FINAL REPORT

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RETA 6471: STRENGTHENING COASTAL AND MARINE RESOURCE MANAGEMENT IN THE CORAL TRIANGLE OF THE PACIFIC – PHASE 1

BY UNIQUEST PTY LTD

In association with
The University of Queensland's Centre for Marine Studies

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for

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ADB, GEF and AIMS Financed

Figure 1: Project Demonstration Area

I. INTRODUCTION

1. The following Appendix presents the country level program for Fiji within the Regional Technical Assistance (RETA) program for the Coral Triangle Initiative – Pacific program. The RETA is operating within five countries including Timor Leste, Solomon Islands, Papua New Guinea, Vanuatu and Papua New Guinea. The overall Project documentation will comprise a consolidated RETA technical assistance document and a GEF CEO endorsement template. These documents will be highly aggregated data and descriptions that will not define detailed country level programs.

2. The RETA has decided to prepare individual country reports to present detailed country level programs to support review, ratification and most importantly implementation of the program.

II. ISSUES

1. Background

3. Fiji's natural endowments of forests, agriculture, fisheries and minerals have played a key role in economic development. The nation produces a wide range of outputs from its fertile soils, coastal flatlands, and coastal and marine ecosystems. Coastal areas also support the majority of urban environments within which slightly more than 50% of the total population live.

4. Fiji has a relatively pristine environment but economic development is manifest in new pressures on the environment. These include: (i) conversion of the remaining stands of native forest into exotic plantations and small holder sugar cane; (ii) inappropriate zoning and land use; (iii) over fishing; (iv) poor waste management practices; (v) water pollution; (vi) climate change impacts relating to more extreme drought and flood events, loss of coastline and coral reef decline; and (vii) social and environmental impacts associated with rapid development through urbanization and tourism.

5. Over a third of the country's gross domestic product (GDP) and 70 percent of exports can be attributed to natural resource-related activities such as agriculture, forestry and fisheries, tourism and mining with the economic benefits estimated to be valued at FJD 973 million per year.

6. The economy of Fiji is based on the sugar and tourism sectors but under-investment over the last decade has seen Fiji fail to capture the potential market gains on offer. Increased private sector investment during the late 1990's was recently reversed as a consequence of increased political uncertainty. Tourism contributes to approximately 17 percent of GDP and employs approximately 40,000 people despite negative growth the sugar industry's share of GