain recognition with communities. While most of the protected area focused on preservation ideals, there is also a critical need for investing in restorative initiatives.

Concerning environmental education and public awareness, many protected areas have programmes for raising public awareness of the values and importance of conservation. The inclusion of environment subjects in tertiary, secondary, primary education and the newly adopted early childhood curriculum is a great boost environmental education. Under the Solomon Islands MDG goal 2 it is the ultimate aim to involve all children in primary education by 2015 and, this assures all Solomon Island children to expose to some form of environment education. The establishment of the Climate Change Division in the Ministry of Environment, Conservation, Disaster Management and Meteorology (MECDM) is a very significant step, demonstrating the Government's commitment to the issue, with short-

term training on climate change issues having been organized for relevant personnel from stakeholder groups.

The Lalsu of the Public Solicitor office has been building land owners capacity on environmental laws and required steps for declaring protected area under the Protected Areas Act 2010. Many pamphlets have been produced including template for assisting CBO to register under the Trust Act and the Business Act.

With respect to agro-biodiversity, Solomon Islands has collected and deposited accessions in the regional germplasm banks within the Pacific Commission. Some NGOs are now encouraging communities to conserve food plant varieties through *in situ* conservation programme. The Ministry of Fisheries and Marine Resources (MFMR) has also established a framework for community-based resources management (CBRM+). Recent legislation has introduced management control measures, such as a ban on the export of certain species and limits on certain capture fisheries technologies. Subregional initiative such as the Party to the Nauru is also paving way forward towards the adding of values and economic return to our tuna development.

The Small Business Enterprise Centre is running various business training courses to assist in the management and improvement of livelihood initiatives. The SBME have also paved way in teaching various businesses in the country. Furthermore, a major programme on waste management awareness, supported by the World Bank, is being implemented in Honiara in conjunction with the City Council. This has resulted in an enhanced level of awareness on most environmental and biodiversity issues at all levels of society, which reveals itself in the increased level of support.

Regarding species monitoring, the production of the State of the Environment Report (2008), National Adaptation Program of Action (2008), Second National Communication on the impact of climate change on biodiversity required under the UNFCCC (2010) and implementation of the Programme of Work on Protected Areas (PoWPA), have generated volumes of information and knowledge which help to catalyze efforts towards conservation and biodiversity-related activities. The fifth report will add to the momentum.

Since, the NBSAP come into place, its *implementation* has been improved through various interventions of the Global Environment Financing Mechanism. Other donors have assisted notably the EU and AusAID particularly within the sustainable use context. In parallel, many international NGOs working in the country are leveraging international resources to facilitate programmes in country. The new Protected Areas Act has legalized the establishment of a Trust Fund to assist in the development of conservation areas and other biodiversity- related activities.

Building on our past strengths and weakness, we reaffirmed and recommitted to the Strategic Plan for Biodiversity 2011-2020 and its Aichi Biodiversity Targets, and have identified the following areas of interventions, for the next 7 years:

- ✓ Environmental education and public awareness
- ✓ Governance and Compliances
- ✓ Sustainable finance
- ✓ Research, Traditional Knowledge, Science, Information System and Technology
- ✓ Marine and Coastal Biodiversity
- ✓ Agro-biodiversity
- ✓ Forest, Mountain and plant genetic Biodiversity
- ✓ Development and Pollution control
- ✓ Invasive Alien Species
- ✓ Climate Change, Disaster Risks Management and Natural Infrastructure
- ✓ Protected Area Systems
- ✓ Species Conservation
- ✓ Inland Water Biodiversity
- ✓ Access and Benefit Sharing (ABS)
- ✓ Implementation

Viewed as an implementing mechanism of the NBSAP (2009), the updated NBSAP has 4 strategic goals, 16 targets, 92 milestones and 200 proposed activities and enclosed by specific indicators summed into 21 policy indicators.

The implementation mechanism of the updated NBSAP comprises of an administrative structure, a resource mobilization plan 2014-2018, an environmental education and public awareness plan, and a fifth and the sixth report. Lastly projects and conventional GA, NGOs CBOs operations serves as another implementing mechanism. The table below summarizes the newly updated NBSAP targets with reference to the previous NBSAP (2009) and the Aichi target.

Solomon Islands NBSAP targets		
The Updated NBSAP Target	**NBSAP (2009) themes**	**Aichi Target**
Priority 1: Environmental Education and awareness **Target 1** By 2020, the people of Solomon Islands are aware of the values of biodiversity, and those steps required for conserving and sustainably using them	7	1
Priority 2: Governance and Compliances **Target 2** By 2020, existing environmental laws and regulations, policy and management plans including those provisions supporting of incentives and subsidies for biodiversity managements are utilized to conserve and sustainably use and also to eliminated and phased out any negative impacts on biodiversity	1, 12	3, 4.

Priority 3: Sustainable Finance **Target 3** By 2020, the Solomon Islands, has developed and adopted a sustainable finance plan to mobilizes resources and to effectively implement the national biodiversity strategic action plans, to complement or build on the NDS and other related environmental policy and at least identified, developed and adopted strategies to generate revenues from two revenue sources	6	20, 3
Priority 4: Research, traditional Knowledge, Science, Information System and Technology **Target 4** By 2020, Research, encompassing traditional knowledge, science, and social science, economic investigation has been raised including the transfer of related technologies thereby biodiversity values, functioning, status, and the consequences of their losses are better understood and managed.	8	18, 4, 20.
Priority 5: Marine and Coastal Biodiversity **Target 5** By 2020, the Solomon Islands has reinforced and reaffirmed its commitment, reciprocally, to the achieving of regional and sub-regional objectives in efforts to sustainably managing of tuna and reducing of tuna by catch in her EEZ, thereby doubled economic benefit/return.	Not covered	6 , 3

Target 6 By 2020, coastal commercial fish, mammals, reptiles, and invertebrates are effectively managed and harvested sustainably within the current legal instruments and management rules thereby improved the health of the ecosystem with special attention to protect threatened species and restoration of vulnerable ecosystems	Not covered	6, 12, 10
Priority 6 Agro-biodiversity **Target 7** By 2020, the genetic diversity of native cultivated plants and domesticated animals and of wild relatives, including socio-economical and culturally valuable species and/or their population are maintain/increases while discouraging activities that had been contributing to their population diminish.	9	7 , 13.
Priority 7 Forest, Mountain and plant genetic Biodiversity **Target 8** By 2020, the rate of deforestation particularly from industrial logging of native trees, slush and burn has been reduced by 50%, and initiatives are made towards the restoration of 15% of fragmented logged areas, maintained 10% of remaining virgin forest thereby contributing to conservation, sustainable use and providing avenues for equitable sharing of forest biodiversity alongside initiative for mitigating against climate change.	Not covered	5 , 15, 10.

Priority 8 Development and Pollution control and Biodiversity **Target 9** By 2020, wastes; solid waste, non-biodegradable and highly toxic waste, including excess nutrients has been brought to levels that are not detrimental to ecosystem function and biodiversity including human health.	11	8
Priority 9 Invasive Alien Species **Target 10** By 2020, invasive alien species and pathways in Solomon Islands have been identified and, measures are in place to control potential entry of new invasive species. Developed and adopted an implementation plan to control or eradicate current invasive species that are threatening food security, trade and biodiversity including human health.	4	9
Priority 10 Climate Change and Disaster Risks Management and Green Infrastructure **Target 11** By 2020, 50 % of the biodiversity priority areas identified in NAPA and the Climate Change policy been operational, and a mitigation action plan in place, been integrated with infrastructure developments and disaster risk management.	10	10, 15.

Priority 11 Protected Area System **Target 12** By 2020, at least 10 per cent of the terrestrial and inland water, and 15 per cent of coastal and marine areas of the Solomon Islands, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively management regimes; thereby an ecologically representative and well-connected system of protected area is established, integrated into the wider landscapes and seascapes conservation based initiatives.	3	11
Priority 12 Species Conservation **Target 13** By 2020 the Solomon islands has reaffirmed and enhanced its commitments towards the reducing and managing of known endangered species, and prevented endemic species from undergoing local extinction; and has reinforced its commitments towards the global and regional efforts to prevent extinction of migratory threatened species	2	12
Priority 13 Inland Water Biodiversity **Target 14** **By 2020,** ecosystems that provide essential services, particularly services related to water, its contribution to human health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, land owners, local communities, and the poor and vulnerable.	Not covered	14, 15

Priority 14 Access and Benefit Sharing (ABS) **Target 15** **By 2015**, the Solomon Island has acceded to the Nagoya protocol and there by developed and adopted an action plan for the fair and equitable sharing of benefits arising from the utilization of its genetic resources; and thereby by 2019 a legal instrument is developed and adopted for the protection and disseminating of local knowledge and practices that associated to their uses.	5	15
Priority 15 NBSAP Implementation **Target 16** By 2014, Solomon Islands has reviewed, updated and reaffirm commitment to NBSAP as a policy instrument and has already implementing 25% of the stated actions	NBSAP (2010)	17

Table of Contents

Acknowledgment

The Environment and Conservation Division of the Ministry of Environment Climate Change, Disaster Management and Meteorology is pleased to present to you this 5th National report on the implementation of the United Nation Convention of Biological Diversity (CBD). The fifth national report forms one output of the project for updating of the Solomon Islands NBSAP, 'Support to GEF Eligible Parties (LDCs & SIDs) for the Revision of the NBSAPs and Development of Fifth National Report to the CBD - Phase 1'. It provides important information for the development of the Global biodiversity outlook 4. At the same time provides useful information for the final updating of the Solomon islands NBSAP. We acknowledge our partners particularly UNEP and GEF for funding the project. We also acknowledge all stakeholders for inputs. Finally we wish to acknowledge those who collated and put these informations into a story- this manuscript.

On behalf of the Environment and Conservation Division of the Ministry of Environment Climate Change, Disaster Management and Meteorology, I declare this report as official.

Signature: _____ Date:____31/3/2014_____

Mr Joe Horokou

National Focal Point – Convention on Biological Diversity

Environment and Conservation Division

Ministry of Environment, Climate Change, Disaster Management & Meteorology

Honiara, Solomon Islands

DISCLAIMER

This report is developed for ECD. However, the views presented may not reflect the view of the partners.

Chapter 1

Update of the Solomon Islands' biodiversity; status, trends, threats and their implications on people's well-being

1.0 Introduction

Biodiversity 'the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part, including diversity within species, between species and of ecosystems.'[1] The concept of ecosystem service[2] is increasingly useful in untangling the notion of biodiversity, where people are viewed as integral part. As such biodiversity is increasingly viewed as directly related to poverty eradication, economic development, and wellbeing and therefore underpins one of the most important components for achieving the 2000 Millennium Development Goals. People's value, is there for important for better resources management and provide the ultimate components for achieving of the CBD three objectives- conservation, sustainable use and equitable sharing of genetic resources.

An effort to untangle the concept of ecosystem service is firstly attempted by the Millennium Ecosystem Assessment (MEA) (2005)[3] report. The MEA clarified *ecosystem services* into four categories; (1)The *provisioning services* which include food, water, timber, fiber and resources for the development of medicines (2); *Supporting services* includes nutrient cycling, soil formation, supplying oxygen through photosynthesis (3); *Regulating services* includes flood and disease control, water purification, climate regulation, the prevention of natural disasters and the mitigation of damage, control of pests through natural enemies (4); *Cultural services* includes spiritual, recreational, and

[1] United Nations (1992) Conservation on Biological diversity

[2] Ecosystem services are the benefits people obtain from ecosystems.

[3] Millennium Ecosystem Assessment Ecosystems and Human Well-Being: Synthesis (2005) Island Press, Washington, DC.

cultural benefits. As such when people are placed at the center of ecosystem; ecosystem services become fundamentally similar across all biomes.

The terrestrial biomes of the Solomon Islands comprised of tropical rain forest, mountain, and inland water, volcanic islands and crapes, hot springs and mud pools. The coastal biodiversity constitutes of coral reefs, mangroves, intertidal zones, estuaries, seagrass, algae, literal vegetation and estuaries. It includes all species found in these ecosystems and those species found in area between 50 meters below mean sea level and 50 meters above the high tide level or extending landward to a distance 100 kilometres from shore[3]. In the marine biomes tuna supports commercial development and coastal artisanal fisheries. Whales, dolphins, sharks, and turtles provide multiple uses to the islanders. Likewise agro-biodiversity supported subsistence livelihood and contributed significantly to the local and foreign revenues.

There have been increasing evidences in support of the erosion of biodiversity which are having repercussion on the ecosystem services. The most notable threats are habitat destruction, overharvesting, mismanaged agriculture and mining developments. Invasive species and waste are also impacting on the health of biodiversity which has been exacerbated by climate change and natural disaster. Weak governance, insufficient funds and the lack of capacity thereto, have left these threats unattended.

We describe here some of the main types of biomes and species and the benefits people gained from them. The report builds on the 4th National report[4] from an *outcome-impact evaluative* perspective in part to the Solomon Islands commitment towards the implementation of the CBD (1995) and its updated strategic plan and the Aichi targets. It build around the testing question 'To what extent do the CBD and NBSAP (2009) helped influence better biodiversity management in the country?'

We assessed the Solomon Islands biodiversity status, which provide the basis for the updated NBSAP. At the backdrop we weigh the Aichi targets using a score card format- the

[4]MECDM. 2011. Fourth National Report to the Convention of Biological Diversity , Honiara , Solomon Islands can be derived from http://www.cbd.int/doc/world/sb/sb-nr-04-en.pdf

traffic light code in our assessments. Information presented here are derived from the preliminary stock take reports for the updating of the NBSAP[5,6], state of coral reef[7], the state of plant genetic resources[8], the state of the environment report [9], newspapers, public documents and peer reviewed literatures. Observations and experiences are also used.

Following the guideline for the development of the 5th National report[10] this Chapter is structure around the following key questions; (A): Why is biodiversity important for the Solomon Islands? (B);What major changes have taken place in the status and trends of biodiversity in the country? (C); What are the main threats to biodiversity? (D); What are the impacts of the changes in biodiversity for ecosystem services and the socioeconomic and cultural implications of these impacts? (E); What are the possible future changes for biodiversity and their impacts? We present our response under various thematic (biomes) where we have also adopted as our priority areas of intervention for the next seven years.

1.1Why is biodiversity important for the Solomon Islands?

1.1.1 Coastal Biodiversity

Characterised by islands and surrounded by a massive Pacific Ocean-left 95% of the Solomon islanders associated with the coastal environment, where at least 50 to 90% of proteins are obtained from the coastal biome particularly fish. Seafood, curio and jewelry,

[5]Environment and Conservation Division. 2012. Solomon Islands state of biodiversity, MECDM, Solomon Island Government, Honiara, Solomon Islands.

[6]Environment and Conservation Division . 2012. Stock taking report for the review of the Solomon Islands National Biodiversity Policy and Strategic Action Plan: review of laws, policies management plans and current project and programmes, MECDM, Solomon Island Government, Honiara, Solomon Islands.

[7]Sulu, J,. Delvene, N., Agnetha,V.,Senovea, M. and Lysa, W .2012. State of the Coral Reefs of Solomon Islands Coral Triangle Marine Resources: their Status, Economies, and Management

[8]Ministry of Forest and Research of the Solomon Islands . 2012. State of Forest genetic resources in the Solomon Islands, Ministry of forestry and research, Honiara, Solomon Islands

[9] Pacific Horizon Consultancy Group. 2008. Solomon Islands State of the Environment report 2008, Ministry of Environment Conservation and Meteorology, Honiara, Solomon Islands

[10]Preparation and Submission of the Fifth National Report to CBD (SCBD/SAM/RH/LC/81444 (2013-098)); derived from http://www.cbd.int/doc/notifications/2013/ntf-2013-098-nr5-en.pdf

aquaria corals, and raw material are common goods[11]. It has been estimated that the direct use of coral reef per km^2 reef per year stand a record of US $ 75,000 to US$170,000[11]. Coral and mollusk are also important source of lime for the national betel nut coral lime trade, contributing up to19% of the total direct value of goods [11].

Mangrove provides wood for firewood, building materials, carvings, canoes, ornaments and propagule for food. Annual subsistence estimated of mangroves is US$ 345–1501 per household'[12]. Today propergule cost US $0.1 per fruit and a 5 meter mangrove trunk costs US$40 in the urban market. Sea grass and algae on the other hand with the exception of seaweed has no direct use. Seaweed in 2010 recorded a production of 411,780 kilograms, sold locally with 1% been exported.[13]

Coral reef, mangroves, sea grass, coastal shrubs, intertidal muds and algae ecosystem supports nursery, provides fishing ground and enabled nutrient cycle. These ecosystems are interdependent and uphold the health of biodiversity, rendering supports for coastal and marine fisheries. In the Solomon Islands including other pacific island countries fish and invertebrate are harvested by four main types of fishing techniques (1); fisheries for demersal fish (2); fisheries for near shore pelagic fish (3); fisheries for targeted invertebrates and (4); fisheries for shallow sub tidal and intertidal invertebrates[5].

Fishing is also specialised, where women and children normally collect marine mollusc, particularly those in the class of bivalve, gastropods and cephalopods. Most popular are giant clams and pearl oysters. Shells are often carved into shell money, necklaces and ear rings. Shell money are normally used for buying of pride price. A 100 stretched of 5 bundles of strings valuing US$50 00 normally exchanges at a single pride, roughly accounted for 50000 shells collected for a single pride prices. Chitons are gleaned for

[11]Albert, J. A., Trinidad, A., Boso, D. and Schwarz, A. J. 2012. Coral reef economic valuation and incentives for coral farming in Solomon Islands. Policy Brief. CGIAR Research Program on Aquatic Agricultural Systems. Penang, Malaysia. *AAS*- 2012-14.

[12]Warren-Rhodes, K, A-M, Schwarz ., NL, Boyle ., J, Albert ., S,S, Agalo., R, Warren ., A, Bana., C, Paul ., R, Kodosiku., W, Bosma., D, Yee ., P, Ronnback., B, Crona., N, Duke. 2011. Mangrove ecosystem services and the potential for carbon revenue in Solomon Islands. *Environ Conserv*doi doi:10.1017/ s0376892911000373

[13] Solomon Islands Central Bank, 2010. Annual Report, Honiara, Solomon Islands

subsistence and sold in urban areas at US $ 0.1 per animal. The most targeted species of the marine gastropods include trochus (*Trochus niloticus and T.Pyramis*) and green snails (*Turbo marmoratus, T. setosus and T. argyrostomus*). Gastropods are picked from their natural habitat such as rocks, reefs and mangroves.

Squids, octopus and cuttlefish of the cephalopods groups form are rare delicacy for most Solomon Island people. The cattle fish shell in particularly is often used to decorate tradition carving. Sea cucumber of the group echinoderm is now critically overharvested and has had been imposed periodic export closure. Crustaceans such as lobsters, crabs (including mud crab found in mangroves, giant coconut crab, and coastal crab), and shrimps are usually harvested and consumed locally. Non-edible marine organism coloured the coral reef beautiful. Barnacle and sponges and other glue producing organisms are potential bio-chemical host for bio-mimicry and pharmaceuticals.

The fish fauna in the country stand a record of 1,019 species belonging to 82 families and 348 genera[7]. Most of these fish are fished and consumed by people or sold in the local markets. In the urban areas coastal fish are sold at US$5-6per kg, most coming from the provinces by middle man who bought from rural fisher at US $0.5 -$1per kg. Fish collections are also done in the Solomon Islands since 1865 with specimens deposited in many museums around the world and provide useful genetic information for taxonomic studies[7]. Pelagic fish such as tuna, tuna like fish and sharks are also associated with coastal environment. Sharks, turtles, dolphins and dugongs are normally caught by subsistence and small-scale artisanal fishers. Turtle shells are used for fashioning of shell money and dolphin's teeth used for traditional money and their flesh eaten and sold in local market. Dolphin export also earned significant foreign revenue for the country and traditional dolphin hunt is still practiced in part of the Solomon Islands.

Despite dugong (Dugong dugong) and turtles and others species, have been prohibited from harvesting some communities still harvest these animals. There is also a ban on the shark fin export but shark harvest is still practiced. Traditionally some clans worshiped shark and current generation continue to observe the ritual practice as an honor to ancestral belief system.

In respect to regulatory services, coastal biodiversity provides coastline protection, beach replenishments, climate regulation and disease regulation. The coral reefs shoreline protection is estimated an indirect use of US $18,000 - $270,000 per km^2 reef per year[11]. The presence of mangroves and coral reef ecosystems dramatically reduces the likely damage by hurricanes and waves to inland biodiversity. They also provide water quality control, reduce the magnitude of runoff, flooding, and aquifer recharge, retaining water storage and preventing of landslides.

1.1. 2 Marine Biodiversity

Marine biodiversity[3] particularly tuna species is one of the highest contributor to the national income, second to logging. The commercial tuna species are skipjack *Katsuwonus pelamis*, yellow fin *Thunnus albacares*, big- eye *T. obesus* and South Pacific albacore *T. alalunga*. In 2011, the FFA has record a total value of 403 million USD dollars in the Solomon water. Central Bank (2011) reported a total government revenue of US $18234300, at least 22 times less than the FFA record. These return however, has been doubled with the latest record been quadruple, been attributed to the strong advocacy of the PNA[14]. As stated in the Central Bank report; *'The increase in FFA receipts stemmed from higher revenue collected on behalf of Solomon Islands as a member of the Parties to the Nauru Agreement (PNA)[15].* Today the Solomon Islands and its pacific islands neighbors continue to rely on bilateral and multilateral arrangement to define the economic

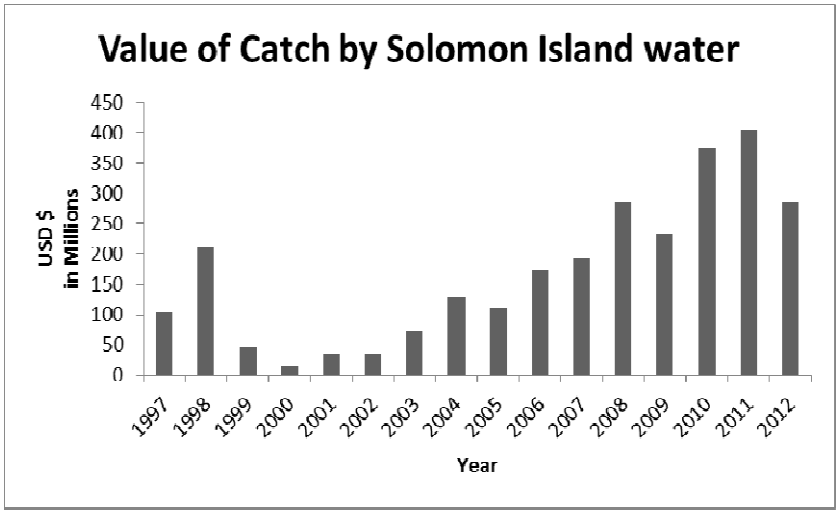


Figure 1: Value of Catch of Tuna in the Solomon Islands (derived from FFA excel data)

[14] Party to the Nauru Agreement

[15]Central Bank. 2011. Annual Report, Honiara, Solomon Islands

threshold of their tuna harvest. The PNA has been recently building the capacity of the islanders to consider a market based approach. Currently the PNA has very persuasive in the imposing of fishing limits through the Vessel Scheme Day (VSD) which has resulted in the increase of revenue collected. The PNA proposed the following to ensure sustainable harvesting and enhancing of benefit sharing;

- cut long line bigeye catches by 30%
- a 30% cut in long-line bigeye catch by 2017, to be achieved by staged 10% cuts
- no more new fishing vessels for foreign fleets
- no increase to the number of foreign purse seine vessels
- no increase to the number of distant water longline vessels
- additional fad measures to reduce bigeye by-catch
- no fad fishing in the high seas by 2017
- extend the fad closure up to 5 months or equivalent reductions in fad sets
- a fund will be created to compensate small island developing states for the costs imposed on them by the fad measures which benefit developed longline fleets, mainly operating outside sids waters
- impose high seas limits
- purse seine high seas fishing to be limited to 2010 levels

(SI Star, 2012)

Indeed the VD scheme has a strong political back up from the Solomon Islands government, as has been reflected in the Prime Minister statement' "VDS is non-negotiable and a prescribed condition to any fisheries agreements that Solomon Islands will have with both multilateral and bilateral partners and distance fishing nations," the VDS is a significant component of the country's tuna industry and the economy and there will be no agreements without its inclusion'' (Solomon star, 2012). Currently the Permanent Secretary (PS) of the Ministry of fisheries and Marine Resources is the chair of the PNA.

The implication of the above scenario was not only of value adding but also demonstrated the importance of tuna (marine biodiversity) in framing the regional and global

institutional reconfiguration around the notion of equity and property right. Along the same notion the emerging of Coral Triangle Initiative (CTI) brings the Pacific island (PIC) countries closer to their Asian neighbors. Solomon Island and PNG provided the node of connection. Numerous reports had alluded poaching of pacific islands tuna by Asian neighbor. The CTI therefore collated the environment like-minded people and institution to gap common threats such as the Illegal Unregulated and Unreported (IUU). CTI has recently established its secretariat in Indonesia. Solomon islands is now working on a ratification paper. The initiatives could also be attributed to the regional initiatives under the marine and costal biodiversity themes of the CBD. The "Coral Triangle" (CT) region covered 1.6% of the planet's ocean and has been assigned as the epicentre of the marine life, been hypothesized to serve as marine life "refuge" in the phase of changing climate conditions particularly during El Niño-Southern Oscillation.

1.1.3 Terrestrial Biodiversity

We refer to terrestrial biodiversity as forest, plant genetics, mountain and Islands biodiversity. The Solomon Islands is featured as one of the world's most extensive forested countries but with low endemism[4]. The forest biomes comprises of coastal strand vegetation, riverine forest, lowland forest, montane forest, non-forest communities, seasonal dry forest and grass land[4]. The Solomon islands is mountainous with the highest peaks reaching 2450 meters in Guadalcanal, Kolombangara with 1768 meters, Isabel with 1250 meters, Rendova with 1063 meter, Malaita with 1280 meters and New Georgia with 1006 meters.The mountains are characterized by cloud forest.

Bird species is diverse and are niche specialized allowing for coevolution. Similar pattern is also found in insects. The bird species stand at a record of 163, whereas insects stand at a record of 14,511 which include 130 butterflies (30 endemic) and 31 cicada species (see case study 1). 19 out of 53 mammal species are endemic, and 80 species of reptiles are present in the country. There are twenty one (21) identified frog species.

The forest materials support housing for the villagers and urban people, especially from canes, the roots of climbing *pundunus and* sago. Almost 90% of the village houses are built from forest materials and mangroves. Food products are normally derived from more than 600 forest products, animals, and microbes.

Mountain people of Malaita and Gudalcanal often referred to as bush people derived their proteins from wild pigs, possums, birds and plants. Nuts particularly the Ngali nut served important protein and has now increasingly become a source of income and plantation timbers[16]. Forest products are predominantly used as fuels for cooking particularly secondary forests, normally collected by women and children. The Solomon Island's forest products are potential host of noble genes as implied by many traditional medicine uses. Plants products are used for neutralising of toxic bite of snake, toxic poison from fish, shark bite and etc. Orchids are widely used as ornaments, often collected from the wild and put into cultivation. The people of Marovo and Renbel people are popular for their wood carving skills, where the cost of carved wood ranges between US $10 and US $5000.

Figure 3: Log Export by province (1995-2005)

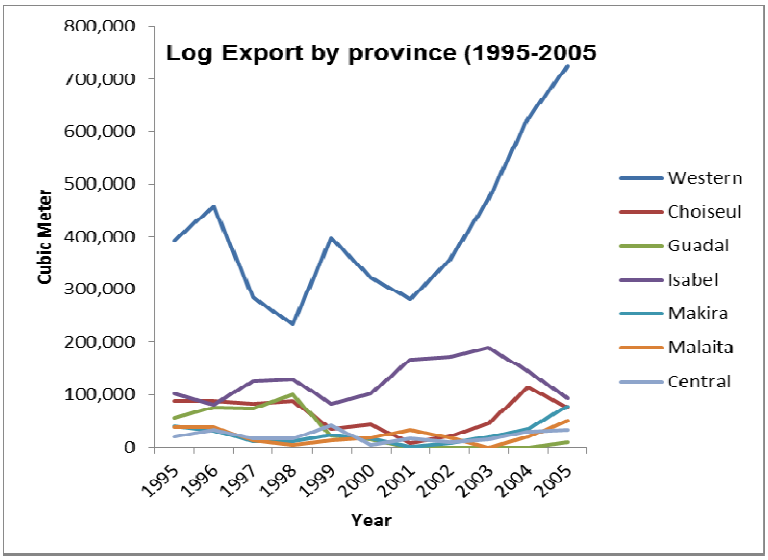


Figure 2: Log Export by province (1995-2005)

In respect to commercial wood, the Solomon Islands over the past two decades depended on logging as one of its top foreign revenue earning source**Error! Bookmark not defined.**. Commercial native trees for the past 20 years contribute to 70% -80% of export. Logging maintains and sustains the livelihoods of rural people through royalty and employment. In 2008 the round log exports stand at a record of 1.5 million cubic meters, 1.4 million cubic meters in 2010 and 1.9 million cubic meters in 2011. This means log continue to be harvest at the same rate or

[16] WWF Solomon Islands (2005) A Forests Strategy for Solomon Islands 2006-2011, Honiara, Solomon Islands

higher than those harvested between 1995 and 2005 (figure 2). In 2011 exports also included 85,301 cubic meters of plantation logs.

Consequently, the removal of forest has resulted in ecosystem services diminish, inevitably alteration the atmospheric chemical compositions. The value of jungle leisure walking has been diminished due to removal of trees that was once kept the forest cool. Subsequently changes of environment encourage the drying of streams, increasing of population of vector carrying diseases and invasive species such as toad.

At the global scale, forest ecosystems play an important role in climate sequestering and carbon sink (carbon dioxide). Effort to provide alternative revenue to logging offered by REDD+ estimates a four times revenue than logging e.g. Tetepare island[17]. Forest regulates water, reduce runoff, flooding, and aquifer recharge. Honiara problem of water shortage are mainly due to the removing of trees and vegetation from the Kongulai catchment.

1.1.4 Case study: 1 Avifauna

Bird and insect diversity and their distribution have been believed to be influenced by geological changes since Pleistocene. Movement of taxa from mainland, New Guinea, Bouganville, Choiseul, New Georgia to smaller and isolated islands was believed as the second reason for rich endemism. On the mainland islands the intermediate and mix ecosystems provided geographical ranges of specialised habitat that allows for speciation. For example, the lower Garanga River valley of the island of Isabel along has 65 resident and 6 migrant species of birds[18].

Bird species also provide a rich source of protein and support food security. The dusky megapode (*Megapodius freycinet*) produces large eggs and supported village livelihood. In urban areas eggs cost US$1.5. The species commonly lays eggs in soft grounds, in the volcanic ash and dead tree trunks and roots. The population is assumed to be in a decline owing to hunting pressure, degradation and destruction of suitable habitat and predation by introduced predators. The *Megapodius Freycinet* is distributed in the main islands of the Solomon Islands and the most popular is the Savo Island. Savo people have experience low egg collections, reaffirming a decline in the bird population.

[17] Scott Alexander Stanley (2013) REDD Feasibility Study for Tetepare Island, Solomon Islands SPC/GIZ Regional Project"Climate Protection through Forest Conservation in Pacific Island Countries" P.O. Box 14041, SUVA, Fiji

[18] Kratter,W, A., Steadman,D,W., Smith, C,E., Filardi, C,E., and H.P. Webb. 2011. Avifauna of a lowland forest site on Isabel, Solomon Islands. *The Auk* 118, no. 2:472–483.

Sanford's Sea-eagle *Haliaeetus sanfordi*

The *H. sanfordi* is the only large eagle in the Solomon Islands are commonly found around forest islets in the Roviana and Marovo lagoon. This species is classified as Vulnerable. It has been estimated that the total population is only more than 250 birds.

Chattering Lory (*Lorius garrulous)*

This species is undergoing a rapid population decline that is projected to continue as a direct result of habitat loss and human exploitation for the cagebird trade.

1.1.5 Inland water biodiversity

Water (H_2O) is essential for all living organisms. It has been defined as one of the provisioning service. Inland water plays a significant role in all terrestrial and aquatic organisms and helped resolved the social and economic need of the Islanders. Fresh water is used for drinking and household uses, industrial, agricultural and power generation. The fresh water fish species stand a record of 43 including eels. There are 175 insects and 45 these insects are endemic .

Fresh water has a strong influence on the islands characteristics. The largest river system of the Solomon Islands for example, Wairaha of Malaita is 486km^2 in its catchments and together with other catchments accounted for more than 2/3 of Malaita Island . The chains of volcanic peaks shaped river system forming linear network, draining away from the mountains. Such characterises those fresh water system found on Santa Isabel. The water system has a strong influence on avauna distribution. It follows that the steep volcanic islands with low permeability bedrock allow rainwater to run off to form river channels. In contrast, permeable limestone islands enable rainwater to percolate rapidly into the groundwater. These make atolls comprises of a few freshwater appearing from lower rocks and are prone to desalination. Inland water biodiversity such as bony fish, fresh water eels, gastropods, bivalves, prawns, crabs, taro, giant swamp taro, ferns supports subsistence life. These products are also sold in local markets. Crocodile skins and shells are used for ornaments. Sago palm and bamboos are used for building materials. Water regulates the abundance of human pathogens, such as cholera, and altered the abundance of disease

vectors, such as mosquitoes. The state of water and the supporting services depend on the type of the water system.

Flowing water allows the process of erosion, sediment transportation, deposition, food transportation, helped formed and shaped river channels creating fish habitat. Flow underpins the links between the environmental conditions and habitats, and influences the processes that support fish and invertebrates. Flow transport the materials on which fish feed from upstream habitats to progressively larger habitats downstream. Flows connect floodplains with the main channel, and allow food and other materials to be exchanged between these two habitats. Such is characterised by Guadalcanal plain. The combination of functional process zones, habitats and habitat patches enable rivers and estuaries to support each other and together support different stages of fish species and invertebrates. For example, climbing gobies are adapted to live in fast flowing habitats such as riffles, rapids, and even waterfalls and mangrove while jack *Lutjanusargenti maculatus* tend to live in deeper fast-flowing pools. Off-channel habitats offer refuge during the wet season, feeding areas and spawning sites, and refuge from predators. Many of these habitats are temporary, and dry out from time to time. Off-channel tributaries are found on Choiseul and floodplain lakes in Malaita and Tetepare Island.

1.1.6 Agro-biodiversity [19]

The Solomon Islands is characterizes as an agrarian country where 85 percent of the people are smallholder farmers. Farming is distributed along customary boundaries as such agriculture development is constrained by communal land property right. Farming is therefore viewed as environmental friendly as a consequence of the property regimes which leaves biodiversity corridors in between the farms. This is also reaffirmed when more than 85% area identified as suitable for livestock (the Agricultural Opportunity Areas

[19]Agricultural biodiversity ' are the components of biological diversity of relevance to food and agriculture, and all components of biological diversity that constitute the agricultural ecosystems (agro-ecosystems), the variety and variability of animals, plants and micro-organisms, at the genetic, species and ecosystem levels, which are necessary to sustain key functions of the agro-ecosystem, its structure and processes .

(AOAs) is still unused. Out grower scheme of GPPOL also resonates this practice and has been successful ever since.

On the other hand, many of the cultivated plants such as yams (*Dioscorea spp.),* taro (*Colocasiaesculenta*), giant swamp taro (*Cyrtosperma Merkussi*) and sweet potatoes (*Ipomoea batatas*) and fruit crops such as bananas (*Musa spp.*) and watermelon (*Citrullu slanatus*) serve as the people's main staple diet. Betel nut is a common cultural species where nuts chewed with limes. At least 1 in 10 people in the Solomon Island practice betel nut chewing and betel nut industry employ at least 20% of the informal sector trades. Economically, agricultural sector contribution goes further than the SBD $75,300,000.00 earned by the few commercial farms and the 11,859 workers employed on them.[20] Agricultural products represent 24.2 per cent of the national exports and underpin one in five jobs in the entire economy.Cocoa and coconuts present the most popular commercial crops. They also presented with different varieties as such contributed to genetic diversity. Islanders often use glarycydia, banana, taro, melon and root crops prior cocoa and coconut planting. Otherwise, native shrubs are progressively removed while the coconut and cocoa seedling take their places. Plants are also used as biological control -to control fruit fly, the cocoa pod borer, African snails, rats and birds.

In the livestock sub-sector, the most popular breeds are -*Sus papuensis and* the feral pig. Pigs also play a significant social contribution such as pride price and dispute resolutions. In average one head of pig cost approximately US$200. On the other hand chickens and ducks are normally raised as free-range in the villages. Dogs and cuts are also raised as pets, used for hunting and the controlling of rats. A honey bee, the latest addition to the livestock products is becoming popular amongst the rural farmers.

Aquaculture on the other hand, is still picking up and is pioneer by seaweed, corals and clams planting for ornamental trade. Prawn (Macrobrachium and pennaied prawn) production made little progress. The aquarium and curio trade represented <3% of the

[20]MECDM (2012) National Biosafety framework 2012, MECDM, Honiara, Solomon Islands

direct economic value and involved less than 7% of the people.[11] The MFMR has a recent break through by culturing a peanut sea cucumber.

1.1.7 Cultural Services: A closer look

A cultural service as defined by the MEA (2005) is the most popular argument used by local people and government officials in support of biodiversity management in the country. In here we also branded institution as cultural services. Arguably a cultural service is fundamentally universal across the class of biomes. How biodiversity is used is underpinned by cultural perspectives that have direct implications on the knowledge making and biodiversity values (i.e aesthetic, educational, institutional and the spiritual values). *Cultural perspective*- evolved over 10s to 100s of generations. The eating of the flesh of Dolphins in parts of Malaita is viewed as barbaric to many people of the Solomon Islands and many conservation societies. But conservation in itself is a *cultural perspective* developed from many knowledge accumulations. The world view that place people as part of ecosystem is also contested by those that hold the view that biodiversity and people are separate entities. The perspective we hold therefore is a reflection of our indigenous knowledge making where people are viewed as integral part of biodiversity which has been reinforced by the MEA (2005) report[3].

Embedded in the indigenous polity and knowledge making is the phenomenon of land ownership. Knowledge making and practices is usually conceptualized by customary property right and it has close association to genealogy (blood line). Customary system is recognised under the Solomon Islands constitution-leaving 90% of the land area under customary ownership.

On the periphery biodiversity uses and their management has been and will always consider customary rights in their mitigation measures. Customarily, only those who have the right to use the land (by blood line) have the right to manage them. This phenomenon has complicated the management of migratory species that forage and homed on the customary land. Conservation reminisce include the prohibition of species from consumption, the restriction of people from entering ritual sites and many others. These

secrete groves may encompasses coral ecosystems, inland water pools, mountains and trees. Every clan and tribe associated themselves with a taboo species as they make references to the ancestral GODS. Western Solomon clans and Langalaga of Malaita observed dolphin as taboo while Tetepare tribe observed lizard. Malaita people observed eagle, crocodiles, shark and snake. The modern SDA religious norms have similar conservation effects, where pigs and most species of crustaceans are prohibited from consumptions. Biodiversity have long historical and cultural underpinnings and continue to be demonstrated in myths, dances and woven baskets.

Likewise, as alluded, shifting cultivation, small scale farming is distributed along customary boundaries, providing small pockets of biodiversity corridors. Amongst many authors e.g. Hviding noted that this social network has developed a net trap, assuring ecological, social and rural economic resiliencies.

Ecosystems influence the type of knowledge system people hold and there by influences the ability of societal changes. For instance today mountain people of Malaita -the kwaikawio people remain firm to nomadic and foraging behavior and continue to resist social changes. Similar characterize are found on those Moro clan in the mountainous Guadalcanal. These mountainous people comprise of at least less than 3% of the Solomon Islander, and pay sporadic visits to coastal relatives.

Customary boundary of those living on the main islands usually ended on the coast line, whereas customary land boundaries of small islands dwellers go beyond the coast lines. A few tribes use rivers and valleys as land boundary. In Are Are of Malaita these landmarks e.g. valley, rivers and streams are common pool resources owned by the adjacent clans-a point of dispute resolution and reaffirming of relationships.

Ecosystems also underpin and shaped knowledge making and practices. For example the Bugotu people uses mangroves for dugout canoes while Malaitan use the mangrove propagules for food. Mountain people of the mainland islands are fresh water fishers whereas coastal people are open water and down streams and estuaries fishers. Subsequently they have developed highly specialised fishing techniques. To date

harvesting of wild life is succumbed into commercial purposes as such the combination of indigenous ecological knowledge and improved sophisticated techniques has becoming one of the main threats to biodiversity. The rearing of pigs, dogs and the cultivating of yams, taro and fruit trees is prevalent in the country. These animals and food crops still play a significant cultural roles particularly feasting. The preparation of foods is spectacular and clan specific. The preparation of *Nambo* from bread fruit is specifically common to those of the Reef Islanders. *Hei*- the preservation of ngali nut is found only in the Western province. Six month putting is specific to some Makira tribe. Much herbal medicine is present but also associated with ritual practices such the use of witch graft.

Ecosystem or aspects of the ecosystem often instigated the feeling of belonging 'a sense of place'. Coastal people hardly want to move inland. Likewise the atoll dwelling people only dreamt of drowning with their sinking islands. The feeling of pride over living in the biodiversity hotspot is obvious amongst the islanders' writings. Spectacular waterfalls, large river system, lake, pristine water ecosystems provide a rich source of inspiration. Solomon Island people continue to bonder and hope for boosting of their eco-tourism industry. Preserving the rest of the virgin forest including closing of marine areas add to tourism attraction sites. Traditional recreational practices such as hunting for wild pigs, birds, food gathering are still maintained across the archipelagos.

Solomon Island biodiversity remains as a top laboratory for the modern science researches particularly within the field of evolution. Coral reef, mangroves, forest, and inland water homed thousands and millions of species that are yet to be uncovered.

From an institutional perspective, biodiversity formed the basis for our regional and global integration -managing a regional and global *common*. For example tuna availed the Solomon Island and its pacific island countries on equal discussion table with the rest of the world (see 1.1.2). On the other hand CBO united tribal and clan divides, including bringing provinces together. This is demonstrated in the case of Anarvon conservation, managed by tribes and clans of Isabel and Choiseul. Indeed CBO provide the best avenue for reconfiguring a diverse society around common environmental needs. As such provide the avenue for achieving the NDS 2011-2020 vision **'A United and Vibrant Solomon Islands.'**

The updated version of NBSAP provides the ultimate tools and steps to realize this vision a reality (see chapter 2 and 3).

1.2 What major changes have taken place in the status and trends of biodiversity since the last report?

Practically, it may be illusive to expect much change in the status of the Solomon Islands biodiversity, since the 4th national report, was only published in 2011. Metaphorically a new born dugong is yet to reach its calving age. However, a 5% decreasing of merchantable forest (between 2010 and 2011) implied that the diminishing of biodiversity is exponential (see figure 3) and biodiversity collapse of certain biome is possible within a 4 year period. Numerous published articles alongside local experiences continue to note the decline of the biodiversity health. The absences of data continue to hinder the accurate recording of the status of biodiversity. However, it has been known that sixteen (16) of plant species, 20 of mammal species, 20 of bird species, two (2) of the frog species and all turtle species are under threat.

The dugong dugon and the Leatherback (*Dermochelys coriacea*) are now listed as vulnerable to extinction. Coral Reef fish such as the *Australogyra zelli, Australomussa rowleyensis, Nemenzophyllia turbida, Palauastrea ramose, Seriatopora aculeate, Seriatopora dendritica*are are all labeled as endangered. Two (2) ground birds are believed to be extinct[9]. There have been turbulences over enforcement where regulated species such as dolphin, tubi (iron wood) and bech-de-mer often found themselves in the export market. At the same time the recent public outcry over these animals' exports has demonstrated relatively high public conservation knowledge and values held by the general population. A recent study of the population of *T. aduncus* of Isabel, Guadalcanal Central and Malaita had confirmed that *T. aduncus* are localized. The Guadalcanal sub population has been the main targets for export while Malaita sub-population is subjected to traditional hunting. The study also concluded that the quota of 50 dolphins per year is unsustainable and suggested five or less per year. The Western provincial government declared its provincial

water as a dolphin sanctuary. Nine species of dolphins had been reported in Solomon Islands and none has list under the IUCN red-list.

Most if not all ecosystems in the country are undergoing health decline as reflected in coral reefs, mangroves, forest and inland water been invaded by invasive species that drive well in an eroded ecosystem. For example, the increasing of the crown-of-thorn stars fish, sea stars and sea urgent population indicated the diminish of coral ecosystem. The rarity of commercials species such as squids, octopus and cuttlefish in the local markets and high prices left us to assume that the species populations have already undergoing a drastic population decline. There is a 1 in every 100 chance to find cattle fish shell in their natural habitat and in the local market outlet.

1.2.1 Case study 2: The *Bolbometopon muricatum* (Bump head Parrotfish)

The population of *B. muricatum* is relatively abundant in the Solomon Islands and Papua New Guinea. The species is the largest of all parrotfish that can reach 50 kg and lives up to 40 years. The species is gregarious and occurs in aggregations of up to several (>75) individuals. This makes them vulnerable to spear fishing and night fishing. Aggregations of this species are important producers of coral sand on reefs and may be important in the maintenance of ecosystem resilience. In Roviana Lagoon- of the Western Solomon Islands, juveniles lived in shallow inner lagoon while large individuals live in the passages[21].

Threats

B. muricatum are vulnerable to overfishing because of their shoaling and group resting behaviour. In Roviana Lagoon, artisanal spear fishers use their sophisticated indigenous knowledge of the spawning behaviour and ecology to catch as many fish as possible in the night.

Conservation Actions

In 2002, two marine protected areas (MPAs) ["no-take" zones] were established in Baraulu Village and Nusa Hope Village to protect *B. muricatum* and other lagoon species. Regulations 29 of the Fisheries Act, also stipulated that "any person using under-water

[21]Hamilton, R.J. 2003. The Role of Indigenous Knowledge in Depleting a Limited Resource – A case study of the bumphead parrotfish (*Bolbometoponmuricatum*) artisinal fishery in Roviana Lagoon, Western Province, Solomon Islands. In: N. Haggan, C. Brignall and L. Wood (eds) *Putting Fishers' Knowledge to Work*. Conference Proceedings, Chapter 10. Fisheries Centre Research Reports 2003, Vol. 11(1) 504 pp. (Available at: www.fisheries.ubc.ca/publications/reports/11-1/10_Hamilton.pdf; accessed on 28th Dec 2006).

breathing apparatus for the purpose of harvesting any marine resource shall be guilty of an offence and liable to a fine not exceeding five thousand dollars or six months imprisonment or both such fine and imprisonment" . Many villages regulate spearfishing (e.g. bans on night diving)[22]. Although traditional leader's ability to manage marine resource was found to be effective in some of the tribes, the existence of non-member (e.g., institutional context) and enforcement of harvest restriction rules are crucial so as to enhance management and minimize the public contest over natural resources[23]. Aswani and Hamilton (2004) suggested that the prohibition on spearfishing within passage habitats in Roviana Lagoon would provide a measure of protection the remaining important spawning stocks of *B. muricatum* in the Indo Pacific region. They further recommended imposing lunar ban on spearfishing during the spawning period- late full moon quarter.

Inland water values continue to diminish mainly because of their ageing and land based pollution. For many decades down streams have been served as drinking source, household uses and accommodated many leisure activities. These activities have now been abandoned due to pollutions. Today there is an increasing view, that streams and coastal areas as disposal sites and area for defecation. Honiara provides a clear example. As people's population increases with miss resources management, the pressure on inland water biodiversity increased exponentially. DDT and fish poison is also prevalent. Large scale logging and mining that do not take into account healthy land management practises, increase sediments into rivers smouldered and suffocated the freshwater life.

In the forestry sector, the current record of the remaining merchantable forest has a stock of 4,627,459 cubic meters (see table 2).

[22]Gillett, R. and Moy, W. 2006.Spearfishing in the Pacific Islands – Current Status and Management Issues.Secretariat of the Pacific Community, Noumea, Food and Agriculture Organization of the United Nations, Rome.Gillett, Preston and Associates Inc. 77pp.

[23]Aswani,S., and R. J. Hamilton. 2004. Integrating indigenous ecological knowledge and customary sea tenure with marine and social science for conservation of bumphead parrotfish (*Bolbometoponmuricatum*) in the Roviana Lagoon, Solomon Islands. *Environ Conserv* 31: 69-83

PROVINCE	2006 Assessment Update (M^3)	Commercial Forest Yield M^3/Ha	FRIS Update (M^3) Remaining Merchantable Volume		Remaining Merchantable forest Areas (Ha)	
			2010	**2011**	2010	2011
Guadalcanal	481,200	12	238,218	238,218	26,681	26,681
Choiseul	2,573,000	31	1,756,783	897,760	98,477	98,415
Western	2,079,000	42	1,487,947	1,380,634	49,544	46,235
Malaita	751,400	26	652,912	817,032	52,372	60,339
Makira	487,200	28	178,571	178,114	14,628	14,408
Isabel	1,190,700	21	849,078	754,090	70,556	61,684
Central	279,300	49	203,677	203,677	7,003	7,003
Temotu	509,532	46	469,724	469,724	30,380	30,380
Rennel	466,703	14	442,333	373,941	49,963	35,672
Grand Total			**6,279,243**	**4,627,459**	**399,604**	**380,817**

Table 1: Remaining Merchantable Forest Area

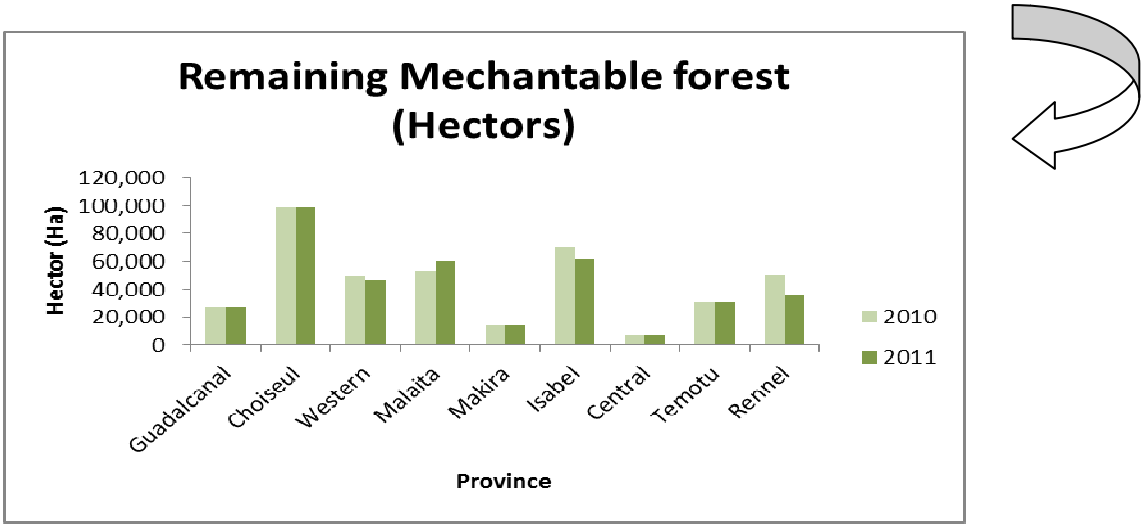


Figure 4: Remaining Merchantable forest (2011)

The remaining merchantable forest is decreasing at 5 % which may also implied the same decline of associated ecosystem. Figure 3 shows the logging activities and the current valid license issued by the ministry of Forestry.

Table 2: Summary of status of ecosystems and taxonomic groups and the key threats				
Status score	Biomes/Biodiversity	Ecosystem	Key threats (number in bracket means most significant threat(s))	Threats description
	Forest	lowland rainforest	(1), 3, 9	Varies across the provinces. Between 2010-2011 there has been a 5% of decline of merchantable forest cover from logging development and concentrated only in a few islands
		riverine forest	(1),2, 3, 9	varies
		grassland	3, (6), 9	decline in urban center
	Mountain	Montane	(3), 5	Legally protected and inaccessible by villagers
	Island	Island	3,(5), 7, 9	declined in inhabited islands and space
	Inland Water	upstream	(1),5, 9	Localized but varies
		downstream	1,2,3, (4), 7	In health decline but varies
		lake	(1), 3, 4, 5,7, 9	Only a few in the country with the largest declared as a world Heritage site
	Agro-biodiversity	Native agricultural species	(3)	Cultivating of native species are in decline
		Native aquaculture species	(3), 5	A few native species under development
	Coastal	estuaries	1,2,3, (4), 7	Localized and only a few in the country
		coastal strand vegetation	1, (3),4, 5,9,	In decline but varies
		Mangrove	1,2, (3),4 ,5,9	In decline but varies
		coral	1,2,3,4,5,9	In decline but varies
		Sea grass	1, 3,9	in decline
	Marine[24]	SI Marine and (EEZ)	2, 4,5	Decline and varies across ocean space
Taxonomic groups				
	Fish	tuna	2, 3, 5	Varies across species. Big eye is believed to be overharvested
		Shark	3	No management and insufficient data-fin export has been regulated
		Coastal fish	1,2, 3, 4, 6 (9)	Pressure from the above factors and some species undergoing local extinction
	Mammals	Dugong	3, 9	Listed as critically endangered

[24] Marine areas where the sea is deeper than 50 meters

		Dolphin	3,9	Bottlenose dolphin in decline in parts of the islands while the rest are caught as tuna by catch
	Reptiles	Turtle	3, 9	Continue to be in decline with a few management intervention by various CBO initiatives
	Amphibians	frog	1,3	Varies and victimized by habitat destructions
	birds	Terrestrial and sea birds	(1), 2, 6, (7)	Varies across species and location. Ground dwelling endemic birds are the worst threatened
	Arthropoda	Crustacean	3,9	Varies across the taxa and across the islands with high pressure to those edible groups
		insect	3	Varies and victim from habitat destruction
	Echinoderms	Sea cucumber	9	Overharvesting and imposed periotic export closure
	mollusc	bivalve	3, 9	Varies and poor data
		gastropods	3,9	Varies and poor data
		cephalopods	3,9	Varies and a possible population decline
	Plants	Terrestrial plants	3	Varies and subjective to poor land use
	Fungi	fungi	3	Varies and poor data

score	Health status
	In good health
	varies across the islands
	In decline/bad health

Level of confidence
low
medium
High

Key Threats:

1	2	3	4	5	6	7	9
logging	Other industry	[25]Poor management	waste	Climate change	urbanization	Invasive species	Population pressure

Spread of threat across biomes and taxa: 3>9>1>2>4>5>6>7>8

[25] Poor management includes, institutional, financial, and technical constrains as well as poor enforcements

In the marine sector, there has been a strong evidence to show that tuna are harvested within the sustainable threshold. This has been attributed to strong regional and sub-regional affiliations. The Yellow fin Tuna, the South Pacific albacore tuna *T. Alalungan* and the Skipjack Tuna stock are still not overfished in the Western and Central Pacific Ocean (WCPO)[26]. There was a two month closure of the FAD fishery in 2009, and three months in 2010 with an objective of achieving a 30% reduction of fishing effort. On the other hand the Big eye tuna stock might have already overfished[27]. Having determined that the Pacific Ocean Big eye population is overfished the NOAA has put in place catch limits for US pelagic longline fisheries in Western and Central Pacific Ocean in 2009, 2010 and 2011. This has prompted the U.S. to reduce its longline catch for the Bigeye Tuna. There has been limit imposed on the use of FADs and purse seiners. Together all of these interventions have impacted positive conservation outcomes.

Despites tuna been better managed; the concern over *equity remains a* concern for the Pacific islanders. The Vessel Day Scheme initiated by the PNA have been paving way forward (see 1.1.2) along the notion that revenue from tuna along can able to provide for the country's' economic growth, if harnessed properly. There has been a progress towards the 100 % commitment to observer scheme and a plan is under development to improve national MSC and IUU in the country been spearheaded by the Ministry of Fisheries and Marine resources under the offshore portfolio.

In respect to agro-biodiversity there is a general erosion of native agro-biodiversity due to increased importation of species and products. While farmers traditionally conserved local varieties in their food gardens, they are now attracted to new and imported varieties, causing local varieties to be abandoned.

The Solomon Islands has made great progress in **protected area management interventions**. The result has reflected in a widespread of protected areas been governed

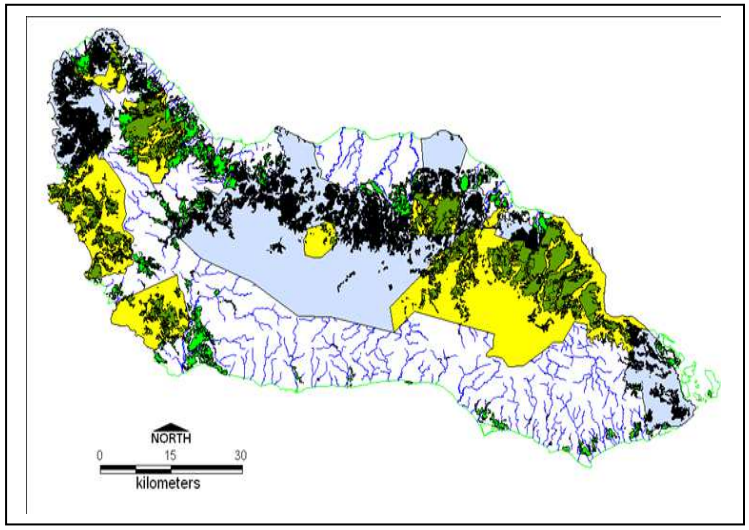
[26]Langley, A., Briand, K., Kirby, D.S. and R. Murtugudde. 2009b. Influence of oceanographic variability on recruitment of yellowfin tuna (Thunnusalbacares) in the western and central Pacific Ocean. Canadian Journal of Fisheries and Aquatic Sciences 66, no. 9: 1462-1477.

[27]Harley, S, J., William, P., Hampton, J . 2010. Characterizing purse seine fishing activity during 2009 FAD closure, Sixth regular session of the WCPFC scientific committee. August10-19, 2010. Nukualofa, Tonga

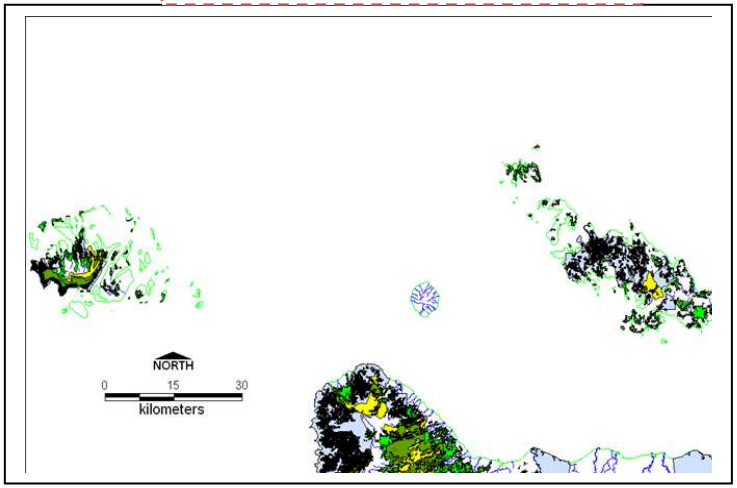
by community based organisations. Current protected are coverage stand a record of approximately 6% of the coastal areas and 1 % terrestrial (see figure 3). The ECD raw data with the terrestrial land coverage as the reference point, recorded a 5 % of protected area. Together with mountains lying above 30 degrees elevation and taboos the total coverage of protected area lies way above 20 % (see the Forth Report and figure five).

Figure 4: Highlighting Logging Activities in the provinces

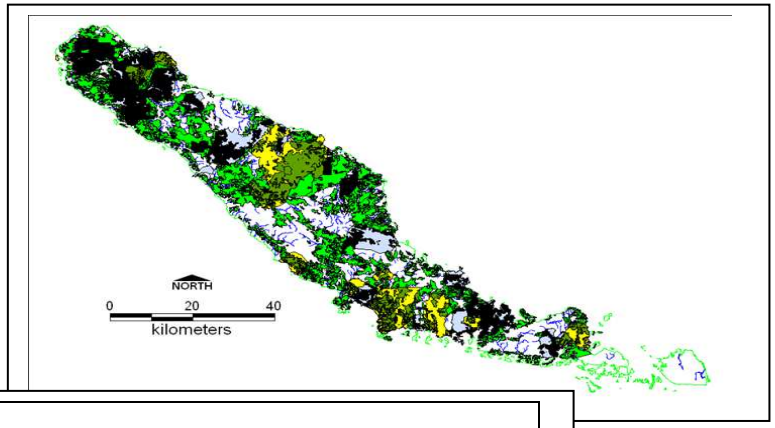
4.a. Guadalcanal



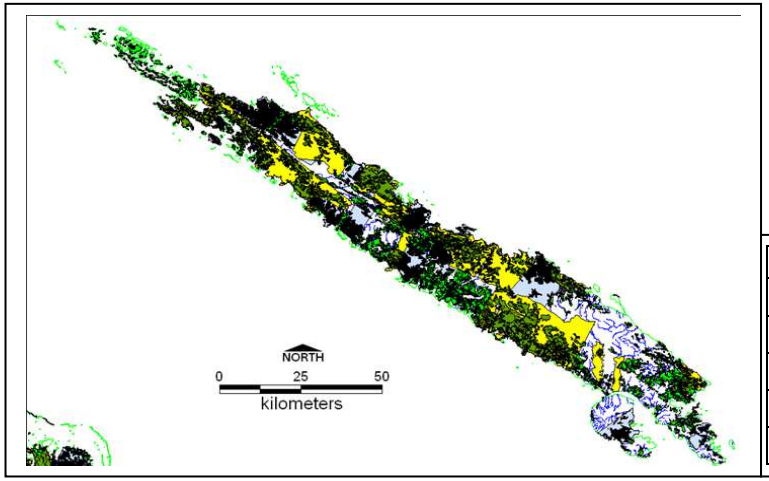
4.b. Central



4.d. Choisuel

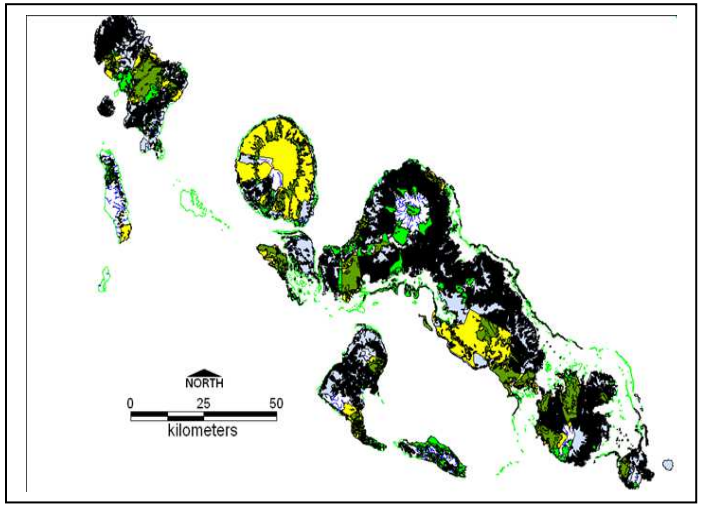


4.c. Isabel

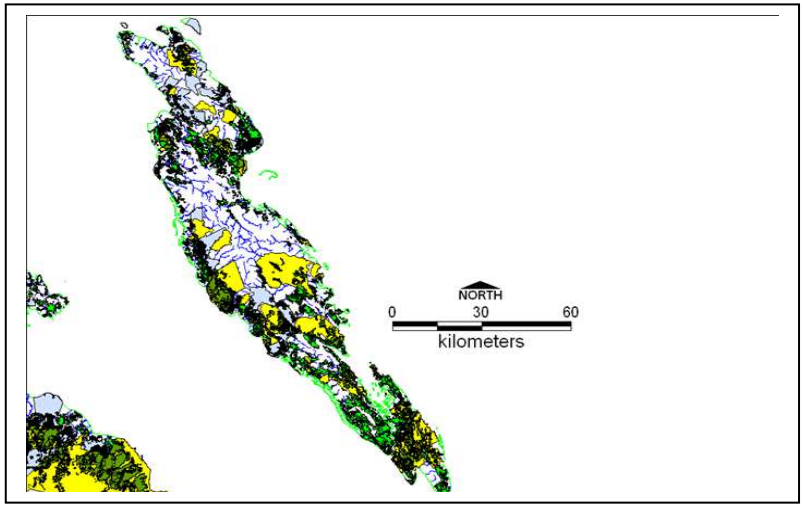


LEGEND	
Remaining merchantable forest	
Committed merchantable forest	
Logged over merchantable forest	
Current logging valid license	
Logged over & expire license concession	

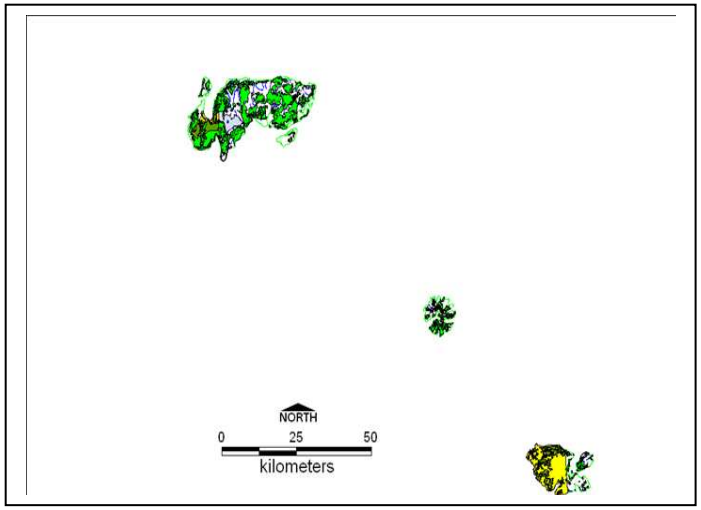
4.f. Western



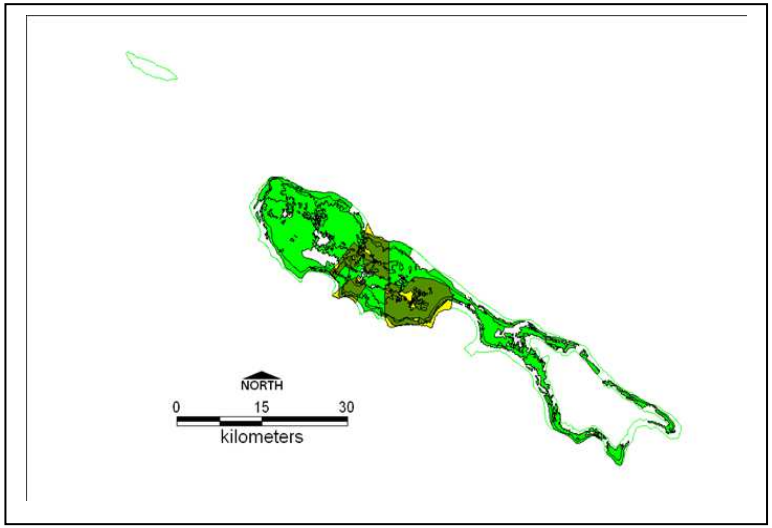
4.e. Malaita



4.g. Temotu



4.h. Renbel



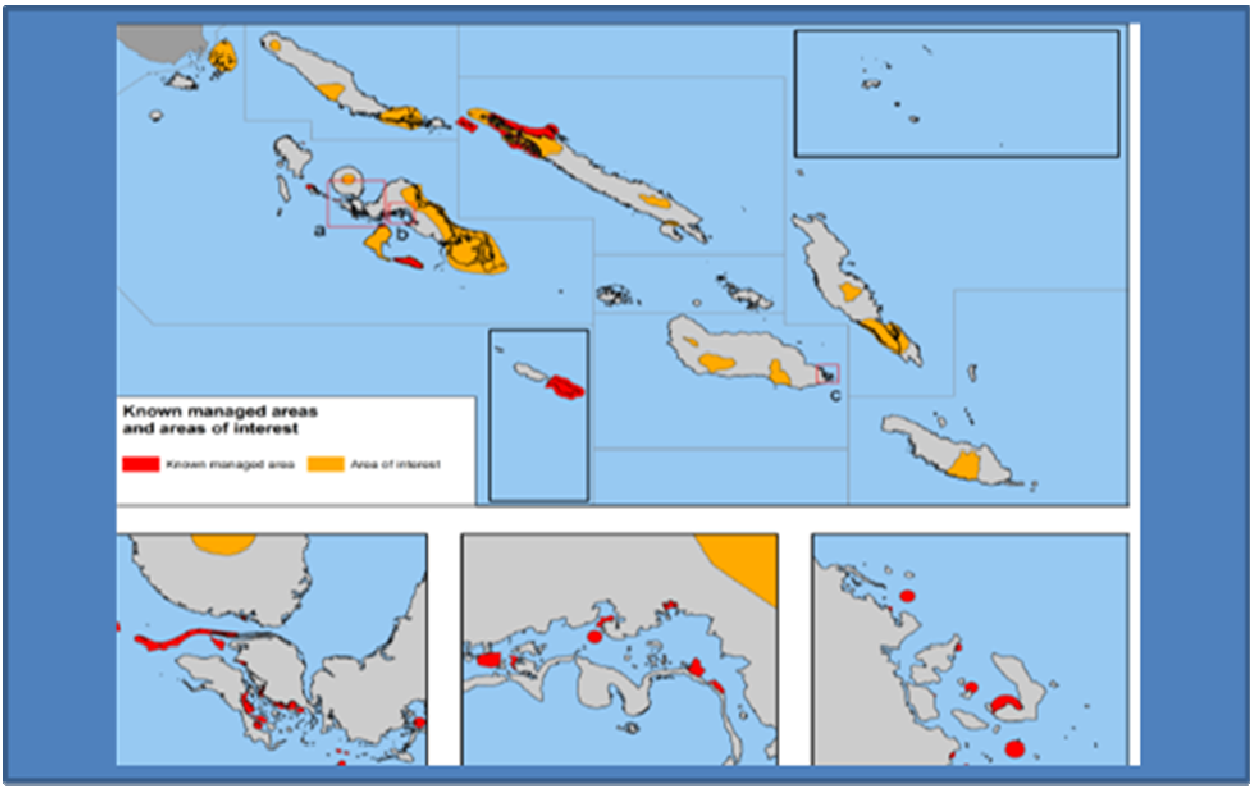


Figure 5: Current and proposed protected Area (After Kool et al, 2012

1.2.2 Protected area intervention

Two protected area intervention approaches are common in the country, been differentiated by their entry points. One involves intervention, where NGOs or Government agencies identified area of ecological important features and initiate negotiation with the recipient community to form a CBO to protect those identified areas. CBOs become a social mediator. Most if not all protected area management practices in the country underwent this approach. The other is a self-initiated approach but is linked to the prior (outcome result). Self-initiated protected areas are resultant from extensive networking and communication with other CBOs and NGOs. The Solomon Islands Marine Managed Area (SILMMA) has been very influential. The latter is often motivated by anticipation of economic return hence those area reserved for protection may not be hosting important ecological characters. Worldwide experiences have shown that conservation is a cultural response. Therefore without natural ecological features, a support towards restorative ecology such as translocation could help enhance and improve biodiversity of those local selected areas.

With respect to intervention Aswani and Weiant (2004) has noted that, in many cases communities are not often prone to 'cooperation during the initial point of entry. Four (4) factors are identified as the main undermining factors; 1) contradictory conservation goals between outside agencies and local stakeholders; 2) divergent political and economic agendas among local participants (e.g., tribal authorities), national participants (e.g., ministry of fisheries), and international participants (e.g., funding agencies); 3) a lack of economic and educational programs to assure the long-term sustainability of any conservation project locally; and 4) internal strife among inclusive members, particularly in socially and culturally heterogeneous communities.

As such an intervention approach will always require adopting an **inclusive strategic approach** at all levels of project cycles. This must also include women. Perception is always changing especially when benefits a visually presented. The Roviana case has reflected such scenario which the project eventually lead to improved shellfish biomass, enhanced local environmental awareness, and the reinvigoration of cultural management practices[28]. The adopted principles are 1) high level of participatory involvement and community leadership; 2) validating local knowledge with science 3) integrating indigenous knowledge with science; 4) the unique marine tenure system that allows for the project's development and the area's policing; and 5) the tangible economic incentives created by the development project, which ultimately empowers local women.

On the other hand the Tarvana CBO provided an alternative perspective on protected area management initiatives. The Tarvanar Marine and terrestrial protected area is self-initiated, been motivated from an extensive collaboration, awareness and community empowerments. Arguably it can directly attribute to other intervention approaches in country. A social network initially emerged as a stand against commercial logging, but also following the realization of depletion of marine stock .The notion of better institutional coordination prompted the development of Tarvanar constitution (2011) followed by their registration under the Solomon island trust Act. The Naro MPA attracted many NGOs

[28]Aswani, S., andP. Weiant,. 2004.Scientific Evaluation in Women's Participatory Management: Monitoring Marine Invertebrate Refugia in the Solomon Islands, *Human Organization*, 63. No. 3: 301-319

government and donors. The lesson provided by Tarvana is that even with a self-initiated approach the support from NGOs and GA remains crucial. Open communication and inclusive participation, strong cooperation will help withstand a few oppositions and reinforces the kinships system that was once enjoyed. Experience shows that there is an improved fish stock in the closed area and a reduction of efforts by fishers in the nearby area. Alternatively self-initiated project are indeed the impact of many projected initiated throughout the country and as such stand as an indicator for building an environmental culture.

1.3 What are the main threats to biodiversity? A Scenario Analysis

Poor management, poses the main wide spread threat (see table 2), where habitat destruction posed the most underpinning treat to terrestrial, inland water and coastal biodiversity, particularly from commercial logging. Revegetation of logged area is unlikely to fill gaps until 2030. The recovery of those associated biodiversity will remain uncertain. Only 10% of Solomon Islands are considered suitable for commercial exploitation and logging practice also extended their operation in non- commercial areas such as steep slopes and sensitive forest water catchment. Associated threat such as increasing of sediment loads, chemical waste and increased water toxicity in the river system and the coastal system continues to persist in areas like Marovo lagoon, Viru Harbour in Western Province and Isabel after logging has been long abundant.

Compliance and monitoring is poor and indeed there are many evidences in support of logging industry operating without approved EIA. With no approved environment mitigation measures, enforcement is difficult. In the worst case scenario villagers are in competent to enforce environmental rules. Mining and mono-crop poses similar threats, except that these industries have evidently are diligently and rigorously making every effort to comply with the national EIA standard including the international standards such as the ISO e.g. Sumitomo prospecting mining company and the GPPOL.

Social disturbances is also risen when disparity of sharing of royalties, disagreements and conflicts between landowners. Given the notion of primary, secondary and tertiary ownership, distributing of royalty including employment is often made in favour of the primary owners or the developers supporters' normally those powerful chiefs. Because genealogy is orally passed, the erasing of some owners is obvious. Female are often the victims even when they are the primary owners of the land. Such is demonstrated in the communities of Guadalcanal, Western province and Isabel.

Given this situation, the updated NBSAP in its strategic goal A, aims to harness effective enforcement of laws while providing incentives and subsidies to discourage activities that poses threat to biodiversity. In particular Target 2 has been pursued under the notion that noncompliance or the lack of enforcing of rules thereto, in part to those who are *entrusted* to enforce rules on behalf of all Solomon islanders are also viewed as law infringers. The leaner interpretation of law is also resulting in mix representation. The NBSAP emphasises the need for holistic interpretation of laws for e.g. the interpretation of Forestry ACT alongside the Environment ACT shall give the full legal interpretation for the implementing of sustainable use, conservation and equity within forest development. The forestry policy has failed to received cabinet approval after many attempts. With an adopted NBSAP negotiation capacity building, there has been an evidence of an increase of EIA conducted in a very short time – at least 10 complains and several EIA submitted to the ECD Director each week.

It follows that by directly emailing those responsible staff of extractive resources companies, there has been an increase of publication in the popular newspaper. Likewise the increasing of community legal right knowledge over natural resources has increase court cases against logging industry. As demonstrated by Lily Duri Dani who has finally won her court case after challenging a logging company for six court cases since 2007 (*Catherine Wilson*). These can be attributed to the good work done by the LALASU group.
At the flip of a coin, enforcement has to be supported with a counter opposing alternative, where target eight aims to reduce deforestation from industrial logging of native trees through providing incentives such as those offered by REDD+, the promoting of ecotourism

by protected area initiatives. Initiative under the reforestation over logged area is underway although hampered by financial shortfall. Regardless of this short fall initiative under the NBSAP implementation is paving way towards through community empowerment by encouraging people to plant trees for their own benefits and to consider registering the community under the trust act (e.g. Rokoaniihi group of Malaita). By been organized and setting the first step the opportunity to draw fund is numerous as demonstrated by the Tarvana CBO of West Guadalcanal. An effort to steer RCDF funds towards reforestation has failed although a number of constituencies has bought for their respective constituencies sawmills to ensure sustainable harvesting of forest. But such initiative could also view as political masterminded in times of campaign for the next general election. Its sustainability is highly susceptible.

In a later development an Australian NGO alongside with MFR has been building capacity of stakeholder to ensure Solomon islands wood is exported to those countries that has strong legal instruments against poor forest management. Most logs are currently exported to Asia particularly Malaysia and found their way into the developed countries. The Westpac bank has recently dissolved the loggers account to discourage those industries that promotes unsustainable logging. It follows that the proposal by FAO for integrated forest management may fill some of these gaps and helps achieve some of the NBSAP milestones, if fully approved.

Indeed by providing incentives, this will discourage community from losing protected areas to developers such as those conservation areas of Marau that has now lost to logging and other commercial uses[16].

Facing the same threat the Lake Teigano of Renbell is now listed as a heritage site in danger. Under the updated NBSAP in millstone 12 . A. it aims for the delisting of the Lake Teigano from the danger list. Progress has been made by updating of the state of conservation of the property, a management plan is now under development including the process of finalizing the draft 2009 Rennell-Bellona Province Lake Teigano Heritage Park Ordinance. The REDD+ project has conducted a feasibility study and ecotourism initiative

on site[29], with a few individuals received ecotourism training oversea. The shift of the World Heritage focal point to ECD enables the Lake as one of the potential site to be declared under the Protected Area Act.

Another major form of habitat destruction that has been going on unnoticed is the traditional method of slush and burn. Slush and burn lessen workloads but the damage to biodiversity is severe. The fast growing population and the demand for commercial agricultural products that involved slush and burn clearings, speculatively have great damage on biodiversity especially secondary forest. Slush and burn turns slashed bushes including organism into ashes, exposing land to erosion and subsequently holding decomposing processes such as nitrogen cycle.

Given the demand for crops to support to date needs there has been a significant reduction of fallow periods, disallowing soil fertility and therefore poor yield. Slush and burn may also increases the period for soil fertilisation. The grass land on Guadalcanal and Gnela of central province also sporadically underwent bush fires, particularly during the spell of drought and has been exploited by Honiara city expansion (see 4th report).

Given people settlement is distributed along customary boundary, the constrains, and threats faced by agro-biodiversity is underpinned by the property of land fertility. Such those populated coastal dwellers and small islands dwellers face the hardest difficulties, and therefore land use management including the management of slush and burn is more urgent than others. Progress has been made and momentum has been gaining over land use practices since the intervention of the SWoCK project under the MAL and the MECDM assisted by the UNDP.

Addressing land use planning requires investment in environmental education and public awareness as provided by the updated NBSAP target 1. Instituting of CBO is viewed as essential particularly with reforming of a robust customary institution that has been

[29] Scott Alexander Stanley 2013 REDD Feasibility Study for East Renbell World Heritage Site, Solomon Islands SPC/GIZ Regional Project "Climate Protection through Forest Conservation in Pacific Island Countries" P.O. Box 14041, SUVA, Fiji

eroded over the years. Customary rules have no longer served their original purpose as context changes over time. By installing CBOs, order can be instilled where land uses practices can seriously pursued and enforced as demonstrated by CBOs that focus on protected area management. The need for instituting CBO is backed by the rationale that behavioural changes are slow and inversely proportional to action. Therefor instituting of CBOs to enforce rule to compliment a soft public awareness is important and the subsequent building of community managers' capacity (environmental education) to ensure CBO is managed at a professional standard. CBO provide the best avenue for remoulding of our institutional architecture if national and community cohesions are to be enhanced.

On the other hand, today agricultural development is becoming bias towards the rearing of introduced species. Interbreeding of native breeds with introduced breed (either human induced or naturally) has resulting in gene erosion e.g. the interbreeding of the native *Sus papuensis and* the feral breeds with introduced breeds. Introduced breeds indicated the changes in production systems and changes of eating habits which therefore demands more resources and intensive care and land uses.

However, livestock and mono-crops in the villages are constrained by the intensive labour, leaving only a few people and village communities to operate commercial crops and livestock. Livestock farming is often integrated with crops in the villages and on a larger scale with plantation development where threats are insignificant. Agriculture and aquaculture development remains a top priority to improve the living standard of the villagers and to reduce poverty. There is a need to improve native breeds and varieties to maintain genetic diversity but also to earn income and to support subsistence life. A course module has been developed to improve Small Business Enterprise development with special emphasis on commercialisation of the native breeds and varieties. The project will be implemented by the Small Business Division of the Ministry of the Commerce, where the course development is funded under the NBSAP implementation fund. The synergy between the NBSAP target 3 on sustainable finance and the Small and Medium Enterprise

policy under the overacting NDS policy is pursued in here (see section 2 on implementing mechanism).

Invasive species is the second underpinning threat to island biodiversity. Disappointedly, there is little effort and management intervention to control the established invasive species at least from a biodiversity conservation concern. Indeed there is a need for improved capacity building with respect to invasive species management for those entrusted ministry officers. Progress has been made towards the controlling of agricultural invasive species but shows little success. There are several invasive species in the country requiring management interventions. These include vertebra such as the cane toad (*Bufo marinus*), feral pigs, cats, rats and dogs. Catherine et al (2007)[30] noted that the three large, ground-dwelling birds, the *Microgoura meeki* endemic to Choiseul; *Gallicolumba salamonis* endemic to Makira and other outlying islands and *Gallinula silvestris* endemic to Makira have almost certainly extirpated by these animals.

Today the African Giant snail is undergoing an exponential population growth rate, taking every chance of no competitor in the food web and its ability to fast regenerate. It is vectored by moving vehicles. Their potential to spread to other provinces is very high as they can easily vectored to other provinces by people accidentally. Its economic implications would be severe if the population continue to spread around the country. In the costal environment the Crown-of-thorn stars fish is driving well in the changing coastal environment damaging coral reefs.

Intraspecific competition is also common amongst the introduced birds and native birds. In Honiara native bird has now been replaced by the introduced one. Invasive plants such as *Merremia peltata*, *Browsonaetia papyrifera*, mimosa weed (*Mimosa sp.*), and water hyacinth (*Eichhorniacrassipes*) are also present in part of Solomon Islands.

On another hand the crocodile has also perceived as invasive including flying fox because they destroys fruits and animals that support village livelihoods. Tilapia is listed as a potential fish for aquaculture but its invasiveness requires a closer assessment. As such

[30]Catherine E. F., Boseto, D., Filardi, C, E. 2007. A preliminary desk study identifying important Bird areas (IBAs) in the Solomon Islands, BirdLife International

discouraging of Tilapia is required since Tilapia is listed as the 100th worst invasive species. Coordination between Ministry of Fisheries, the Ministry of Agriculture and the Ministry of Environment is therefore required to select breed that support livelihood but does not pose danger to biodiversity. The Pacific Island Ecosystem at Risk project (PIER, US Forest Service) lists over 150 invasive and potentially invasive plants.

With the enactment of the Biosecurity Act and the Biosafety Framework, NBSAP aims to instigate the development of invasive species management plan to control the spread of current invasive species e.g. the Africa Snail and to strictly enforce the biosecurity act to deter entry of potential invasive species. Perhaps a provision for compensation by those vectors e.g. companies machines is required to help finance the management of potential invasive species once they enter into the country.

Urbanisation poses another major threat to urban biodiversity particularly from an increasing number of migrants from rural areas. Poor construction and road architecture allows for high flow of water in the city during heavy rain. Untreated sewage discharge allows to flow into the stream and the coastal environment. Furthermore urban river systems are now used as dumping grounds and site for defecation. As a result the water quality of urban areas particularly in Honiara is amongst the worst deteriorated water in the country with high e-coli concentration. The poor water quality has subsequently shifted the river ecosystem and diminishes biodiversity health.Waste problem is complicated by landfill issues where Ranadi serving the entire Honiara.

Subsequently, over crowdedness from rural migrant has increase waste problems proportionally , putting greater demands for infrastructure and housing which put and encouraged urban sprawls, increasing of land degradation, waste and polluted streams and coastal areas. People regarded Honiara as a temporary home; as such do not see it as their own in contrast to their own villages and provincial town. In addition waste added to the magnitude of vulnerability posed by natural climate events such as high rainfall, flooding and coastal erosion.

Similarly, open defecation is common in almost 90 % of the rural areas. Coastal areas including rivers a seen as areas for defecating and waste disposal. In the open seas, plastic are normally disposed during island hopping. In many cases if not all, waste of all sources such as non-biodegradable and highly toxic waste from oils are treated equal and discharged into the environment.

The reviewed NBSAP aims to push on the momentum on the current effort of the ECD and Honiara City Council on waste management issue in Honiara. It also aimed to put emphasis on green infrastructure particularly in Honiara as the pioneer town. Over the past few years under the new Honiara City Clerk leadership, Honiara City Council has been stepping up their work on town planning and enforcing of laws. It has been one of the provincial/municipal governments that has step up work and has now attracted support from partners. The ECD has received grants from the central government to clean up Matanigo River. Progressively, the path towards developing a green town along the

perspective of making Honiara a tourism destination is making positive changes. The Beautification group continues to receive fund to scale up tree planting development. The government of Japan support with developing pore holes for water supply and improved road construction to reduce traffic jam. The Rapid Employment project continues lure public support from the town dwellers. These entire ongoing project helped paved way forward in developing Honiara an environmental friendly condition for her people.

Natural Disaster such as cyclones, tsunami, storms, droughts and earthquake poses an avoidable threat. However, some authors have shown that natural threats causes minimum damage to biodiversity than human induced activities. The recent tsunami in the Western province in 2007 caused distractions to those protected areas in the western province.
Climate change poses the same but more severe risk and challenges and may have already impacting in all biomes without documentation. Climate change increase sea acidity therefor encouraging of coral bleaching. Subsequently thermal expansion and melting of ice increase the volume of the sea (sea level rise), potentially eating up the coastal and smaller islands. The changing climate condition could potentially favour invasive species and vector carrying decease. The cloud forest has a potential to evaporated, posing danger to mountain forest biodiversity.

During heavy rain inland biodiversity could found them washed into the sea and soaked dead. The reviewed NBSAP aims to implement at least 50% of the NAPA and climate change policy particularly those targets that rest on environmental concern. There has been a good progress on this theme particularly when climate change has raised high as the number one threat and concern at the highest global political level. Particular emphasis is made on green infrastructure as a mean to stimulate financial flow towards urban development and managements.

1.3.1 Case study 3: Coral reef system

The Solomon Islands Coral reef ecosystem faced numerous threads caused by natural events and anthropogenic factors. Logging and poor land use practices stood out as one of

the most significant threats (see above discussions). Overharvesting poses another threat particularly during an explosive population growth rate with mismanaged fisheries. Illegal dynamite fishing is also posing threat to coastal biodiversity as these activities destroy corals. The converting of coral reefs into logging landing sites, and anchorages also smoulder coral reefs. In many parts of the Solomon Islands corals (Coral sand, coral rubble (gravel) and coral stone (live and/or dead coral) often used for construction of homes purposes in rural areas and towns including materials for building seawalls and artificial islands. Intrinsic factors such as rasping of parrot fish and the Crown-of-thorn stars destroy coral species .

Besides the anthropogenic pressure on the coral reefs ecosystem, sea level rise as a result of climate change underpins another significant threat. Climate change causes coral bleaching as there is a sudden change in salinity, or increases in chemical toxins, SST or solar irradiance, forcing the brown *Symbiodinium* leave their tissues[31] . While there has no record of coral bleaching in the Solomon Islands[32], a number of the tropical Pacific has already facing coral bleaching.

About 25% of carbon dioxide (CO^2) absorbed by the oceans[33], these CO^2 reacts with sea water to create dilute carbonic acid, which interacts with carbonate ions, turning them into bicarbonate ions. Subsequently, a sharp decline in concentration of carbonate ions eventually resulted in a reduction of calcification rate of reef-building corals and other calcifying organisms.

Finally, Institutional and financial capacity constraints are obviously one of the top undermining factors, affecting the delivery of biodiversity services. The lack of technical capacity has added to the mosaic. Current policy architecture is also found to be mitigating against technology and scientific knowledge transfer. The end result is an institutional turf,

[31]Morgan, S, P., P, L, Munday., N, A J, Graham., M, Kronen, S,Pinca., K, Friedman., T,D, Brewer. , J,D, Bell., S, K, Wilson., J, E, Cinner. , J, P, Kinch. , R, J, Lawton. , A, J, Williams., L, Chapman., F, Magron. and A, Webb. 2011. Vulnerability of coastal fisheries in the tropical Pacific to climate change

[32]Ove, H, G., S,Andréfouët., K, E,Fabricius., G,Diaz-Pulido., J, M, Lough., P, A, Marshall. and M, S , Pratchett. 2011. Vulnerability of coral reefs in the tropical Pacific to climate change

[33]Raven, J., K , Caldeira., H, Elderfield.,O, Hoegh-Guldberg. and others (2005). *Ocean Acidification Due to Increasing Atmospheric Carbon Dioxide.Policy Document 12/05*, Royal Society,London, United Kingdom.

characterizes by resistance towards institutional changes, creating mistrust, corruption, competition and personality. Although mainstreaming of conservation policies and regulation is rife (see chapter 2), compliance is lacking. Government officers and politician personality often compromises with strict enforcements. As alluded Independent environmental monitoring and auditing remain a great challenge. EIA is facilitated by the developer with or without the Ministries assistances. Along the same issue of compliances, protected taxonomic groups are often found their way in the exports market chains (see Black, 2011)[34]. Most logging ships are speculated to undergo wildlife smuggling.

There are also obvious increasing of ignorance of behaviours as could be reflected in unnecessary chopping of trees, burning of bushes including trees by youths. Along this sediment birds, lizards are hunted as part of leisure activities. Removing of coastal lands trees including mangroves as unwanted plants is widespread. Removing river vegetation for subsistence agriculture and houses continues to be practiced in many rural Solomon Islands. Taking these over a 20 years period and factoring into the rate of population growth could left us to speculate that village practices has been causing a greater damages to biodiversity. Investment in capacity building to change people's behaviour in favour of conservation need becomes crucial and has been one and the only top priority since the ECD came into existence.

Community based protected area also faced the challenges of poaching. Poaching are either wilful or been attracted to the abundances of fish, shells, sea cucumber that can be harvested with little effort. This also occurs in marine areas where poaching of tuna is speculated to be undertaking by illegal fishing flits in the Solomon water and her EEZ zones. Since the NBSAP review come into place a subcommittee has now formulated to be led by MFMR to address IUU and MSC. The PNA has increased its newspaper publication particularly in their conservation efforts. There is a high possibility to increase economic return from tuna fisheries if the government rigorously pursues the recommendation by the PNA.

[34]The Solomon star (24/07/2011) derived from http://www.solomontimes.com/

Chapter 2

The national biodiversity strategy and action plan, its implementation, and the mainstreaming of biodiversity

2.1 Introduction

The updated Solomon Islands National Biodiversity Strategic Action Plan constituted of a long term goal –the 2050 vision, a medium term goal - the 2020 mission, 16 targets, 92 milestones and 200 proposed activities. The long term goal is an impact statement, the mission and targets are outcome statements while milestones served as output statements and the proposed activities serving as activity statements. The targets, millstones and activities are clustered into 15 priority areas under 4 broader *strategic* goals of interventions. The NBSAP's action is derived from existing policy actions particularly the global biodiversity strategy and its Aichi target, the NBSAP (2009), NDS (2011-2020) and other related policies (see table 4). All are instructed from the provision provided by law particularly the CBD (1995), the Environment Act (1998) and the Solomon Island Constitution (1979). It builds on the momentum produced when Solomon Islands ratified the CBD convention in 1995 and the endorsement of the NBSAP in 2010. The NBSAP endorsement was also coincided with the end of 2002-2010 global targets and the entry of the 2011-2020 strategic plan. At the same time the Protected Area Act was developed alongside the development of NBSAP (2009), which was enacted in the same year 2010. The Protected Area Regulation was gazetted in 2012.

The instant unfolding of these events prompted us to focus on the updating of the NBSAP as an implementing mechanism of the NBSAP (2009).The updated NBSAP therefor maintained the participatory approaches undertaken during the development of NBSAP (2009) as such maintained its legal mandates as a policy instruments.The mandate for the NBSAP review is provided by decision VIII/15 and has been reinforced in decision X/2 COP 10[35]. The NBSAP (2009) provided for the NBSAP review every four years.
Arguably the NBSAP (2009) devoid SMART, has no indicator, reflected a poor linkage to the 2010 global targets, and actions are repetitive- punctuating around environmental awareness. Given a global and national rule mismatch, efforts are also made to realign the updated national strategies to the global biodiversity strategy and its Aichi targets.

The NBSAP 2009 comprises of 117 actions and 12 themes which are all adopted and updated into the reviewed NBSAP. Reflecting on the notion of SMART[36]–the output of the project that harnesses the updating of NBSAP[37] have been adopted as the 16th target (see figure 5)[37]. In theory the NBSAP is developed from two policy perspectives; to emulate the Aichi Biodiversity Targets at the national level under our local context and circumstances (development perspective), *and* to implement national laws and policies simultaneously (mandate perspective). Both perspectives make NBSAP as a mandate but also to effectively and efficiently manage the Solomon island biodiversity. This perspective provides the underpinning conceptual framework for planning and executing of the NBSAP review[37]. Adopting an adaptive co-management principle the project concept continue to be review. As alluded the NBSAP (2009) and its renewed version are viewed as **one** where the latter is an accumulative of the earlier. The reviewing of NBSAP is underpinned by the following output objectives;

I. To make a better change under various themes of NBSAP (2009)

[35]CBD. 2010. Report of the tenth meeting of the conference of the parties to the Convention on Biological Diversity. http://www.cbd.int/cop10/ (accessed January 21, 2011).

[36]UNDP, 2011. UNDP outcome-level evaluation a companion guide to the handbook on planning monitoring and evaluating for development results for programme units and evaluators

[37]'Support to GEF Eligible Parties (LDCs & SIDs) for the Revision of the NBSAPs and Development of Fifth National Report to the CBD - Phase 1 (2012-2014)

II. To provide an opportunity for collaborative actions
III. To provide a bench mark to measure and report on progress of conservation at the national level
IV. To collate in-country programmes and projects, and to purposefully navigate towards a common environmental goal.

In the reviewing processes we have also adopted the following principles which are derived from the overall principles;

- **S.M.A.R.T**- where targets are Specific & Simple, Measurable, Achievable & Attainable, Realistic and Relevant and Time bound.
- **Consistency and synergies** - Where the **Global Target Framework** (the global Aichi targets 2010-2020) and existing laws, policies and national plans have been amalgamated; thereby gaps identified provide the basis for priority and targets.
- **Participation and inclusiveness** – that targets are developed through broader sector consultations and across various hierarchies including women and children.
- **Comparative advantages and Common Interest**- where targets focus on issues of national interest that can be addressed within the current level of national competency and are practically visible.
- **Scientific Data and Information** - where targets are based on latest available data available.

Alongside the questions posed in chapter one, the following questions have helped structured this chapter; what are the biodiversity targets set by your country? How has your national biodiversity strategy and action plan been updated to incorporate these targets and to serve as an effective instrument to mainstream biodiversity? What actions has your country taken to implement the Convention since the CBD ratification report and what have been the outcomes of these actions? How effectively has biodiversity been mainstreamed into relevant sectorial and cross-sectorial strategies, plans and programmes? How fully has your national biodiversity strategy and action plan been implemented?

2.2 NBSAP Conceptual Framework

The NBSAP conceptual framework (figure 6.0) ensures mainstreaming of biodiversity is inherently part of its developments and its implementations. Two reviews[5,6] provided the baselines. The vision, the missions, targets, millstones, activities and indicators are linked as a coherent whole and are nested with current projects, programmes, ministerial cooperate plans and divisional plans. This perspective provides the paradigm for enhancing mainstreaming and underpins the implementing instruments structure and functions. The implementing mechanisms comprises of a (1) An administrative mechanism that comprises of ECD as the secretariat, supported with CBD focal points and thematic working groups. A Biodiversity forum is anticipated to be held every three years to provide updates on NBSAP implementations; (2)The resource mobilization plan 2014-2018; (3) an Environmental education and public awareness plan (i.e a combined strategy for communication and capacity building course modules); (4) projects and (5); the 5th and 6th national reports.

The NBSAP is viewed as an *organic document* systematically revealed in various stages during its development and therefore its foreseeable implementations. It underpinned by adopted principles which are code of conducts to guide implementation.

2.2.1: Excerpt from NBSAP

Vision

Building a unified, vibrant and environmental stewardess, thereby by 2050 we are able embedded in our society an environmental culture, where unique and endemic biodiversity remains our natural heritage, cultural identity, and ecosystems continue to provide for our economic, social, spiritual and knowledge development. Biodiversity health is maintained; restored, sustainably used and shared equally.

Mission

We will make efforts to take urgent action to halt the loss of biodiversity, thereby by 2020 ecosystems continue to maintain their resiliencies and continue to provide essential

services, thereby securing the Solomon islanders variety of life, and contributing to people's well-being, and poverty eradication.

Principles

Intergenerational equity: where the benefits of our future generation will always considered in all form of development including biodiversity conservation, and making references to our forefathers.

Precautionary: where the lack of scientific evidence will not deter us from acting to prevent serious or irreversible environmental damage or degradation and we will continue to observe our customary laws as an integral part of our development and conservation aspirations.

Participation and Complementarily: where all institutions, organizations, programmes and projects, vested with variables of structures, functions and powers (whether, global, regional, national, provincial or tribal) shall be interpreted under a common purpose-consorted to the same vision and mission- i.e. building a Solomon island environmental culture living in harmony with nature and the embracement of coexistence.

Synergies: Where all environmental rules, including conventions, laws, policies, and management plans, including norms and practices are holistically interpreted, and their deliverances maximizing of outcomes and impacts

Ecosystem Approach : where our strategy shall rest on the notion of managing a system-(spatially and temporal), land and forest , inland water, the costal and marine biodiversity including the atmosphere are part of a coherent whole in turn support ecosystem services, our livelihood, economic and national building needs, linking to an infinite past and an infinite future.

Accountability and transparency: where biodiversity management is link to better governance where accountability and transparency enable us to effectively and efficiently measure and manage our biodiversity.

Adaptive and dynamic: where today's management is relevant to the tomorrow's and is relevant to the next tomorrow and one ecosystem is relevant to the next in a closed but an open loop.

People and inclusiveness: Where the health of our biodiversity is our livelihood and where our cultural heritages revolved and resolved. Where women, men, youths and

children are participating in biodiversity managements and our knowledge and spiritual attributes fully utilized in our sustainable development endeavors.

2.3 2020 targets

Emanated from the conceptual framework the targets are developed and reviewed to inherit, and to be nested into other related policies targets. These targets will continue to be reviewed until the NBSAP is made ready for Cabinet endorsement.

The Solomon Islands has responded to the call for the development of Action Plan for the programme of work on protected area (PoWPA)[38]. The action plan was reviewed several times and together with global and regional capacity-building workshop, the PoWPA has subsequently updated and adopted into the NBSAP (see NBSAP priority 11, target 12). The Coral triangle initiative action plan (NPOA) and its implementation plans provided another cross cutting plan that integrated the three Rio conventions objectives within the theme of coastal biodiversity. At the sub-national level the Choiseul Ridge-to-Reef plan and the Isabel Ridge to reef plan provided the initial steps for sub-national biodiversity strategy plan developments. Since the reviewing of the NBSAP, there has been a significant progress in developing of actions and proposals aligning to the objectives of the CBD and the Environment Act in general (also see annex 1 for scaling).

[38] Solomon Islands Plan of Action on the Programme of Work on Protected Area, can be derived from http://www.cbd.int/protected/implementation/actionplans/country/?country=sb

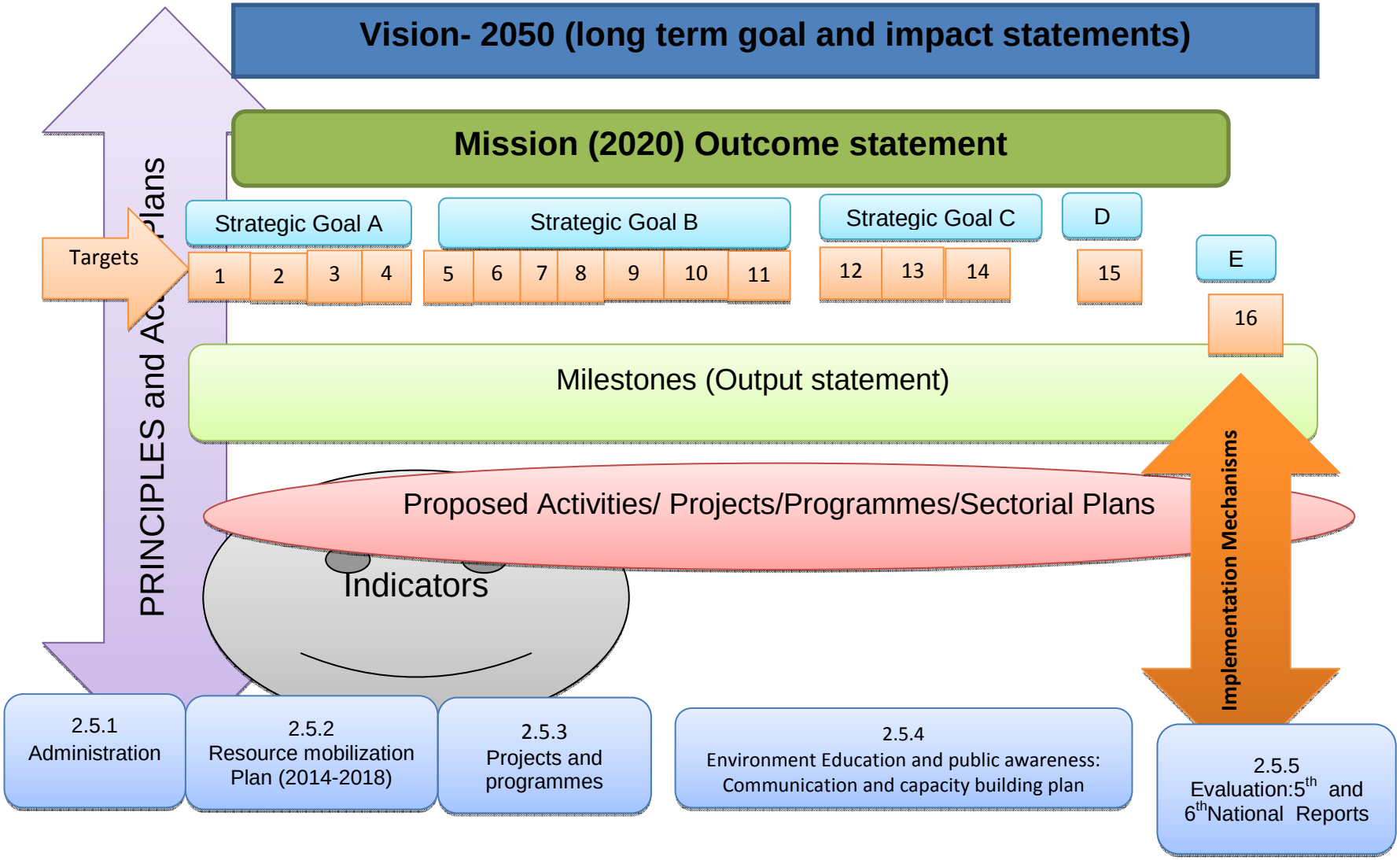


Figure 6: the Conceptual Framework; Solomon Islands National Biodiversity Strategic Action Plan

2.3.1 Solomon Islands updated NBSAP targets

Goal A

Addressing the underlying causes of biodiversity loss by effectively and efficiently delivering our mandates and developing of incentives and subsidies to improve and enhance biodiversity management

Goal A depicted biodiversity mainstreaming which comprises of targets 1 to 4. These targets applied within and across all the targets (1-16). In here the term *mandates* inferred all rules including laws, treaties, policies, management plans, action plans including traditional and religious norms. The notion of incentives and subsidies is framed within the ideal of *reward* (market based) and *punishments (regulatory).* Their counter-opposite forces could help shape people's behaviour in favour of building an environmental culture. Delivering of our mandates also depend on the available knowledge (research-target 4) and subsequently their utilisation (target 1). The goal is built in concurrent to the global strategic Goal A.

Priority 1: Environmental Education and awareness

Target 1 By 2020, the people of Solomon Islands are aware of the values of biodiversity, and those steps required for conserving and sustainably using them

The NBSAP (2010) priorities environmental education and public awareness on theme 7 and has in cooperated actions in all other themes. The proposed NBSAP adopted environmental education and awareness as its first priority, target 1. Environmental education is stipulated in the Education strategic framework 2007-2015. The target is relevant to the Millennium Development Goal 2 where the Solomon Island aims to achieve all children to attend primary education by 2015. It follows that this target is built within the scope of Aichi target 1. The target rest on the notion that environmental education and awareness are fundamental for instigating of people and institutional behavioural changes in favour of conservation management needs. Environmental education and awareness requires the supplier of knowledge to be 'contented' to be able to elucidate and disseminate environmental knowledge to have impact on changes. What, where, who and how environmental education and awareness can be harnessed and conducted is based on the knowledge suppliers' capacity.

Priority 2: Governance and Compliances

Target 2

By 2020, existing environmental laws and regulations, policy and management plans including those provisions supporting of incentives and subsidies for biodiversity managements are utilized to conserve and sustainably use and also to eliminated and phased out any negative impacts on biodiversity

This priority and target build on NBSAP (2009), theme 1: Mainstreaming biodiversity which has also stated as actions in all the other themes. Building on the NBSAP (2009) where mainstreaming is rife and endemic in sectorial laws and policy's' architecture including provincial ordinances are now fully developed the need for their effective enforcement and implementation remains as the next step.

Arguably the continuous loss of biodiversity over the years is a direct result from the lack of implementing of our mandates, where most of our environmental laws, policies, action plans and management plans are redundant. The discontinuity of environmental rules within and between the levels of governances- national, provincial and the multiples of customary rules is also making enforcements difficult. None compliances is also obvious in multi-cooperate business particularly logging and fisheries. Therefore the target seeks to address biodiversity management through the effective appliance of the EIA particularly in logging and fisheries.

It follows that fostering and enhancing the cohesive flow of rules between our existing laws, policies and management plans is seen as imperative to achieve policy objectives, thereby better manage our biodiversity. It builds on the notion of pluralistic interpretation of law. As such building capacity to holistically interpret laws for e.g. Forestry ACT with the Environment ACT is viewed important.

Linking and fostering national rules to the local rules to ease common pool resources management characterised by a robust and complex customary land property right system is paramount. Reforming community resources governances at the local level is necessary to facilitate the national effort to promote effective biodiversity management. Equally sustainable use, conservation and equity require reciprocal interaction at all levels of transactions.

Further it builds on the need to develop policy or regulatory instruments that favor incentives and subsidies that will harness biodiversity management. The Solomon Islands law architecture allows for the development for additional regulations and as such developing of regulation is viewed important than reviewing of Acts. Finally the target is developed within the context of Aichi target 3 and 4.

Priority 3: Sustainable Finance

Target 3

By 2020, the Solomon Islands, has developed and adopted a sustainable finance plan to mobilizes resources and to effectively implement the national biodiversity strategic action plans, to complement or build on the NDS and other related environmental policy and at least identified, developed and adopted strategies to generate revenues from two revenue sources

This target builds on the NBSAP (2009) theme 6 on financial resources alongside two proposals- the proposal on sustainable finance and Payment of ecosystem services (PES). A sustainable finance policy tool was produced by ECD in 2012. The provision is provided by the Environment Act, Fisheries Act, and the Protected Area act. Given these mandate, the sustainable finance is developed in congruent to Aichi target 20. Target 3 – re-enforces the provisions for payment of ecosystem services (PES) (Aichi target 3). Arguably, the conventional mechanisms such as the GEF, UNDP, Government, NGOs and Private Company will continue to provide the sustainable finance mechanism for implementing NBSAP[39]. The target provided a provision for development of the resource mobilisation plan and a draft resource mobilisation plan 2014-2018 is now under development and aims to improve coordination between current and pending projects to pave way towards the establishment of an environmental trust fund via a strategic sustainable finance strategy as the first step.

Priority 4: Research, traditional Knowledge, Science, Information System and Technology

Target 4

By 2020, Research, encompassing traditional knowledge, science, and social science, economic investigation has been raised including the transfer of related technologies

[39]ECD (2013) 1st Draft of NBSAP Resources Mobilization Plan (2014-2018), MECDM, Solomon Islands.

thereby biodiversity values, functioning, status, and the consequences of their losses are better understood and managed.

The target builds on the NBSAP (2009) Theme 8 on research, monitoring and information sharing. It responded to and integrated Aichi target 18 and 19. It also gives special emphasis to sustainable finance feasibility study such as PES research (Aichi target 4) as such it provides steps towards NBSAP target 3 and subsequently Aichi target 20.

The target build on the argument that researches whether traditional knowledge, experiential knowledge, scientific, social and economic investigation are all equally important for unraveling of hidden mysteries, and the articulating of those found knowledge for better resources management. Research is essential for developing of rules to be compatible to nature. It also builds on the notion that scientific knowledge requires partnering with outside institutions and the engagement with external experts. Integrating of traditional knowledge with the contemporary research is important to better defined parameters underpinning the causes of and status of biodiversity loss and therefor their managements. It follows that information system and technology will allow us contextualize information to be easily communicated and to make relevant decisions.

Goal B

Reduce the Direct and indirect pressures on biodiversity through Ecosystem based Managements

This strategic goal is made in harmony with the global strategic goal B to address the anthropogenic and natural pressure on biodiversity. It clustered target 5 to 11. Most if not all environmental laws have now adopted an ecosystem management approach or at least has its implications.

Priority 5: Marine and Coastal Biodiversity

Target 5

By 2020, the Solomon Islands has reinforced and reaffirmed its commitment, reciprocally, to the achieving of regional and sub-regional objectives in efforts to

sustainably managing of tuna and reducing of tuna by catch in her EEZ, thereby doubled economic benefit/return.

Target 5 and 6 is not sufficiently covered in the NBSAP (2009). It therefore build on similar policy and regional and international conventions (see 4th report pp 47). The target provide the synergy between UNCLOSE and CBD and other none binding instruments such as UN Fish Stocks Agreement1, FAO Compliance Agreement, FAO Code of Conduct for Responsible Fisheries and regional instruments such as the Forum Fisheries Agency Convention, Nauru Agreement, Niue Treaty US Multilateral Treaty, WCPFC Convention and Noumea Convention. Synergy is inferred in the statement… to reinforced and reaffirmed its commitment, reciprocally, to the achieving of regional and sub-regional objectives… (NBSAP Target 2), in efforts to sustainably managing of tuna and reducing of tuna by catch in her EEZ (Aichi target 6), thereby doubled economic benefit/return (NBSAP target 3). This target is mainly focused on Marine biodiversity as defined by the MEA Report '…areas where the sea is deeper than 50 meters.' A draft Fisheries Bill (2013) is under development and has exclusively mentioned the ecosystem management approach[40] as one of its principles (continue target 6).

Target 6
By 2020, coastal commercial fish, mammals, reptiles, and invertebrates are effectively managed and harvested sustainably within the current legal instruments and management rules thereby improved the health of the ecosystem with special attention to protect threatened species and restoration of vulnerable ecosystems

It builds from the Fisheries Act and adopted the Ministry of Fisheries Cooperate plan its inshore fisheries plan and others. It adopted the current work on dolphin regulation and provided the synergy between CBD and CITES there by the corresponding national laws such as the wildlife management Act, Protected Area Act etc. It builds on The Solomon

[40]a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. The application of the ecosystem approach will help to reach a balance of the three objectives of the Convention: conservation; sustainable use; and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. An ecosystem approach is based on the application of appropriate scientific methodologies focused on levels of biological organization, which encompass the essential structure, processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of many ecosystems.

Islands National Action Plan on the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security. It in- cooperated the outcome objectives of future and current project such as the MACBIO (2013-2018)[41]. It builds on the need to develop plans for specific ecosystems such as sea grass and mangrove. It is therefore made in congruent to Aichi Target 12, 6 and 10.

Priority 6 Agro-biodiversity

Target 7

By 2020, the genetic diversity of native cultivated plants and domesticated animals and of wild relatives, including socio-economical and culturally valuable species and/or their population are maintain/increases while discouraging activities that had been contributing to their population diminish.

Adopted from NBSAP (2009) theme 9 on agro biodiversity, it has in cooperated aquaculture development to fully reflect the definition of Agro-biodiversity[42]. It therefore builds from the MAL cooperate plan (2010-2014) Bio-safety policy framework (2012), The Agriculture Policy 2010-2015, Solomon Islands Government Policy on Organic Agriculture Systems (2010), National food security, food safety and nutrition policy 2010 – 2015, National Rice Sector Policy (2010-2015), National Agriculture and Livestock Sector Policy 2009-2014, Solomon islands Aquaculture Development Plan 2009-2014 , Solomon Islands Tilapia Aquaculture Action Plan 2010–2015 and other related policies. It is developed within the scope of Aichi target 7 and 13 to address the current threats face by agro-biodiversity.

Priority 7 Forest, Mountain and plant genetic Biodiversity

Target 8

By 2020, the rate of deforestation particularly from industrial logging of native trees, slush and burn has been reduced by 50%, and initiatives are made towards the restoration of 15% of fragmented logged areas, maintained 10% of remaining virgin forest thereby contributing to conservation, sustainable use and providing avenues for

[41]Pacific Integrated Water Resources Management Project, Mekem Strong Fisheries (MSF), PAS: Strengthening Coastal and Marine Resources Management in the Coral Triangle of the Pacific.

[42]Encompasses the variety and variability of animals, plants and micro-organisms which are necessary to sustain key functions of the agro-ecosystem, its structure and processes for, and in support of, food production and food security.Source: FAO/CBD. Workshop 1998

equitable sharing of forest biodiversity alongside initiative for mitigating against climate change

Although not directly assigned as a theme in NBSAP (2009), it implication is related to other themes such as the protected area system. In particular the national consultation workshop on the thematic area for GEF 5 identified integrated forest management as one of the priority area[43].

The target is therefore made in harmony to Aichi Target 5 and 15. It applies across the rest of the targets as implied in ….. the rate of deforestation particularly from industrial logging of native trees, slush and burn has been reduced by 50%, and initiatives are made towards the restoration of 15% of fragmented logged areas.. (to complement target 6 on costal area e.g. mangroves) and to maintain 10% of remaining virgin forest in corresponds to target 12. It provides the platform for equitable sharing of forest biodiversity (NBSAP target 15) alongside initiative for mitigating against climate change (NBSAP target 11, Aichi target 10).

Priority 8 Development and Pollution control and Biodiversity

Target 9

By 2020, wastes; solid waste, non-biodegradable and highly toxic waste, including excess nutrients has been brought to levels that are not detrimental to ecosystem function and biodiversity including human health.

This target is provided by the NBSAP 2009 theme 11 on waste management. The target is also build from the National Solid waste management strategy and Action Plan 2009-2014 and particularly the J Prism (2010-2015)[44]. The Solomon Islands is also in the process of development of a National implementing plan for POP[45]. The target responded to Aichi target 8 and aims to stimulated further development under waste management strategy under other conventions. The target is also related to target 3 on the need to effectively conduct EIA in industries.

[43] http://www.thegef.org/gef/NPFD/Solomon-Islands

[44] Human and institutional capacity building on sustainable Solid Waste Management - implementation of the Pacific Regional Solid Waste Management Strategy) project.

[45] 'Global Project on the Updating of National Implementation Plans for POPs'

Priority 9 Invasive Alien Species

Target 10

By 2020, invasive alien species and pathways in Solomon Islands have been identified and, measures are in place to control potential entry of new invasive species. Developed and adopted an implementation plan to control or eradicate current invasive species that are threatening food security, trade and biodiversity including human health.

This target is built from the NBSAP (2009) theme 4 on Management of invasive species and genetically modified organism. It builds simultaneously with the NBF (2012) and the recently enacted act the Bio-security Bill (2013). The target is built along the guideline of the Aichi target 9.

Priority 10 Climate Change and Disaster Risks Management and Green Infrastructure

Target 11

By 2020, 50 % of the biodiversity priority areas identified in NAPA and the Climate Change policy been operational, and a mitigation action plan in place, been integrated with infrastructure developments and disaster risk management.

The target is built from NBSAP (2009), theme 10, the SI NAPA (2007) and the climate change policy 2012-2017. The target builds on the synergy between CBD and CCC including disaster risk management with particular emphasis on town planning. The target therefor builds in congruent to Aichi target 10 and 15.

STRATEGIC Goal C

Enhancing and promoting of protection and restoration of biodiversity to safeguard ecosystems, native species and genetic diversity

Enhance infers to step up and to promote infers to introduce conservation to areas where conservation has never been promoted or species that has not been attended in the past. Protection also means restoring of degraded areas such as those logged areas.

Priority 11 Protected Area Systems

Target 12

By 2020, at least 10 per cent of the terrestrial and inland water, and 15 per cent of coastal and marine areas of the Solomon Islands, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively management regimes; thereby an ecologically representative and well-connected system of protected area is established, integrated into the wider landscapes and seascapes conservation based initiatives.

The target is built from NBSAP (2009) theme 3 on protected area. It therefore builds from the Protected Area Act (2010) and the protected area regulation (2012) and provides the steps to implement the act effectively. It in-cooperated and provided further steps from what has been achievement on the ground by CBOs and their NGOs counterparts. It remoulds the recent developed PoWPA action plan and therefore made in harmony to Aichi target 11. The Notion of '… integration into the wider landscapes and seascapes conservation based initiatives' inferred improved management of other targets (the sustainable use of biodiversity and the application of ecosystem based management).

Priority 12 Species Conservation

Target 13

By 2020 the Solomon islands has reaffirmed and enhanced its commitments towards the reducing and managing of known endangered species, and prevented endemic species from undergoing local extinction; and has reinforced its commitments towards the global and regional efforts to prevent extinction of migratory threatened species

This target is built on the NBSAP (2009) theme 2 on Species conservation. It therefore footed from the Wildlife Protection and Management Act (1998) and provided the synergy between CBD, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and Convention on Migratory Species of Wild Animals (CMS). It embraces the global CMS action plan[46] and the SPREP action plan on migratory species[47], and made in harmony to Aichi target 12 and related targets. It further selected

[46] UNEP and CMS [Strategic Plan] 2013
[47] SPREP 2013

species that requires attention as a means to untangling of general terms used in the NBSAP (2009).

Priority 13 Inland Water Biodiversity

Target 14

By 2020, ecosystems that provide essential services, particularly services related to water, its contribution to human health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, land owners, local communities, and the poor and vulnerable.

The target is built from the Rivers Waters Act (1996). It implies across the NBSAP (2009) action particularly the waste management theme. The target is made in congruent to Aichi target 14 and 15 with special emphasis on inland water and the associated ecosystems. It is specifically related to eliminating of poverty…… 'it takes into account the needs of women, land owners, local communities, and the poor and vulnerable'. The target is also related to international water, which on the ground focuses on integrated water management implementation. It related to the rest of the targets particularly when the Solomon Island comprises of islands and water catchment accounts almost 2/3 of the islands.

Strategic goal D

Enhancing the equitable sharing of benefits derived from biodiversity uses and the associated traditional knowledge

Equitable sharing of benefits of the use of genetic resources has already undertaken in-between the many tribes of the islanders particularly sharing of knowledge such as herbal medicine. Such the need to enhance such informal arrangements through legal means is viewed important particularly when the use of products or their derivatives in biotechnology appliances may involve companies outside the country. The notion of equity also implied the proportional sharing of benefits from genetic resources use such as logs, fish and even mineral.

Priority 14 Access and Benefit Sharing (ABS)

Target 15

By 2015, the Solomon Island has acceded to the Nagoya protocol and there by developed and adopted an action plan for the fair and equitable sharing of benefits arising from the utilization of its genetic resources; and thereby by 2019 a legal instrument is developed and adopted for the protection and disseminating of local knowledge and practices that associated to their uses.

This target is built from the NBSAP (2009) theme 5 on benefit sharing and access to genetic resources. The target is made in congruent to Aichi target 15, aiming to accede to the Nagoya protocol by 2015. Currently the government has approved a cabinet paper for ratifying of the Nagoya protocol and the project on the Ratification and implementation of the Nagoya Protocol in the Countries of the Pacific region will help further accomplish this target

Strategic Goal E

Enhance the implementation of NBSAP through participatory planning, knowledge management, capacity building and decentralizing of NBSAP to sub national and community levels

Enhancing implementation inferred that the reviewed NBSAP is development as an implementing mechanism of the NBSAP (2009). The consultative approach undertaken including the reaffirmation by the provincial members for NBSAP (2009) remains valid.

Priority 15 NBSAP Implementation

Target 16

By 2014, Solomon Islands has reviewed, updated and reaffirm commitment to NBSAP as a policy instrument and has already implementing 25% of the stated actions

The reviewed NBSAP is developed within the framework of NBSAP (2009) which provided the provision for renewal every four years. At the same time the review also reaffirmed and conformed to the COP 10 decisions X/2. The later holds weight as the reviewing of the NBSAP is funded under the GEF-UNEP project[37] . As such this target is developed under the guideline of Aichi target 17. Using the modality of the project it has been viewed that at least 6 % of the action plan (target 16) is now under implementation. It follows that when the conventional Government, NGOs and CBOs operations including current projects are in-cooperated into the updated NBSAP

implementation is almost 20 %. The updated NBSAP implementing mechanisms includes, an administrative structure, a resources mobilisation plan, an environment and public awareness plan, projects and the 5th and 6th National Report (see 2.6).

2.4 Biodiversity mainstreaming

As inferred in the conceptual framework the action plan is derived from existing rules including project outcome objectives. The difficulty of achieving project outcomes objectives allows the NBSAP to take the advantage and adopted projects outcome objectives into its actions. For example, the MESCAL[48] project outcome objective three is to ensure mangroves governances is strengthened, and therefore by *adopting the project outputs, it has reaffirmed and reassured the wayward to the achieving of the project outcome.* Likewise the SEMRICC (2012)[49] project outcome objectives to improve environmental governances had been enhanced by adopting the output of the dolphin workshop[50] and the GIS component as the NBSAP's technology assessment component. This approach stood in contrast to other project development and provided the platform for effective and efficient mainstreaming. It also avoids the notion of reinventing the wheel. The action plan has been developed by the ECD staff that has the mandate to develop and imposes environmental rules as such it also stood as a test if NGOs and other Government agency have any stake in complying to the Environment Act (1998).

Demonstrating the notion of flexibility and *inclusiveness* the action plan is left open ended in contrast to NBSAP (2009) where TOR is developed for projects and have been aligned with possible executing agencies. This open ended approach has then been enclosed by the proposed institutional arrangement, particularly the need for reporting of implementation of environmental services to the ECD on three years period. While mainstreaming of biodiversity is becoming an urgent and popular theme in the global biodiversity agenda, it has been agued here that mainstreaming in the Solomon Islands is indeed endemic as reflected in our national laws and policies architecture. It has been and will always be part of our indigenous knowledge making - where land, sea including

[48]The Mangrove Ecosystems for Climate Change and Livelihoods
[49]strengthening Environment Management and Reducing the Impact of Climate Change in the Solomon Islands
[50]UNDP Solomon Islands supports Dolphin Assessment and Management Workshop http://www.undp.org.fj/index.php?option=com_news&Itemid=45&task=view&id=319

the air is viewed as a coherent whole. From this perspective, environmental rule without mainstreaming is viewed as null and void, especially when 90 % of our resources are owned by the community and governed by customary rules. This has been recognized in our national Constitution. This has further reaffirmed when all laws administered by development sectors embraced environmental protection. In many circumstances the *leaner interpretation* of law often resulted in misrepresentation. The result thereof is the development of new laws leaving 50% of laws redundant.

The NBSAP adopted the view that the pluralistic interpretation of law must be seriously pursued where the Environment Act and the Constitution providing the overarching law. There is a need to navigate away from viewing the Environment Act as the MECDM ACT but to view it as a Solomon Islands laws which must read alongside other Acts. The pluralistic interpretation of law is often mixed and often contested by those legal practitioner and regulatory Ministries. This was evident during a conflicting of interpretation during a Tubi export (discussion, 2013). This scenario therefore prompted the need for more open dialogue and legal capacity building as stipulated in our target 2, on the need to improve governance and compliances. Legal perspective must go beyond the conventional law application to ensure livelihood, national economy and the environment including equity must be compromised.

Furthermore all environmental related laws provide the provision to produce additional regulations. Regulation in itself can be viewed as a management plan- at least to be based on a legal instrument. The provision to create additional regulations is viewed here as a platform for promoting adaptive management. The NBSAP embraces the view that developing of regulation is foremost, instead of reviewing of ACT as reflected in the past action plans.

At the policy level the provision for mainstreaming is provided by the fact that the NBSAP is developed to compliment and reciprocate the Solomon Islands National Development strategy (NDS) 2011-2020). The NDS is the overarching policy that defined the long term (as a medium term from NBSAP timeframe) development aspiration of the country and provided the impetus for ownership and resource mobilization. The NDS build on five (5) principles of the Paris Declaration on aid effectiveness (Ownership, *Alignment, Harmonization, Managing for Results and Mutual*

accountability). The vision it uphold is 'A United and Vibrant Solomon Islands.' The underlying mission is; 'to create a modern, united and vibrant Solomon Islands founded on mutual respect, trust and peaceful co-existence in a diverse yet secure and prosperous community where tolerance and gender equality are encouraged and natural resources are sustainably managed; 'And'

Policies and action plans	**Time Frame (20..)**						
Policy	14	15	16	17	18	19	20
NBSAP (2011-2020)							
NBSAP resources mobilization							
NDS							
National Solid Waste management strategy and Action Plan 2009-2014							
The NCRA Policy statement 2010 and all Ministerial Cooperate Plans							
The Solomon Island Climate change policy 2012-2017 and NAPA							
Solomon Islands National Biosafety Framework 2012							
The Agriculture Policy 2010-2015							
National food security, food safety and nutrition policy							
National Rice Sector Policy (2010-2015)							
Solomon Islands National Strategy for the Management of Inshore fisheries and Marine resources 2010-2012							
Solomon islands Aquaculture Development Plan 2009-2014							
[51]Solomon Islands Coral Triangle Initiative National Plan of Actions (NPOA and implementation framework							
Education strategic framework 2007-2015							
Pacific Islands regional guidelines for whale and dolphin watching 2008							
Regional Action Plan for sharks (2009)							
Pacific Ocean Pollution Prevention Programme (PACPOL) Strategy 2010-2014							
Pacific Regional Solid Waste Management Strategy 2010-2015							
Pacific Islands Framework for Action on Climate Change 2006–2015							
FFA Regional Monitoring, Control and Surveillance Strategy 2010-2015							

Table 4: Policy and action pan time frame

[51]http://www.coraltriangleinitiative.org/library/national-plan-action-solomon-islands

to enable all Solomon Islanders to achieve better quality of life and standard of living for themselves and their families through constructive partnership for social, economic, political and spiritual development. The policy objectives for conservation and environmental management is :[52]'to promote a holistic, sustainable approach to natural resources management addressing biodiversity, forestry…. Other policies' actions that are in cooperated into the NBSAP are given in table 4.

2.5 The implementing mechanisms

The implementing mechanism of the NBSAP, follows the modality of the projects for the reviewing of the NBSAP[37] . As alluded the NDS 2011-2020 provide the resources mobilization instrument. All post government cooperate plans and sectorial plans will soon follow. Instituted by the Financial Instruction , any proposed project and funding that required government partnership must firstly sought with close consultation and approval by the Ministry of Development and Aid Coordination. With respect to the NBSAP structure these implementing mechanisms are part fulfilling of Strategic Goal E 'Enhance the implementation of NBSAP through participatory planning, knowledge management, capacity building and decentralizing of NBSAP to sub national and community levels. Particularly Target 16 which states 'By 2014, Solomon Islands has reviewed, updated and reaffirm commitment to NBSAP as a policy instrument and has already implementing 25% of the stated actions' (see figure 5).

2.5.1 The administrative mechanism

The proposed administrative mechanism constitute of a Secretariat and a Forum. The secretariat is proposed to consist of three bodies the Environment and Conservation Division to perform duty as required by the Environment Act (1998) section 6 and 7- and to be over sighted and assisted by a CBD National Focal Points and thematic committees. Currently the focal point for Resource Mobilization is held by officer from the Aid Coordination Division of the Ministry of Development Planning and Aid Coordination. The focal point for GTI is held by the National Herbarium and Botanical Garden Division of the Ministry of Forestry and the rest of the focal points are within the

[52] Solomon Islands National Development Strategy 2011-2020

Environment and Conservation division of MECDM. A Biodiversity Forum is anticipated to occur every 3 years beginning 2016.

2.5.2 Resources Mobilization plan (2014-2018)

The plan **assumed** that the current Ministerial staff, NGOs and CBOs is sufficient to implement NBSAP. As such the need to scale up **operational cost** to scale up duties proportionally is viewed crucial. Since the development budget is progressively acute towards the Ministry of Rural Development (MRD), the influencing of those MRD staff is anticipated to be able to factored environment concerns into their respective plans.

2.5.3 Projects

Projects in cooperated into the NBSAP;

A. Support to GEF Eligible Parties (LDCs & SIDs) for the Revision of the NBSAPs and Development of Fifth National Report to the CBD - Phase 1 (2012-2014)(review of NBSAP and the fifth National Report)
B. MACBIO (2013-2018) (Strengthening of the sustainable management of marine and coastal biodiversity by economic ecosystem assessments, marine spatial planning and consultations in regard to protected areas in the Republic of Fiji, the Republic of Kiribati, the Solomon Islands, the Kingdom of Tonga and the Republic of Vanuatu)
C. MESCAL (2010-2014) (Improving people's livelihoods while facilitating mangroves management to enhance natural infrastructure, insulating coastal communities from the adverse effect of climate change)
D. J Prism (2010-2015) (Human and institutional capacity building on sustainable Solid Waste Management - implementation of the Pacific Regional Solid Waste Management Strategy)
E. Coral Triangle Initiative (to 2015) (management of coastal resources by addressing food security, climate change and coastal biodiversity)
F. UN-REDD Programme (Mobilizing technical expertise of the Food and Agriculture Organization of the United Nations (FAO), the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP) to assist Solomon Islands to establish the necessary institutional and individual capacities to develop full REDD+ readiness)

G. Enhancing the Resilience of Communities in Solomon Islands to the Adverse Effects of Climate Change in Agriculture and Food Security Project (2011-2014)(Providing training in vulnerability, adaptation, disaster risk reduction with special focuses on assisting rural communities in efforts to enhance the resilience of farming, food production and water catchment management).
H. SOI AF PIMS4451 Resilience of communities to CCA (2011-2015)(promoting and piloting community adaptation activities in enhancing food security and livelihood resilience in pilot communities in at least three selected regions, strengthening institutions and adjusted national and sub-national policies related to governing agriculture in the context of a range of climate change future, and fostering the generation and spread of relevant knowledge for assisting decision-making at the community and policy-formulation level).
I. Pacific Adaptation to Climate Change Project (Supporting the Solomon Islands communities in remote outer islands to enhance resilience of food security including support for water catchment and storage).
J. Pacific Integrated Water Resources Management Project (Scaling up of lessons emerging from the application of IWRM with a particular focus on rural areas).
K. Building Capacity for Sustainable Management of East Rennell World Heritage Site (Building the capacity of East Rennell communities, particularly the East Rennell World Heritage Trust Board (ERWHTB), to sustainably manage their forests and other natural resources, and to improve rural livelihoods by focussing on education, training, and implementation of actions in support of the East Rennell World Heritage Site (ERWHS) Management Plan).
L. Commercialisation of Seaweed Production, Solomon Islands (CoSPSI) (Sustaining of seaweed production in rural areas of Solomon Islands by providing materials, training and extension services)
M. SIMROS: (Consolidating MFMR's strategy and reviewing of the Fisheries Act).
N. Turtle Conservation and ecotourism (2012-2016) (promoting conservation through ecotourism)

Proposed projects

O. Integrated Forest Management in the Solomon Islands (2014-2018) (Assist the Government of the Solomon Islands to implement integrated management of

protected and productive forest landscapes for sustainable community development and multiple environmental benefits)

P. Pacific Islands Ridge-to-Reef National Priorities – Integrated Water, Land, Forest and Coastal Management to Preserve Biodiversity, Ecosystem Services, Store Carbon, Improve Climate Resilience and Sustain Livelihoods (Maintaining and enhancing Pacific Island countries' (PICs) ecosystem goods and services (provisioning, regulating, supporting and cultural) through integrated approaches to land, water, forest, biodiversity and coastal resource management that contribute to poverty reduction, sustainable livelihoods and climate resilience)

Q. Mainstreaming Global Environmental Commitments for Effective National Environmental Management

R. Ratification and Implementation of the Nagoya Protocol in the Countries of the Pacific Region

2.5. 4 Environment Education and public awareness: Communication and capacity building plan

The Environmental Education and public awareness is developed into a combined communication and capacity building plan. With respect to communication the contents of NBSAP is communicated through face-to-face, semi-structured questionnaires, workshops, internet circulars, notices, call for comments on draft of NBSAP and power points presentation. The notices provided by the CBD have been distributed by the focal points.

Further, communications shall be facilitated by the administrative mechanism, the secretariat and sub groups. The biodiversity forum will give the most up-to-date information and to be presented in the State of Environment Report (SOE) and subsequently the 6th National report to the CBD. Figure 6 shows the communication and capacity negotiation tool during the updating process of the NBSAP.

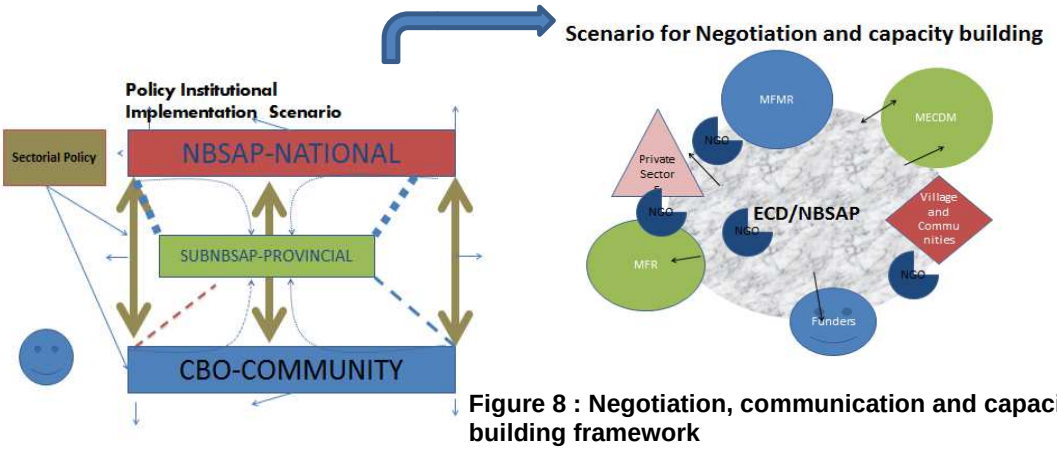


Figure 8 : Negotiation, communication and capacity building framework

With respect to capacity building, the NBSAP's structure and contents ensures capacity building is adopted at all entry points. Capacity building is therefore part of all the priority areas .For instance improving of GIS requires improving laboratory capacity and it depends on financial capacity to operationalize actions. The financial resource capacity building need is addressed under the resource mobilization plan, the institutional capacity is addressed under the administrative structure and the evaluation capacity need is addressed under the national report to the CBD. Finally human and financial capacity building need is developed into course module to be implemented by the Ministry of commerce.

2.5.5 The Solomon Islands 5th National Report

The fifth National Report (this report) provides an evaluative perspective on the implementation of the CBD and the NBSAP (2009). Adopting the new structure the 5th report also served as the evaluation mechanism for the Environmental Act. Terminal evaluations of project particularly those listed in section 2.5.3 shall provide useful information for the 6th report.

2.6 Poverty eradication and the MDG

The Solomon Island does not have a poverty eradication strategy. However, poverty eradication is inferred in most if not all of the development sector policy. The NDS provide the policy tool to address poverty. It follows that NBSAP has adopted and build on the NDS as such gives the platform for addressing poverty. It has been reinforced by

the adopted principle of the NBSAP (2009) where NBSAP must be 'people and livelihood oriented'.

Decoding the term poverty Govan and others (2013)[53] concerned that the term 'poverty' is sensitivity in most Pacific island countries and suggested the term 'hardship' to be used instead (pidgin: stap no gud)[54].

> *'Hardship would refer to the inability to afford basic needs (food, clothing, fuel for cooking), the lack of permanent shelter and the inability to access basic services (health, education and transport)'*

Because 90 % of the Solomon islanders are subsistence based- the notion of hardship can be calculated against the time or calories used to obtain these basic resources. For example the amount of time used to fetch clean water or the time taken to catch fish. Attempts made by the UNDP to use the universal term base on those living at $1.00 or $1.25 per day were attempted by Millennium Development goal report 2010[55]. In here the national basic needs poverty line were estimated from the cost of a minimally-nutritious, low-cost diet which delivers 2100 calories per day plus the cost of essential non-food expenditures'. This definition places a total of 121,063 people in basic needs poverty in the Solomon Islands, or almost 23% of the population[55]. This left Solomon Islands to rank as one of the lowest of all Pacific nations in the Human Development Index (HDI) (Chronic Poverty Research Centre) [53].

Based on the Millennium development goal report (2010), the Solomon Islands has scaled as having a 'mixed progress in respect to Goal 7 on environmental sustainability. The underpinning reason is because of Ministry's newness. The report goes on to claim that 'There are real dangers if environmental issues are not adequately addressed soon (i.e. deforestation and logging), risks will exacerbate from rising sea levels, climate change and other challenges in sanitation and water quality'. However, the report may also infer that it was presented without considering the actual status of biodiversity.

[53]Govan, H., Schwarz, A.M., Harohau, D., Oeta, J. (2013) Solomon Islands National Situation Analysis.CGIAR Research Program on Aquatic Agricultural Systems. Penang, Malaysia. Project Report: AAS-2013-16.

[54]Lam-Legu, M. 2007. Participatory Poverty Assessment Report Solomon Islands 2 April – 30 Nov 2007 Strengthening Poverty Analysis andStrategies in the Solomon Islands, Secretariat of the Pacific Community (SPC) ADB REG TA 6157.

[55]MDG Progress Report: UNDP 2010. Millennium Development Goals Report for Solomon Islands 2010. Ministry of Development, Planningand Aid Co-ordination, Honiara, Solomon Islands. Joint Presence of UNDP, UNFPA & UNICEF.

The report also divorce the integrated nature of the environment where achieving universal education (MDG 2) implies that environment education has been already part of the curriculum implying that at least half of the Solomon island population are exposed to environmental knowledge. Given this perspective the Solomon Islands has done much better in achieving the MDG 7. The MDG 2010 report also concerned that MDG has not been mention in the biodiversity policy. As inferred in the NBSAP biodiversity is implicated in our customary norms where the Solomon Islands constitution has recognized and the Environment Act as the pivotal laws for environment mainstreaming - and indeed it may not worth mentioning.

2.6.1 case study 3: The Solomon Islands Coral Triangle Initiative National Plan of Action

Amongst other related cross-sectorial policy the Solomon Islands Coral Triangle Initiative National Plan of Actions (NPOA)(2010) seek to address poverty through fisheries management while adopting to climate change .The NPOA is an action plan made in commitment to the implementation of the regional cooperation action plan of the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF) (RPOA). The initiative in itself can be traced to the provision provided by the three Rio Conventions, particularly the provision for regional cooperation at the regional level by the CBD.

The vision it upholds is that : *'Solomon Islands sustainably manages marine and coastal resources to ensure food security, sustainable economic development, biodiversity conservation and adaptation to emerging threats through community based resource management approaches supported by government agencies and other partners.*

The underpinning principles rest on the *people-centered approach* and *ecosystem based resource management* to be promoted by the flagship modal- 'Community Based Resources Management (CBRM+). Viewed as a vehicle for stimulating other national policy priorities, enabling maintenance of marine resources for food security and people's livelihoods, the policy selected Malaita, Western, Central and Guadalcanal as the forerunner province for implementation. These province are identified as the poorest performers as identified by UNDP (2008) and Narsey (2009). The Solomon Islands National Action Plan on the Coral Triangle Initiative on Coral Reefs, Fisheries And Food Security aimed for 50% of Solomon Island coastal, watershed and inshore area under improved management through CBRM and ICM approaches by 2015.

It is therefore developed to achieve the MDG, including climate change adaption and mitigation. It seeks to address Millennium Development Goal 1 on Eradicate extreme poverty and hunger. It also seeks to address related goals such as MDG 2, 3, 7 and 8 and in particular the Aichi Target 10 and 11 and alongside the cross cutting NBSAP targets (1-4). Several efforts were made to review the target and has further clarified under the two implementing mechanisms. The two implementing strategies provided the baseline line for Strategic Goal E' Enhance the implementation of NBSAP through participatory planning, knowledge management, capacity building and decentralizing of NBSAP to sub national and community levels particularly milestone 16 C.

The MACBIO (2013-2018), Pacific Integrated Water Resources Management Project, Mekem Strong Fisheries (MSF) ,PAS: Strengthening Coastal and Marine Resources Management in the Coral Triangle of the Pacific and others to further implement the objectives. The CTI has now established a Secretariat hosted in Indonesia. The influence of Gerusu protected area network which was borne from the NPOA first phase of implementation is worth considering particularly when it helped to feed up to the strengthening of the provincial government which enable the Central province to become one of the first province to receive fund from the strengthening of the provincial government funded by the UNDP.

Chapter 3

Progress towards the 2020 Aichi Biodiversity Targets and contributions to the relevant 2015 Targets of the Millennium Development Goals

3. Introduction

The implementation of the strategy 2011-2020 has been already underway before the NBSAP review initiative was started. This has been demonstrated by the development of Choiseul Ridge to reef plan and the Isabel ridge to reef plan in consortium to the Aichi target 11 with assistance from TNC. The respective projects were implemented under the CTI programme.

The MOU between international NGOs, and programmes with the SCBD to implement the three objectives of the CBD is therefore interpreted as legitimate at the national level (e.g. Memorandum of Understanding (07 October 2008) *between SCBD and TNC*). We therefor recommended international NGOs operating in the country to follow suit.
The most significant achievement made by the MECDM in responds to the NBSAP (2009) is the enactment of the The Protected Area Act (2010) and the Protected Area Regulation (2012). The Act built from the NBSAP (2010), theme 3, objective 2. 'The *Protected Area Act* is developed with the objective of establishing protected areas system to *effectively* and *efficiently* conserve the Solomon Islands biological diversity.' The Protected area Regulation 2012 provides the procedure and guiding categories for protected area management plans development. Since then protected area provide with the most obvious lesson learned- in average people often think of conservation as protected area.

With many achievements made so far, we have scaled the Aichi target and provide information related to the implementation of MDG. The information could also provide baseline for the post MDG development on sustainable development agenda (see table 3).

3.1 The scaling of Aichi Biodiversity Targets: A Solomon island Context.

STRATEGIC GOALS	TARGETS	Score	Description; national actions taken and outcomes achieved
Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society.	**Target 1:** By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.		Biodiversity concern is an embedment of many Solomon Islanders' cultural norms (see chapter 1). This can be supported by the phenomenal of landowners' often been resistance towards proposed industrial development. This people's behaviour is closely linked to the concern over livelihood; future generation and ritual practices- but perhaps not from a sustainable development concerns. Therefore, the need for educating people to ensure values are framed by science based evidence is required. Endangered species are continuously harvested and vulnerable animal. Non formal education provided by Government agency, NGOs and CBOs have made good progress. Formal education e.g. The effort to achieve the MDG Goal 2 has enable primary schools exposed to environmental education since environment is part of the curriculum. However, the mismatch between knowing and action continues to widen. Public awareness in respect to content is still needed to be specifically tailored to groups and audiences that can able to instigate behavioural changes that can uphold biodiversity values and take necessary steps.
	Target 2: By 2020, at the latest, **biodiversity values** have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.		Biodiversity value on one hand is fully reflected in our national laws, provincial ordinances and policies. Most, if not all the Ministries are regulatory agencies, therefore are *mandated* to consider the EIA. The ministry of Fisheries has adopted an ecosystem based management approach towards offshore and inshore fisheries while the forestry sector is mandated to do so. Poverty reduction strategy is the grounding philosophy for the adopted Constitution, and has reinforces in the Medium term development strategy and the NDS (2011-2020) as well as the NBSAP. Provisional services (goods) are fully reflected in the Central Bank reporting system. However, ecosystem services have little attended in the reporting system because of the newness of the concept. Good progress have been made in conducting feasibility study on ecosystem services e.g. PES that could pave way forward.

	Target 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.		The Environmental Act provided for valuating and has been reinforced in the protected area Act. Progress has been made towards conducting of the PES feasibility study e.g. the REDD+. This may provide alternative revenue to substitute logging and eventually phasing it out [17]. The Ministry of Tourism is promoting ecotourism and a few feasibility studies were also conducted. Royalty are paid towards the water sources owner especially water catchment that supplies water to urban area. The link between protecting the water catchment from ecosystem services perspective is still poor. It is arguable that PES for water is much more appropriate than the concept of royalty where payment is made in the form of rent for ownership. Renewable energy such as Solar system has been introduced to villagers to reduce dependency on lowland forest for fuels under the UNCCC implementation.
	Target 4: By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.		The notion of **…** sustainable production and consumption…is poorly understood in part to those regulatory agencies and NGOs. Because of the absence of this ideal there is little process towards keeping the impacts of use of natural resources well within safe ecological limits. However, industries on the other hand have well aware of this principle and because they are affiliating to global environmental organisations, their compliance to environmental standards is high particularly when the values of the end products is also determined by sound environmental management practices. However, this is still poorly reflected in logging industry. On the other hand rural based development and practices resonates the principle of safe ecological limits-hence is not an issue requiring urgent intervention.
Strategic Goal B: Reduce the direct pressures on biodiversity and promote	**Target 5:** By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.		The rate of loss of all natural resources is often intervened by regulatory approach (law) or promoted through protected area intervention and other similar approach such as the ridge to reef approach, IWRM, CBRM and etc.. The restorative ecology management approach is still rarely used and therefore poorly understood. Plan to restore logged areas and mangrove is in progress. Progress is also underway in restoring of degraded water system by the IWRM project intervention. Most of the logged areas are left to naturally restore. This target requires more investments in the near future.

	Target 6: By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.		The provision for ecosystem based management is provided in the fisheries Act. It follows that a holistic interpretation of laws e.g. Interpreting fisheries act under the Environmental Act will ensure ecosystem based approach. It has been reinforced by the offshore and inshore fisheries strategies. Monitoring fish harvested for local market and subsistence harvest is proven difficult. Regulating of exports e.g. invertebrates is properly carried out and including imposing of periotic closer of sea cucumber. Progress is made towards the assuring of harvesting of tuna at the sustainable rate alluded to be influenced by strong regional and sub-regional cooperation such as reduction of by-catch, restricting of fishing methods and imposing FAD closure, including closing of adjacent High Seas. PNA is pursuing for the panning of Big eye tuna as it has believed to be overfished in the member countries including the Solomon Islands.
	Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.		Rural based agriculture development is constrained by land tenure system which allow for small pockets of farms and biodiversity corridors. The use of native trees and fruits as pioneer plants prior cocoa and coconut planting also promoted biodiversity conservation. Mono-crops such as palm oil has mitigation plans for native plant and animal restoration and promoted conservation e.g. GIPPOL . In the forestry sector there are only two companies' issues with forest certificate. On the other hand aquaculture is still in its early stage of development.
	Target 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.		In average most ecosystems are relatively in good health. However, those that are badly degraded from localised activities e.g. logging or mining is seldom addressed. Pollution is mainly from high sedimentation from poor land uses practices. Over-crowdedness particularly in small islands are also associated with waste problem including Open defecation.
	Target 9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.		Agricultural pest and diseases pathway has been identified and measures are in place to control them. A recently enacted Biosecurity bill (2013) has been adopted, although technological and human capacity is evidently insufficient. Project is in place to control current invasive species such as the African snail but is becoming unsuccessfully executed. In the Coastal environment efforts

			are paving ways within the CBOs regimes controlling the notorious Crown of star fish. Invasive vertebrates e.g. pigs and dogs that threatened birds are inadequately addressed. Invasive species such as toad and others a well-established and difficult to eradicate. Some native's species such as flying fox are becoming invasive and threating food security particularly in the eastern outer islands. Invasive species remain a major concern for native biodiversity and people's food security.
	Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.		Progress has been made within the scope of project intervention, particularly within the thematic of climate change. In particular the National Adaptation plan for climate change and the National action plan of the Coral triangle initiatives specifically address this target. Some of the project sprouting out of these plan are the Gerusu network of Central province, Gizo protected area network of Western province, the Choiseul and Isabell ridge to reef plan and others. Environmental advocators continue to advocate against the potential negative impact of mining and logging. There has been progress towards the integrating of climate change and biodiversity within the concept of natural infrastructure as demonstrated by the MESCAL project.
Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity.	**Target 11:** By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.		Currently the terrestrial protected areas stand at a record of 5 % (land proportion)[4] and 6% coastal area (following the definition given by the Millennium Ecosystem assessment report (2005). All area above 30 digress elevation is protected under the forestry act while many ritual sites (taboo) are under forms of protection. The arable area is only about 5% as such it could be argued that more than 20% of the terrestrial land is now under some form of protection. Further in the marine the appliance of ecosystem management particularly tuna fisheries are of world class. Reinforced by the Protected Area Act and its regulation protected area has now covered more than 100 sites with assistance from international NGOs like TNC, WWF, WF, CI. There is still a need to improve their management plans and to ensure that they are recognised under the protected area act. Spatial planning is still needed to ensure these informal protected site are better managed under the concept of protected area system (a cross representation of all ecosystem).
	Target 12: By 2020 the extinction of known threatened species has been prevented and their		Although the work of IUCN red list are helpful in classifying of threatened species and some of these species are now listed under the Wildlife Act, it has

	conservation status, particularly of those most in decline, has been improved and sustained.		been assumed that awareness of their protection is still currently insufficient (let alone those CBOs). There has been progress in conserving marine reptiles such as turtle. Because of the poor knowledge of the red list the efforts to preserve them is also absent. For example dugong is branded as very high vulnerable species, but the species have little conservation concern. Worst still are those species that have no direct relation to the people (eatable species). Population baseline is absent and there is no plan for population recovery.
	Target 13: By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.		Many of the traditional cultivated plants and the method of cultivating, have been slowing eroding. Domesticated vertebrates such as pigs are still maintained including varieties of plants species which are often planted around village houses and gardens. The shifting of diets also impacted on the lesser demand for local breeds and plant varieties and therefore many have now been abundant.
Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services.	**Target 14** :By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.		We refer hereto those 'ecosystems that provide essential services' as those ecosystem services related to water- the inland water biodiversity. Inland water has played many ecosystem services to the islanders. Fetching of drinking waters is particularly undertaken by women and children. The aging of water including continuous land based pollution has been polluting the water particularly downstream thereby inflicted hardship faced by women and children. There has been a moderate increase in building water supply for villagers including building of toilet slabs. It follows that IWCM project has rolled out over the years. Other projects such as forest conservation are helping improve water sources. In town the JICA project has improving water supply by building bore holes that supplies water for urban areas e.g. Honiara. The problem of water system also linked to social insecurity where landowners are often subjective to closing water sources. Developing a water funds is possible where the funds can be directly used for those that are looking after the water sources particularly the land owners.

	Target 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.		Conservation approach is predominantly based on a preservation ideal. Restoration is still poorly practiced. Progress is underway in efforts to restore native plants -at least 1050 hectors. Mangrove restoration is also picking up while the villagers are planting native trees in their gardens and along the roads. Some church community such as the CFC in the Western Solomon islands, Anglican brotherhood are also restoring forest with the objective of increasing commercial wood in their areas. In the marine environment protected area intervention is also viewed here as restoration (see target 11). The project REDD+ potentially provide the incentives for the villagers to conserve forest instead of resorting to logging.
	Target 16:By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.		The Solomon island has now approved a Cabinet paper for ratifying the Nagoya protocol. There has been progress towards the South-South Cooperation through (SPREP) on capacity building and awareness on the Nagoya protocol on equity under the proposed project 'Ratification and Implementation of the Nagoya Protocol in the Countries of the Pacific Region'
Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building.	**Target 17**: By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan		The Solomon Islands since 2012, has underwent 2 reviews, has develop targets, action plan and implementing plans. The updated NBSAP should be finalised and forwarded to cabinet for approval soon.
	Target 18: By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels		Traditional knowledge is formally recognised in our constitution and on the periphery they formed an integral part of conservation and sustainable use management and have implications on equity. There are traditional practises that are viewed as destructive and have been made worse when modern technology is introduced as such the updated NBSAP also seeks to resolve this.

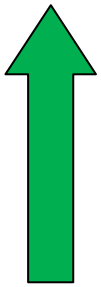
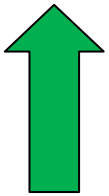
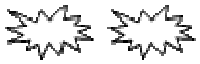
	Target 19:By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.		We have made moderate progress in the South- South integration through our regional institutions such as the USP, SPREP, SPC, FFA and with association to many international conservation NGOs such as the WWF, TNC, WF, CI, UG. The need to develop comprehensive spatial planning remains important and the scientific, social and economic research for sound decision making remain important. We do not expect all individual to fully comprehend the science behind these threats but would like these findings to shape policy that may allow people change behaviour in favour of environmental goals.
	Target 20: By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties		The architecture of the updated NBSAP is developed to reflect a resource mobilisation plan, where it compliment and reciprocate the NDS. It follows that a draft resource mobilisation plan (2014-2018) has now in place. In the resources mobilisation plan we viewed the traditional funding mechanism to continue providing for the implementation of the NBSAP. This includes the GEF, Bilateral and multilateral agencies, central governments, business and international NGOs. It follows that since the NBSAP accommodated other convention we also anticipate to draw funds from other mechanism such as the adaptation fund, the Nagoya fund and others. We will continue to make effort to influence aid agency refined policy to ensure environmental issues is reflected in their policy. It follows that research such as the PEs, Bio prospecting, tourism Fee and water fee provide initial step for developing an environmental fund to generate internal revenue to fill financial gaps that might not be eligible to be funded under the traditional funding mechanisms. In general there has been an increase of fund by proportion each year towards environmental protection.

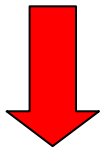
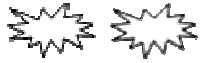
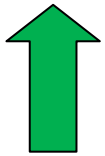
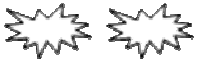
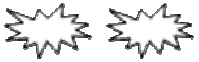
Table 3: Scaling the Solomon Islands against the Aichi target

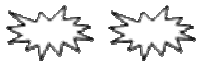
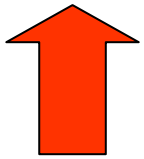
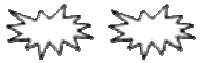
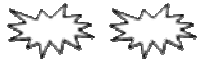
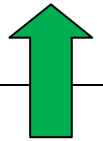
score	progress
	Good
	Mix
	poor

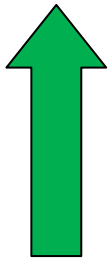
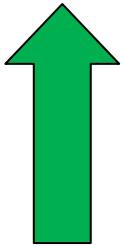
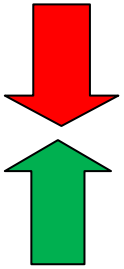
3.2 Indicators

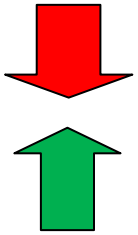
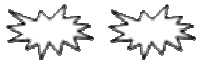
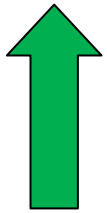
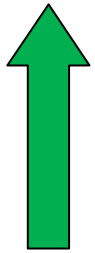
The updated NBSAP is structured into hierarchies in according to the chronological order; vision, mission, targets, milestones and activities. Each level has specific indicators feeding into the next level (see chapter 2). Projects have their own indicators and because the updated NBSAP also incorporated their outcome objectives, their indicator are also included.

Trends shown by progress towards the Solomon islands national 2020 biodiversity target since its updating process (since 2012)		
Addressing the underlying causes of biodiversity loss by effectively and efficiently delivering our mandates and developing of incentives and subsidies to improve and enhance biodiversity management		
	% of people with biodiversity knowledge and are taking positive steps towards conservation	Although the exact % of population with biodiversity knowledge has not been quantified, there has been an increasing evidence to support the increase of biodiversity knowledge. Momentum has been gaining since 2012 as evidence in newspapers. The number of awareness conducted by NGOs, CBOs and Government Agencies continue to rise. Business companies such as mining and forestry developers have since then published their articles in the popular newspapers. The two most notable organizations are the PNA and the Honiara City council. The Solomon Islands has adopted environmental component in formal curricular and the current reviewed curriculum has shown environmental component in cooperated in the early childhood education. The effective deliverance of this curriculum will depend on the content of the teacher syllabus particularly the SINU. The updating of the NBSAP implementation has boosted some of the CBOs operating in the country and a course module is developed for Small Business enterprises development with aspect focusing on implementation of NBSAP. 
	Number of positive actions taken towards the implementation of the CBD by Government Agencies, NGOs, the private sector, CBOs, University and citizens	The conventional approach undertaken by environmental Government Agencies, NGOs, CBOs, University continue to rise. There has been an evidence of scaling up of enforcement by government agencies and in strict adherences to national standards by multi-cooperative business such as mining and mono-cropping. 
	Number of biodiversity laws, regulations, policies	The number of environmental laws continues to increase e.g. the biosecurity Act (2013), the protected area regulation (2012), a bottle nose dolphin regulation is under development. The Division of reforestation has come up with a divisional plan for restoration over logged area. The ECD has developed a work plan. The reviewing of the Wildlife Act has been approved and will commence soon.

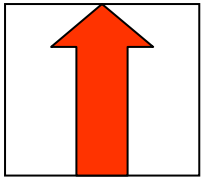
	and management plans developed and adopted- and effectively and efficiently implemented.	There is a significant step up in the appliance of the EIA and monitoring. The fisheries bill is under development. An MSC and IUU working group has been formed and an offshore policy under development. A resources mobilization plan for NBSAP implementation is in its draft stage including and environment and public awareness strategy. A National Action Plan for land use planning is also in place and under implementation. At the subnational level the Honiara City council has developed and adopted plans where environment is featured under theme 3. The Choiseul ridge to reef and the Isabel ridge to reef has been developed and adopted. The Malaita provincial Ordinance, Central province fisheries ordinance, Renbel Environment ordinance and the lake Taeigano ordinance. However, their effectiveness with respect to enforcement and implementation is still untested. 
	Number of registered environment CBOs under the Charitable Trust ACT.	An effort to derive environmental registered CBO from the Company Registration Unit was unsuccessful, due to poor category of recording. However there is evidence that the number of CBO is increasing. SILMA the latest register network has recently gained its legal recognition after registering. 
	% of funding allocation towards environmental protection	A baseline data from 2010-2014 shows that 37 % of biodiversity protection activities comes from official development, 28% from NGOs, 15% from the government and 20% from other public funds. Since 2013 there has been a significant increase of budget towards environmental protection from official development supports and national government as administered by the ECD. 
	Number of biodiversity researches conducted	There has been an increasing number of graduate scholars undertaken biodiversity research in various university throughout the world including 3 ECD staff. Biodiversity research by University, research Institutions as well as government agency and in country NGOs has increased since 2010. However, the gap remains proportionally large. 
Reduce the Direct and indirect pressures on biodiversity through Ecosystem based Managements		
	% of economic return from biodiversity developments e.g. from	The PNA effort has resulted in 4 time's increase of revenue to its member country including Solomon Islands.

	offshore fisheries	
	% cover of mangroves, coral, seagrass and coastal vegetation protected or restored	Reefs in MPA (2%); Mangroves in MPA (2%), costal area (6%);terrestrial PA (5%). 
	Number and population of invasive species under controlled	Efforts to Control African snail have failed and the population is undergoing an exponential growth. The same is assumed to be occurring in other invasive species. 
	% of population consuming and producing local food	Large proportion of the current population continues to produce and consume local food. 
	Number of partnerships for advancing biodiversity	There has been an increase of partnership with international institutions and crop agencies such as SPC, SPREP, FFA, SOPAC etc. Recently Korea has establish partnership with the Ministry of Forestry to improve forest plantation that can enhances ecology. 
	Number of biodiversity database	Numerous databases has installed in the Ministry. The MECD has recently installed a GIS lab with assistance from the UNDP. 
	% of community or town with open free defecation policy	Under the WASH project a few community has already establish toilet slaps. Honiara has a plan to install public toilet while Auki has already installed one at the market outlet. 
	Number of communities that are resilient and	Sea walls are built as sea breaker and there has been an increasing number of CBOs who aims to keep

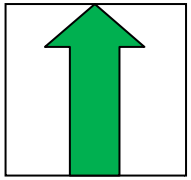
	adaptive to climate change	coastal vegetation healthy as natural infrastructure. There is a substantial increase of funding support towards adaptation to climate change focusing on themes such as food security and disaster risk managements.
Enhancing and promoting of protection and restoration of biodiversity to safeguard ecosystems, native species and genetic diversity		
	Lake Teigano World Heritage site been delisted from the danger list.	With the recent inscribing of East Renbell (Solomon Islands) on the List of World Heritage in Danger the Solomon islands has made the following; An up to date report on the state of conservation of the property, including a report on the progress made in the implementation of the recommendations. A management plan is under development and a draft 2009 Renbell Province Lake Tegano Heritage Park Ordinance. The REDD+ project has conducted a feasibility study and ecotourism initiative are also underway, with a few individuals received ecotourism training oversea. The shift of the World Heritage focal point to ECD enable the Lake as one of the potential site to be declared under the Protected Area Act.
	% coverage of protected areas, connected protected areas and biodiversity corridor (e.g. % cover of managed mangroves, coral reef, seagrass and coastal vegetation-been protected or restored)	MPA in EEZ (0.03%); Reefs in MPA (2%);Mangroves in MPA (2%), costal area (6%);terrestrial PA (5%).
	Number of or population sizes of targeted species been recovered, % or number of endangered species prevented from further decline or local extinction	No baseline data and no management plan to recover population. There is a positive progress in turtle recovering project and protection in various part of the country.

	Water quality; [concentration of chemicals, minerals and microorganisms] of drinking water including river and streams	Urban drinking water are usually tested, while all village drinking water are not tested. With mining operation e.g. Gold Ridge mining, the monitoring of water quality has risen at specific location. Little effort is made to use water quality in IWRM project intervention. 
Enhancing the equitable sharing of benefits derived from biodiversity uses and the associated traditional knowledge		
	Solomon island acceded to the Nagoya protocol and developed a legal framework	The Solomon islands has finally received approval of cabinet for ratifying the Nagoya protocol. SPREP and UNEP have forwarded a proposal to GEF for early ratification of the protocol by pacific island countries and the developments of relevant instruments. 
Enhance the implementation of NBSAP through participatory planning, knowledge management, capacity building and decentralizing of NBSAP to sub national and community levels		
	NBSAP developed and adopted in time including related implementation plans	The updated NBSAP is now under its final phase of editing as well as supporting implementing mechanism in place. The draft should be forwarded for cabinet approval soon. 
	Number of project proposed (either approved or not), or those that are developed and approved for implementing of NBSAP or other related environmental activities	There has been an increase of project proposal by GA and CBOs to implement NBSAP (see 2.5.3) 

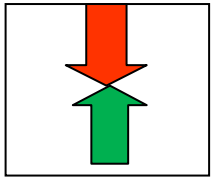
	Number of coordinating body formed, and the frequency of meetings conducted	There have been an increasing number of committees formed as subcommittee of the NBSAP. This includes a Dolphin Management committee comprising of 9 members, an IUU and MSC committee. The revitalization or the strengthening of current thematic committee is also obvious. The frequency of meeting is moderate. 



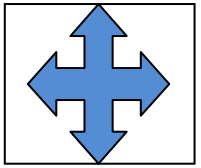
Negative change



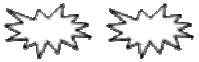
Positive change



Negative and positive



Insufficient data to make conclusion

Level of Confidence	
	**Low**
	**Medium**
	**High**

3.3 Conclusion

Biodiversity mainstreaming is viewed as endemic, as reflected in our traditional knowledge making and has been reinforced in our national laws and policy architecture. The instituting of the Environment and Conservation Division in 2007, has reinforces and reaffirmed our commitment towards the implementing of conservation, sustainable use and equity with respect to biodiversity managements. It therefore set the foundation for enhancing the coordinating of biodiversity issues in the country. While it has becoming conventional for development of laws, the ineffectiveness of enforcement and implementation has provided an alternative interpretation and arrangements. The NBSAP therefore proposed the need for a holistic interpretation of laws. Regulatory mechanism and market based approach including awareness must go hand in hand to ensure shaping of culture that favours environmental needs. This view ensures a functional coordination and to elevate from competition between environmental organisations especially when finance is becoming very scarce. Government agencies viewed as policy designers while NGOs are implementers. Since the two are linked and organisations are thematic oriented their amalgamation into NBSAP policy architecture ensures all organisation to take their niches and to navigate purposefully towards a common environmental goal.

From a regulatory perspective, the enactment of the Wildlife Protection and Management Act and the accession of Solomon Islands to CITES have effectively reduced and ended the export of birds from the country while reducing the export of many wildlife species. However, there is still a need to initiated restorative programmes to compliment this regulatory approach. On the other hand there has been a dramatic increase in the number of sites that have been fully secured for protection. To date, more than 100 terrestrial and marine sites are either protected, under development or under some form of management, comprising more than 5% of the total land area of Solomon Islands. The Lalasu of the Public Solicitor has been building land owners capacity on environmental laws and required steps to take when infringements occurred. Registering of these informal arrangements under the protected area act will therefore compliment and complete the arrangement for effective enforcements and managements.

Since, the NBSAP come into place, its *implementation* has been improved through various interventions of the Global Environment Financing Mechanism. Other donors have assisted notably the EU and AusAID particularly within the sustainable use context. In parallel, many international NGOs working in the country are leveraging international resources to facilitate programmes in country. The Solomon Islands wish to continue with this sustainable financial mechanism for implementing the updated NBSAP. Since the reviving of the NBSAP since 2012 there has been an evidence of communicating environmental issues, law enforcement need and an increase of project proposals. Whether this can be attributed to the implementation of NBSAP-it is a question for testing and requires further in-depth research.

Annex 1: Scaling of the proposed updated NBSAP's millstones

Targets and Actions	Score	comments on status and progresses
Goal A Addressing theunderlying causes of biodiversity loss by effectively and efficiently delivering our mandates and developing of incentives and subsidies to improve and enhance biodiversity management		
Target 1 By 2020, the people of Solomon Islands are aware of the values of biodiversity, and those steps required for conserving and sustainably using them		
1. A. By 2014, a baseline survey of the people's value of biodiversity is conducted and a national communication strategy has been developed and adopted as the implementing instrument for the reviewed NBSAP.		The preliminary reviews[5, 6] for updating of the NBSAP provided the baseline and a communication plan 2014-2018 is now under development. Most activities undertaken by Government agencies, NGOs and CBOs are centered on empowering people (public awareness). The communication plan 2014-2018 will be developed under target 16, milestone D activity iii).
1. B. By 2015, **public awareness** of the **value of biodiversity** has been raised, including **steps** required to protect them.		Good progress has been made towards public awareness although the content is still insufficient to effectively promoted the three CBD objective and the Aichi Targets. A longitudinal study will be required to verify the influence of the NBSAP on the changing values of people's perspective.
1. C. By 2017, biodiversity conservation **curricula** have been **re-enforced or reviewed and adopted** in primary, secondary and in country tertiary institutions.		Secondary based education includes biodiversity as part of the science curriculum. Tertiary education such as Solomon Island National University, the University of South Pacific (USP) offered biodiversity and natural resources development course enrolling almost a 100 Solomon Island student each year. The recent early childhood curriculum also in cooperated environmental components.
1. D. By 2019, at the latest, the **level of advocacy** for **valuing environmental services** are raised, thereby governments, business and stakeholders have undertaken positive steps to develop, adopted or implemented plans for sustainable production and consumption of biodiversity, keeping the impacts of use of natural resources within safe ecological limits.		The provision for valuating of Environment is provided in the Environment Act. The notion of valuing of environment e.g. PES will remain as part of research and capacity building. Not until it's fully comprehended it will still poorly reflected in the policy architecture and accounting systems.

Target 2 By 2020, existing environmental laws and regulations, policy and management plans including those provisions supporting of incentives and subsidies for biodiversity managements are utilized to conserve and sustainably use and also to eliminated and phased out any negative impacts on biodiversity		
2. A. By 2014, an implementing strategy has been developed and adopted for NBSAP and thereby by 2017 environmental governance has been improved cascading and influencing the efficiency and effectiveness of the Solomon Island governance in general (strategic goal E)		The proposed updated NBSAP architecture is developed to implement multiples of laws and to compliment other related policies and action plans. With this view NBSAP is developed to build on momentum on the many environmental efforts.
2. B. By 2015, all environmental related laws, policy and management plans has been revisited and applied to safe guide biodiversity management need.		Many initiatives are now underway towards the revisiting of current laws- the most notable is the HCC and the MECDM. The Fisheries Bill, the wildlife management Act reviews and the initiative to accede to the Nagoya protocol on equity are some examples. The need to build capacity on the need for a pluralistic interpretation of law is viewed important.
Target 3 By 2020, the Solomon Islands, has developed and adopted a sustainable finance plan to mobilizes resources and to effectively implement the national biodiversity strategic action plans, to complement or build on the NDS and other related environmental policy and at least identified, developed and adopted strategies to generate revenues from two revenue sources		
3. A. By 2014, the Solomon islands have adopted the NBSAP as a policy instrument as such accepted and adopted SF component and the whole as its resource mobilization instrument (target 2).		The final drafting of the updated NBSAP is in progress. The updated NBSAP is developed to emanate resources mobilization- as complimentary and reciprocally related to the NDS 2011-2020 and other polices. The relationship is further dissected and rebuild into a draft resources mobilization plan 2014-2018 to specifically address the NBSAP actions.
3. B. By 2015, current level of research on payment of ecosystem serves (PES) on at least 3 ecosystems; coral reef,		There is a good progress on PES feasibility studies e.g. 2 feasibility study conducted on Tetepare Island[56] and Renbel[57] by the REDD+

[56]Scott Alexander Stanley (2013) REDD Feasibility Study for Tetepare Island, Solomon Islands SPC/GIZ Regional Project" Climate Protection through Forest Conservation in Pacific Island Countries" P.O. Box 14041, SUVA, Fiji

mangroves, forest and watersheds has been carried out and steps are taken to adapt into fiscal policy and national accounting system (target 4)		project,mangroves[12] and coral reefs[11]. The next step is to build capacity of government officers to be fully utilized in decision making and to be reflected in the fiscal policy and accounting reporting system.
3. C. By 2015, a coordination body has been formed to coordinated sustainable finance initiative and developed and adopted sectorial and organizational sustainable finance strategies.		Sustainable finance issues are increasingly in cooperated into many environmental project objectives. The provision for formulating of sustainable finance committee is provided by the PA Act. A sustainable finance policy tool was produced by the ECD and recommended a 9 volunteer member to support the Protected Area Committee.
3. D. By 2017, at the latest there is a 10 % increase of funding allocation to environmental protection by Solomon Island Government, NGOs and CBOs including private sectors and research institutions and therefore scaled up operation proportionally.		Currently the Solomon Islands Government contributed at least 15 % of fund towards biodiversity protection (from 2010 to 2014).The Official Development contributed 37 %, NGOs contributed 28 %, other public fund comprises of 20%. A 10 % increase means a scale up of funding allocation by respective organizational allegiances by a baseline that is required to analyze by each agencies. The Resources mobilization plan 2014-2018, assumed that the traditional funding mechanism (Government, Official Development, NGOs and other public funds) will remain as the financial mechanism for implementing of the NBSAP with special attention towards effective coordination. The Choiseul integrated site under the Climate Change thematic provides an existing example.
3. E. By 2019, a National Environmental Trust Fund (ETF) and its mechanisms is developed and adopted to ensure the long term financial commitment to environmental protection initiatives in country. Initial steps to include the operationalization of protected area trust fund (target 13)		Discussion on the need to develop a national Environmental Fund (ET) was rising high in the national political forums since 2011. The Environmental Funds is provided by various acts including the recent protected area act. However this provision is not popular amongst CBOs and NGOs who do most of the work on the ground. Political maneuvering posed a higher risk [if] the fund is administered under the current government arrangements. NGOs and CBOs who undertook most of the work on the ground has received no support from government budget and the trust fund is highly possible to follow. The independency of the environmental fund is important and the instituting of a

[57]Scott Alexander Stanley, 2013. REDD Feasibility Study for East Renbell World Heritage Site, Solomon Islands SPC/GIZ Regional Project "Climate Protection through Forest Conservation in Pacific Island Countries" P.O. Box 14041, SUVA, Fiji

		separate body is possible under the Charitable Trust Act or the Business Trust ACT. Most of the powerful international NGOs derived decision from their regional body as such the dilemma will still persist if only local agencies have spearheaded such initiatives.
Target 4 By 2020, Research, encompassing traditional knowledge, science, and social science, economic investigation has been raised including the transfer of related technologies thereby biodiversity values, functioning, status, and the consequences of their losses are better understood and managed.		
4. A. By 2015, 30 % of the researches identified in each priority areas have already been started or steps have been initiated to undertake them.		Evidence shows that biodiversity research has been increasing (this report however is unable to provide a baseline to quantify the % of increase.
4. B. By 2015, the Solomon Islands has undertaken in-country technologies assessment and develop strategy to fill gaps		This millstone is currently under development as part of the implementing mechanism of the NBSAP and the associated projects[58]. A technology assessment was carried out by SEMRICC project which follow with a GIS lab installed in MECDM, SOPAC and other regional organization e.g. FFA has advanced a lot in the area of tuna monitoring.
4. C. By 2015, a national clearing-house mechanism is established, together with a strategy to improve access to and sharing of new knowledge and technologies.		Most of the Organizational Allegiances have their own website and together with the CBD clearing house[59], the SPREP[60] clearing house, the CTI[61] website hosted under the SINU, Tetepare[62]are sufficient to host NBSAP information and there dissemination (also see communication strategy 2014-2018 and the preliminary review[6] for updating of NBSAP). The need is to feed up NBSAP informations into these website. Their usability and accessibility however, is still questionable. SILMA under the ADB project is developing their website. MECDM is also making plans to develop its own website. Experiences from

[58]Hoasiuhu, F. 2013.Terminal evaluation of strengthening environment management and reducing the impact of climate change in the Solomon islands (SEMRICC), for UNDP and MECDM, Honiara, Solomon Islands

[59] CBD clearing House

[60] SPREP (http://www.sprep.org/)

[62]TetepareDescendents Association: www.tetepare.org

		other ministries showed that their sustainability is the main concern.
4. D. By 2017, traditional systems for resource management and the ecological knowledge have been documented and utilizes in implementing of the CBD objectives		Many research approaches has undertaken an integrated research approach – a combination of indigenous knowledge with modern science e.g. Aswani and Hamilton, 20032004[63] , Hviding, 1989[64]. A full collection of all research as related to biodiversity in the Solomon islands has been published by various authors.
Goal B Reduce the Direct and indirect pressures on biodiversity through Ecosystem based Managements		
Target 5 By 2020, the Solomon Islands has reinforced and reaffirmed its commitment, reciprocally, to the achieving of regional and sub-regional objectives in efforts to sustainably managing of tuna and reducing of tuna by catch in her EEZ, thereby doubled economic benefit/return.		
5. A. By 2014, the Solomon Islands has developed and adopted a reviewed Fisheries Act , thereby provides the legal basis for the effective and efficient management of the Solomon Islands marine biodiversity and the regulating of fisheries development, in ensuring their sustainable use, conservation and equitable sharing of genetic resources derived from marine biodiversity.		A Fisheries Bill (2013) is under development. The Bill adopted an Ecosystem Based Management approach and also adopted the provision for marine protected area. The NBSAP adopted the view that the current Fisheries Act with the Environment Act (integrative interpretation) is however sufficient to implement the CBD objectives. The current Fisheries Act provided the provision for development of new regulations- In which all actions that requires law intervention could therefore develop additional regulations. The Dolphin regulation is under development and [if] adopted by virtue of gazette could be viewed as an aspect of a management plan.
5. B. By 2015, the Solomon Islands has developed and adopted a policy instrument for addressing Illegal, unreported, unregulated (IUU) fishing and Monitoring, Control and Surveillance (MCS), thereby able to effectively manage and the maximizing of benefits derived from tuna		The Regional and sub-regional bodies and arrangements such as the FFA, SPC, SPREP and the PNA have leveraging Solomon Islands as part of the South Pacific Region in addressing sustainable tuna harvesting including addressing IUU, traceability and MSC. The SI government is currently developing offshore fisheries strategies that include IUU (face-to-face discussion). The government responses to the regional strategies are very crucial to ensure ownership and

[63]Aswani, S. and Hamilton, R. 2004 The value of many small vs. few large marine protected areas in the Western Solomon Islands, *SPC Traditional Marine Resource Management and Knowledge information Bulletin,* 16:3-14

[64]Hviding, E. 1989 Keeping the sea: aspects of marine tenure in Marovo Lagoon, Solomon Islands, in *Traditional Marine ResourceManagement in the Pacific Basin: An Anthology,* ed. Ruddle, E., and Johannes, UNESCO, Jakarta, SE Asia: 7-44.

fisheries.		enforcement by and within the national laws and policy of the country. A national committee has now formed under the theme
Target 6 By 2020, coastal commercial fish, mammals, reptiles, and invertebrates are effectively managed and harvested sustainably within the current legal instruments and management rules thereby improved the health of the ecosystem with special attention to protect threatened species and restoration of vulnerable ecosystems		
6. A[65]. By 2014, the Solomon Islands has reinforced and continue to make commitment for developing management plan for dolphins with a particular emphasis on developing a regulation for bottlenose Dolphin (*Tursiopstruncatus*), thereby by 2016 a dolphin regulation, national management plan supported with provincial ordinances and CBO management plans are adopted.		A Dolphin regulation is under development and is with the Attorney General Chamber for Review. A working committee has been established and a national management plan/s, provincial and community plan are on the pipeline.
6. B. By 2015, 25% of the Solomon Islands communities have adopted and has already reinforcing CBRM+ modal thereby by 2016 a reviewed national action plan is developed and adopted as a post CTI-NPOA for the management of coastal resources by addressing food security, climate change and coastal biodiversity		The Solomon Islands National Action Plan on the Coral Triangle Initiative on Coral Reefs, Fisheries And Food Security aimed for 25% of Solomon Island coastal, watershed and inshore area under improved management through CBRM and ICM approaches by 2015. It is therefore developed to achieve the MDG 1 and other related goals such as goal 2, 3, 7 and 8. As such implement actions related to all the three Rio conventions in particular the Aichi Target 10 and 11.The subsequent implementing mechanism provided the baseline line for Strategic Goal E' Enhance the implementation of NBSAP through participatory planning, knowledge management, capacity building and decentralizing of NBSAP to sub national and community levels particularly milestone 16 C.

[65] Dolphin Workshop minute (2012) hosted by MECDM and MFMR with assistance from SEMRICC

6. C.[66] By 2015, a policy and sectorial strategies or management plan are developed and adopted for an integrated coastal zone management (CBRM) for the protection of intertidal zones that includes, mangroves, sea grasses and algae ecosystem and if necessary efforts should be made to restore and protect 50% of mangroves and 10 % of sea grass ecosystem thereby contributing to protected area system while bolstering natural infrastructure developments.		Similar to millstone 6.B but focus is tailored towards specific ecosystems such as sea grass and mangrove. The MESCAL project provided the baseline for up scaling of project to the provincial and national level. The ecological research by TNC Ecosystem Assessment Report provided with a scientific baseline.
6. D. By 2017, a policy, management plan instruments and sectorial strategies are developed and adopted for protecting of turtles and turtle nesting sites and if necessary develop actions for their recovery.		Various CBOs are focusing on protecting of turtle nesting site and have undertaken artificial incubation. A national and provincial plan is required to collate all CBOs and to implement the SPREP Action plan on turtle. The project on Turtle Conservation and ecotourism (2012-2016) (promoting conservation through ecotourism) under ECD is paving the way forward.
6. E. By 2017, a policy instruments and sectorial strategies are developed and adopted for sharks and elasmobranches found in the Solomon Islands water and thereby complimenting the Regional Plan of Action (RPOA) shark developed by SPREP.		Shark fin export is regulated under the fisheries Act. There remain a need for conducting shark research particularly taxonomic study and to develop a management plan. If required a regulation is needed particularly in tuna fishing industries.
Target 7 By 2020, the genetic diversity of native cultivated plants and domesticated animals and of wild relatives, including socio-economical and culturally valuable species and/or their population are maintain/increases while discouraging activities that had been contributing to their population diminish.		
7. A. By 2015, current policies, management regimes and regulation of agricultural biodiversity are effectively implemented and/or reviewed by part or whole to adequately address biodiversity management in agriculture developments.		Agricultural policies focus on the need for rural development as such provides the mean to meet MDG target 1, the need to remold context to sufficiently promote native biodiversity management is still required and the need for in cooperating of ecosystem services as related to agro-biodiversity. A land use management strategy is under development with assistance from UNDP. The MAL has stepping up their operation since 2012.

[66] MESCALE workshop (2013)

7. B. By 2015, developed and adopted a post action plan for seaweed aquaculture development in the Solomon Islands aligning its objectives along and inconformity to NBSAP 2011-20120 and NDS 2011-2020.		Seaweed industry continues to grow (mainly family based) and becoming popular amongst the rural farmers. A post seaweed plan is a mandate since the current one will end in 2014.
7. C. By 2016, the level of aquaculture development particularly those initiatives that are focusing on improving of native breeds and plants are raised thereby contributing to the conservation and sustainable use of aquaculture biodiversity.		The Ministry of fisheries and Marine Resources continue to undertake research to improve local aquatic biodiversity farming. (With a recent break through the Ministry has able to culture peanut sea cucumber with the assistance from Japan Government
7. D. By 2017, revisit environmental friendly production systems including traditional practices to maintain native species diversity and thereby increase native plants/animal population size.		There is a general erosion of environmentally friendly production of native biodiversity. Project intervention is helping to revive these practices such as the assistance from UNDP - Enhancing the Resilience of Communities in Solomon Islands to the Adverse Effects of Climate Change in Agriculture and Food Security Project (2011-2014).
7. E. By 2019, population consuming of local food has increases while reducing of the consumption of imported goods and thereby increase native species raising and planting		People consuming local food is relatively higher than those who are consuming imported and processed food. However, the consumption behavior is only constrained by their purchasing ability constrained by financial capacity rather than viewing local food as a healthy habit. The National food security, food safety and nutrition policy 2010 – 2015 as the relevant policy and therefor to achieve this milestone a post plan is required.
7. F. By 2019, an ex-situ conservation action plan is developed and adopted for the conservation of identified native breeds and verities.		Progress has been made towards the development of ex-situ conservation such as the Botanical Garden managed by the MFR. At the village house hold level, the rearing of animals for pets is also widespread including planting of native plants for ornamental purpose.
Target 8 By 2020, the rate of deforestation particularly from industrial logging of native trees, slush and burn has been reduced by 50%, and initiatives are made towards the restoration of 15% of fragmented logged areas, maintained 10% of remaining virgin forest thereby contributing to conservation, sustainable use and providing avenues for equitable sharing of forest biodiversity alongside initiative for mitigating against climate change		
8. A. By 2015, a national forest, mountain and plant genetic subgroup (committee) is formed or reinforced and strengthened to improved integrated forest governance, by		Forestry committees are already in place, and therefore the need to in-cooperated the theme of NBSAP is necessary in the future.

providing forum for open dialogue between stakeholders.		
8. B. By 2015, a national integrated forestry policy or plans have been developed or reviewed and adopted for the regulating of and managing of forest, mountain and plant biodiversity and scale up implementation of integrated forest management or similar instrument.		Interpreting the Forestry Act under the Environment Act provided a legal basis for integrated forestry management approach. It has then been reinforced by forestry policy and the ministerial co-operate plan. This milestone also linked to IWRM and protected area management under the flagship concept of ecosystem based management or the Ridge to reef conservation management tool. The objective could be fully realized if the project- Integrated Forest Management in the Solomon Islands (2014-2018) (Assist the Government of the Solomon Islands to implement integrated management of protected and productive forest landscapes for sustainable community development and multiple environmental benefits) is approved.
8. C. By 2015, the social conflict resulting from logging activities at the community level is adequately addressed through effectively applying the EIA and monitoring systems.		Capacity building and public awareness by the Landowners' Advocacy and Legal Support Unit (LALASU) of the Public Solicitor Office (PSO) has making positive effects. Their primary focus is on 'Educating customary landowners about their rights under environmental and resource law (including logging and mining); Advising landowner clients on their legal rights through free legal clinic; Conducting strategic environmental litigation; and Reforming environmental and resource law in Solomon Islands'. As a result there has been an increasing of complains submitted to the ECD, at least 10 each week.
8. D. By 2015, the Solomon Islands has developed and adopted an action plan for plant genetic resources conservation and mainstreamed conservation need into related policy, sectoral plans, provincial ordinances or community based management plan.		Progress has been made under the Ministry of Forestry and research particularly under the Strategy for the Global Taxonomy Initiative (GTI). The mainstreaming of the GTI action plan is still required. The State of Forest Genetic Resources[8] in the Solomon Islands provided the baseline.
8. E. By 2015, capacity building and training with respect to replanting of vulnerable areas is enhanced with at least two active project sites supported from stakeholders.		Replanting of vulnerable areas is sporadically addressed. Several project such as the planting of Bamboo along streams of West Guadalcanal funded by Small Grand-GEF, mangroves restoration by the World Fish Center and MESCAL project has a strong support from stakeholders. The reforestation division of MFR has a plan to replant several logged areas with native trees.

8. F. By 2017, a management plan has been developed and adopted for the seasonal dry forest and grass lands of Guadalcanal and Central province.		There is no action or plans in place as yet for grass land management and often viewed as waste land.
8. G. By 2017, research on the adverse effects on biodiversity from major development including logging, mining, large scale mono-crops including slush and burn method, are conducted thereby factored into improving management plans (Target 4).		There has been a good progresses with respect to conducting of EIA in mono-crops , mining prospecting and others except for logging.
8. H. By 2017, the level of general environmental education and public awareness for villagers are raised and subsequently changing of behaviours from unnecessary chopping of trees, burning of bushes including trees as well as discouraging people from killing of birds and lizards (Target 1).		Most if not all conservation intervention by Government agencies and NGOs counterpart focused on non-formal environmental education (public awareness). However, the need to educate people on issue like unnecessary chopping of trees, burning of bushes as well as killing of animals is still required.
8. I. By 2017, the national geospatial information networking has been re-instated and reinforced and results are integrated into policy making, capacity building and institutional strengthening (target 4).		Progress has been toward geospatial planning (e.g. SOPAC).The necessary laboratory and equipment's have already been installed in the relevant Ministry.
8. J. By 2017, an action plan/policy instrument (activities 2) is developed and adopted at the national level to compliment regional exchange of forest and tree germplasm that aimed for a Regional Tree Seed Centre and its objectives (target 2).		The Solomon islands has collected and deposited accessions in the regional germplasm banks in the Pacific Commission. The SWoCK project has also making progress under this theme.
8. K. By 2017, the syllabus of current curricular on reforestation including biodiversity restoration have been reviewed or reinstated particularly those offered by the Rural Training Centres (RTC),High Schools and tertiary Institutions SINU (target 1).		The RTC and the SINU continue to offer various levels of forestry courses including reforestation and restoring of associated biodiversity.
8. L. By 2019, the REDD+ initiative has establish the legal framework and ready to be implemented thereby providing with the provisions for alternative economic incentives for		The Solomon Islands' (Reducing Emissions from Deforestation and forest Degradation) (REDD+) programme has been promoted through several project intervention. The UN-REDD programme aimed to establish the

protecting and restoring of forest, mountain and plant biodiversity.		necessary institutional and individual capacities required to develop full REDD+ readiness in the Solomon Islands.‖ The project has established a multi-stakeholder committee and is committed to develop a legal framework by 2019. It has underwent several feasibility studies. Live and Learn, SPC and LALASU have been conducting community awareness on the REDD+ initiatives since 2010. If the project is successful it should provide alternative revenues to logging and at the same time improve forest conservations.
8. M. By 2018, the level of research particularly, taxonomical classification of montane forest biodiversity - species identifications, distribution and status has been raised with particular focus on reptiles , frogs and insects, thereby able to provide scientific evidences to develop management plan to maintain or recover species populations (Target 4 and Target 12).		Research on montane forest is picking up over the years.
Target 9 By 2020, wastes; solid waste, non-biodegradable and highly toxic waste, including excess nutrients has been brought to levels that are not detrimental to ecosystem function and biodiversity including human health.		
9. A. By 2015, Solomon Islands has reaffirmed commitment to international and regional conventions in in addressing wastes (Stockholm Convention on Persistent Organic Pollutants (POP Convention), Marine Pollution Convention (London), Montreal Protocol, Waigani Convention, Pollution Protocol for Dumping and Pollution Protocol for Emergencies) and thereby fully mainstreamed biodiversity concerns into their architectures and implementing strategies (target 2).		The National Solid waste management strategy and Action Plan 2009-2014 provide the policy instrument for addressing waste. The synergy between waste policies and biodiversity is also reinforced when the two issues are coordinated within the same Division (ECD). Current waste management projects are; Global Project on the Updating of National Implementation Plans for POPs, J Prism, the Mataniko cleanup project.
9. B. By 2015, the Solomon Island had developed and adopted a post National Solid waste management strategy and Action Plan 2009-2014 and has reaffirmed to the in cooperated the 3R strategy (target 2).		It is a mandate to develop a post waste management strategy or similar instrument once the policy time frame ended.

9. C. By 2015, all major development sectors have developed and adopted a waste management strategy in conformity to the national waste management strategy or other related rules, and enhancing of the independent monitoring of waste management and compliances in major development sectors (target 2).		Most industries such as mining and mining prospecting, mono-cropping companies has an up-to-date waste management strategy. Independent auditing in part to the government is still required. Some industries like the logging has a total disregard to waste managed.
9. D. By 2015, the waste management strategies has been in-cooperated into all CBOs management plans and started their implementation (target 2).		Many established CBOs has a waste management strategy as part of or a separate strategy to their management plan e.g. Tetepare CBO.
9. E. By 2015, open defecation in town and villages has been brought down to 50%, thereby improved land and water quality and reduction of coliforms content in rivers and coastal areas.		There is progress in installing toilet slaps in the villages with the assistance from the World Vision- Solomon Islands. CBOs are also planning to have installed toilets and plan is in progress to reinstate the plan to install public toilets in Honiara.
9. F. By 2015, the Solomon Islands has improved its waste management coordination particularly between the Ministry of Health and Medical Services (MHMS) through the Environmental Health Division (EHD), the Honiara City Council Environmental Health Division, The Environment and Conservation Division in the Ministry of Environment, Conservation and Meteorology and the provinces (target 2).		The national waste management committee continues to sit at an *ad hoc* basis and there is a need to develop plans to systematically conduct meetings in efforts to improve waste management coordination in the country. Biodiversity concern is often featured as part of agendas. A communication tool has also recently developed and adopted.
9. G. By 2019, 70% of the action plan as stated in the biodiversity strategy is adopted and implemented and thereby reducing sedimentations in the river system and coastal areas		The health of river system can traced to the long term impact of NBSAP or related mechanisms.

9. H. By 2019 urban centres particularly in Honiara has developed and adopted an implementation plan to minimise waste in all aspects of development.		Waste management is addressed at an ad hoc basis by the HCC although financial constraints and weak enforcement always mitigated against the executions of plans. The Solomon Island Government has allocated 2.0 Million SID for cleanup of Matanigo river, been allocated to and likely to be administered by ECD and HCC. The EIA continues to be contacted by the development proponents. The Rapid employment scheme funded by the world Bank is gaining recognition by the city dwellers and has improved the town cleanliness. Several recycled can buyers are present. Honiara only has one landfill and all forms of waste are treated equally and disposed at the Ranadi dump site.
Target 10 By 2020, invasive alien species and pathways in Solomon Islands have been identified and, measures are in place to control potential entry of new invasive species. Developed and adopted an implementation plan to control or eradicate current invasive species that are threatening food security, trade and biodiversity including human health.		
10. A. By 2015, a plan is developed and adopted for effective implementation of the Biosecurity Act (2013) in efforts to reduce the spread of current invasive species that threaded food security and biodiversity.		Besides the conventional regulatory approach to control potential entry of invasive species e.g. border checking, a management intervention approach is still required to improve eradicating or controlling of established invasive species
10. B. By 2015, at least one ministerial strategic plan is in place to compliment this biodiversity strategy for invasive species management and strengthen the enforcement and monitoring capacity of responsible agencies (public and private).		The ministry of Agriculture are making progress in efforts to control invasive species that threatened food security e.g. African Snail. Regional cooperation has helped facilitate knowledge in efforts to control invasive species. Some CBOs also made efforts to control invasive species such as the removal of the Crawn of star. The need to continue to build capacity and to implement plans remains a future need.
10. C. By 2017, an implementation plan is developed and adopted for eradicating and controlling of invasive species that are causing threat to native biodiversity and the deterioration of ecosystem including human health.		Progress has been made towards controlling of invasive species such as the African Snail, cocoa bores but is still insufficient.
10. D. By 2017, the Biosafety framework has adopted legal instruments to regulate LMOs in the country, and at least an environmental education and awareness has been initiated		There has been a discussion around the option to ratify the Nagoya-Kualalumpa sub-protocol to substitute the need to develop a separate legal instruments at the national level in ensuring a provision for paying of

by responsible ministries.		compensations if LMO inflicted an adverse effect.
10. E. By 2017, Honiara city council has developed, adopted and has started implementing of an invasive strategy particularly strategy to control dogs and eliminating of dengue mosquito through clean up campaigns and waste management strategy.		The spread of dengue mosquito in 2012 had enabled the Ministry of Health and the City Council to host a week of cleanup campaign. With no systematic plan in place activity come to a hold. The HCC has plan to eliminate strain dogs in the city who has having health and invasive impacts on the City biodiversity. The African tree is widespread in Honiara.
Target 11 By 2020, 50 % of the biodiversity priority areas identified in NAPA and the Climate Change policy been operational, and a mitigation action plan in place, been integrated with infrastructure developments and disaster risk management.		
11. A. By 2015, the Solomon Islands continue and reaffirmed its efforts its implementation of the priority actions as stated in the NAPA (2008) and climate change policy (2012) while taking into account the need to mainstream biodiversity actions into the climate change strategies.		Most if not all climate change projects has a direct implication on the need to address biodiversity and vice-versa.
11. B. By 2015, scale up management of mangrove, coral reef, trees along water/river thereby bolster insolating of inland and coastal erosion		The MESAL project helped develop a mangrove management plan for Eliot Community of small Malaita and the World Fish Center has over the yeas assisted the Langalanga Community. Progress is also underway for developing management plan for Are Are lagoon. Plan is in place to develop a management plan for Coral reef to be led by MFMR with assistance from SPC. Legal instruments e.g. the Forestry Act and the Water River Act provide provision for regulating development close to sensitive river system. The IWRM has implication on river vegetation management. CBOs particularly marine protected area covers literal vegetation as such provides insulation for inland villagers from rising sea level and king waves.
11. C. By 2015, a national mangrove management strategic plan is developed and has adopted in at least two provinces consolidated by network of communities based organization (target 5).		Several CBOs focused on mangrove management (see 11. B). There is a need to develop provincial management plans to compliment the NBSAP. The Guadalcanal fisheries ordinances have provided the provision for mangrove management at the named provincial.

11. D. By 2019, Honiara and the provincial towns have developed and adopted a green infrastructure policy instrument		The town planning act provides the provision for green infrastructure development. Honiara City council has developed a management plan with its 3rd objective aiming to improve environmental and waste managements (also see milestone 10 E; 9, H and other related milestones). The Honiara beautification group continue to plant tree in Honiara and an emerging relationship with green tourism is making way forward
STRATEGIC Goal C Enhancing and promoting of protection and restoration of biodiversity to safeguard ecosystems, native species and genetic diversity		
Target 12 By 2020, at least 10 per cent of the terrestrial and inland water, and 15 per cent of coastal and marine areas of the Solomon Islands, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively management regimes; thereby an ecologically representative and well-connected system of protected area is established, integrated into the wider landscapes and seascapes conservation based initiatives.		
12. A. By 2014, the Solomon islands has reinforced its commitments and continue to support the maintaining of Lake Tegano as its World Heritage site, support the community to implement and enforce their management plan/s and support sustainable development options such as ecotourism and infrastructure investments for those communities living within and close to the catchment area.		With the recent inscribing of East Renbell (Solomon Islands) on the List of World Heritage in Danger the Solomon islands has made the following; An up to date report on the state of conservation of the property, including a report on the progress made in the implementation of the recommendations. A management plan is under development and a draft 2009 Renbell Province Lake Tegano Heritage Park Ordinance. The REDD+ project has conducted a feasibility study and ecotourism initiative are also underway, with a few individuals received ecotourism training oversea. The shift of the World Heritage focal point from the Ministry of Education to ECD has enable the Lake as one of the potential site to be declared under the Protected Area Act.
12. B. By 2015, the trust fund provided for under the Protected Areas Act 2010 is fully established and up and running.		The PA act is now under enforcement and its regulation was gusseted in 2012. It is therefore mandatory to appoint the protected area act committee and subsequently the development of trust fund.

12. C. By 2015, key threats in existing protected areas are identified and addressed accordingly, and that by 2018 at least 50% of the existing protected areas are covered.		Progress has been made by NGO intervention alongside their CBOs counterparts in identifying of treads and systematically addressing them.
12. D. By 2017, 50% of all existing protected areas have developed and adopted a management plans in co-operating sustainable finance plan and a strategic fundraising plan.		Although protected area management plans are in place in most CBOs, there is still an absence of sustainable finance and fundraising plan to help sustain operation cost of the CBOs.
12. E. By 2017, all CBOs operating protected area are registered under the Charitable Trust Act and thereby register with MECDM for recording (target 2).		Progress towards the registration of CBOs or their network is increasing. LALASU through its communication portfolio has developed tool and templates to assist CBO guide constitutional and management plan developments (LALSU Resources page)[67].
12. F. By 2018, 50% of the mountain forest is in some form of active protection particular those highest peak of Guadalcanal, Kolombangara, Isabel, Rendova, Malaita and New Georgia thereby contributing to the terrestrial protected area coverage target.		These highest peaks are protected under the forestry Act and are indeed inaccessible to the villagers. There is still need to recognized and adopted a management plan for the sites.
12. G. By 2018, all existing protected areas have in place a practicable and effective management plans that incorporated traditional and effective conservation and management and monitoring plan.		Provided by the Protected Area Act, many CBOs' are now developing their management plans. The CTI project has been active in training CBOs with necessary tools to ensure protected area sites has an effective management plan
12. H. By 2019, those identified as high conservation value area (terrestrial protected areas are put under management thereby able to cover 100,000 ha and able to restore the 48 threatened species) consolidating the national protected area system.		Progress are under way under various proposed project to enable the achievement of this objectives (e.g. the proposed Integrated Forest Management in the Solomon Islands to be implemented by FAO.
12. I. By 2019, protected areas are integrated into wider		Adopting the principle of ecosystem based management perspective , the

[67] http://www.pso.gov.sb/index.php/lalsu

sectors land and sea sectors conservation planning		protected area management interventions is viewed as integral to those sustainable development initiatives (linked to all other targets) including forest regulation, offshore fisheries and onshore fisheries management.
12. J. By 2019 the following identified important bird areas IBAs have been protected by effective management plans		There are some work on the IBAs and there is a need to adopt a protected area managements tools over the areas.
Target 13 By 2020 the Solomon islands has reaffirmed and enhanced its commitments towards the reducing and managing of known endangered species, and prevented endemic species from undergoing local extinction; and has reinforced its commitments towards the global and regional efforts to prevent extinction of migratory threatened species		
13. A. By 2015, the Solomon Islands has adopted and has started implementation of the Strategic Plan for Migratory Species 2015-2023[68]and has reinforces its commitment towards developing of implementation plans for Whales, Dugongs, Dolphins, and turtles in complimenting and localizing the implementing of the Pacific Islands Regional Marine Species Programme[69]		The implementations of these objectives are mainly regional and at the CBO level, therefore collating these sporadic actions under a national or provincial level is needed. The migratory features set the type of scope of the management plan required. A management plan for Dolphin is under development (see 6. A)
13. B. By 2015, the Solomon Islands has recommitted to undertake a comprehensive research to identify the population, distributions of Crocodile (*Crocodyllusprosus*) and thereby by 2018 developed and adopted an action and implementation plan for its conservation.		Solomon Islands have allocated money in 2012 to conduct research on crocodile and have diverted the allocation towards other uses. The reallocation money for this research is required particularly when crocodile is speculatively, becoming invasive and imposing risk to people. At least 2-3 people per year have been victimized from crocodile attack.
13. C. By 2017, developed and adopted an action/implementation plan for conserving of the current 57% of palms, 50 % of orchids and 75 % of climbing *pandanus* species in the Solomon Islands and if necessary developed and adopted a recovery plan for those 16 plants		Many of these ornamental species are voluntarily planted around private home for beautification as well as a source of herbal medicine. Support from the government through education and awareness is required to scale up such practices. Recording is also needed.

[68]UNEP and CMS [Draft Strategic Plan] 2013
[69]SPREP 2013

species that are considered threatened		
13. D. By 2017, at least the 94 restricted range species of birds in the Solomon Islands are properly researched to identify their population and distribution thereby developed and adopted management plans for restoring of the 20 threatened species.		Several avauna researches has been undertaken at particular sites e.g. Tetepare, Isabel etc. There remains a need to improve avauna research. Adopting these research finding into management plan is needed in the future.
13. E. By 2017, undertake taxonomic study of the 53 mammal species, 80 reptile species and the 19 endemic mammals and developed and adopted plan to recover the 20 threatened species of mammals.		Various researches (University Graduate study) including independent researchers are underway.
13. F. By 2017, developed and adopted plan for the recovery of *Plectropomusleopardus, Negaprionacutidens, Vanderhorstia attenuate and Paraxenisthmusspringeri*.		List under the Wild life Act and therefore required management plans
13. G. By 2017, the Solomon Islands has developed and adopted a sustainable development strategy for whale, dolphin and dugongs		As part of 13 A, 6 A
13. H. By 2017, a comprehensive research is undertaken for identifying of population sizes, distributions of H*. sanfordi* (eagle), Chattering Lory *Lorius garrulous* and adopted forest protected areas or other effective means to maintain or restore their population.		As part of 13 E and F
13. I. By 2017, an implementation plan is developed and adopted for the management of dugong (Dugong dugong) to maintain or recovered current population.		Discussion is underway to secure fund for this action (see 6 A, 13 A, and 13 G
13. J. By 2017, developed and adopted an plan/s for turtles, cetaceans (dugong, dolphin and whales) to compliment Pacific Islands Regional Marine Species Programme 2008-2012.		As part of the above 6 A, 13 A, and 13 G, and 13I) SPREP is serious in assisting its member to help develop plans at least by 2014.

13. K. By 2017, develop and adopted an implementation plan/s for at least 50% of the species listed in Wildlife Regulation and the fisheries act		Most species listed in the Wild life Act required to be supported with restorative management plans. None has a specific recovery plan.
13. L. By 2017, developed and adopted an action/implementation plan/s to restore (*Microgourameek i*endemic to Choiseul; *Gallicolumbasalamonis*endemic to Makira and several outlying islands and *Gallinulasilvestris*endemic to Makira, including, ground-dwelling *Uromys*rats on Guadalcanal.		under protected area intervention
13. M.By 2017,an implementation plan is developed and adopted for native plant such as orchids (for ornaments and Fruits) around village houses and city		As part of 13.C
13. O. By 2017, developed and adopted an implementing plan/s for captive rearing of birds such as parrots, eagles or other native species in wild where their population are in decline.		Related to most of the above
13. P. By 2017, develop and adopt implementing plans for the proper research and recovering the population of; wild Dusky Megapode (*Megapodiusfreycinet*), native breed-Suspapuensi, the feral breed of fowls found on Santa Cruz Island, prawn (Macrobrachium and pennaied prawn), *Xanthostemon CanariumIndicum, PterocarpusIndicus, Xanthostenum, Gmelina Moluccana, Vitexcofassus, terminaliacatappa, Cordiasubcordata, Flueggeaflexuose, Paraserianthesfalcateria, and Intsiabijuga.*		Related to most of the above and required updating of IUCN Red list.
Target 14 **By 2020,** ecosystems that provide essential services, particularly services related to water, its contribution to human health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, land owners, local communities, and the poor and vulnerable.		

14. A. By 2014, the Solomon Islands has continue to support current fresh water management project for improving drinking water quality, by effectively applying the Public Health Ordinances guidelines on the need for improving water quality by factoring in biodiversity management		Since most of the village drinking water are fetched from rivers and streams and therefore it is a crucial to test the drinking water if they meet the public health ordinances and to set the basis for improved managements. There is a general observation that the sources for drinking water in the villages are well looked after.
14. B. By 2015, develop and adopted an Integrated Water Resources Management (IWRM) or Catchment Management Plan for at least 20% of the river systems in the Solomon Islands by reaffirming and scaling up of the current IWRM project lesson learned and to include those largest river system in the Solomon Islands including Wairaha in Malaita and Lunga in Guadalcanal.		The project IWRM (PAS: Implementing Sustainable Integrated Water Resource and Wastewater Management in the Pacific Island Countries - under the GEF Pacific Alliance for Sustainability) and the subsequent proposed project Solomon Islands Water Sector Adaptation Project (SIWSAP) will further help facilitate to meet this milestone.
14. C. By 2017, an implementing plan has been developed and adopted for all urban river system including surface water and ground water factoring in solid waste, liquate waste and sewages management thereby improves water quality in urban river systems (target 8 and 10).		Provided by PAS , Honiara river and stream by now should have an active management regime. The government has budgeted 1.5 million to clean up the Mataniko river (also see10 E; 9, H; 11 D).
Strategic goal D Enhancing the equitable sharing of benefits derived from biodiversity uses and the associated traditional knowledge		
Target 15 **By 2015**, the Solomon Island has acceded to the Nagoya protocol and there by developed and adopted an action plan for the fair and equitable sharing of benefits arising from the utilization of its genetic resources; and thereby by 2019 a legal instrument is developed and adopted for the protection and disseminating of local knowledge and practices that associated to their uses.		
15. A. By 2014, the Solomon Islands has taken steps to accede to the Nagoya protocol and undertake legal and policy reviews thereby by 2015 develop a national framework for implementing of the Nagoya protocol		The Solomon Islands through the ECD has forwarded a Cabinet paper for acceding to the Nagoya protocol while SPREP and UNEP have forwarded a proposal to GEF for early ratification of the protocol.

15. B. By 2017, environmental education and awareness (target 1) for utilization of traditional knowledge e.g. medicine are documented and widely disseminated and used and/or applied by other tribal communities.		Traditional knowledge related to herbal medicine are now becoming available through research and are shared widely throughout the country as part of normal knowledge sharing (kinship ship system). Their protection will depend on the result from action 15 A
15. C. By 2019, develop and adopted a legal instrument for protecting and utilization of traditional knowledge required for sustainable use and industrial developments.		As further steps from action 15 A and B.
Strategic Goal E Enhance the implementation of NBSAP through participatory planning, knowledge management, capacity building and decentralizing of NBSAP to sub national and community levels		
Target 16 By 2014, Solomon Islands has reviewed, updated and reaffirm commitment to NBSAP as a policy instrument and has already implementing 25% of the stated actions		
16. A. By 2012, Solomon Islands has undertaken Stock take reviews of plans, policy and reports and the causes and the consequences of biodiversity loss, and, those gaps identified to set the baseline for the development and reviewing of the NBSAP.		Two reviews has been undertaken lead by the ECD
16. B. By 2013, the Solomon Islands has set National targets, principle and main priority of the strategies through national consultation. Specific activities shall include the setting of the National targets, principle and main priority of the strategies through a proven effective consultation approach suitable to the local context while upholding and embracing the adopted principles.		National targets, principle and main priority of the strategies are part of NBSAP. A 1st and 2nd draft of NBSAP has completed
16. C. By 2013, the Solomon Islands has developed and adopted Strategy and action plan through consultation.		Preliminary action plans developed from recommendation from literatures, face-to-face communication, minutes, circulars, small group meetings and

		validated through triangulations and consolidating workshop.
16. D. By 2013, the Solomon Islands has developed and adopted implementation plan as part of the national action plan and/or related activities through consultation.		The follows are in draft; Resource Mobilization Plan (2014-2018); Environmental education and public awareness plan (2014-2018); ECD strategy plan (2014-2018) including reforestation plan etc.
16. E. By 2014, the Solomon Islands has developed and adopted Institutional, monitoring, reporting and exchange system and related activities through national consultation.		4th , 5th and 6th National Reports and related thematic reports including the State of the Environment provides the avenues for monitoring, reporting and exchange system. ECD to serve as the secretariat to be supported by subcommittees and a three years biodiversity Forums. The fifth report is in its final stage of drafting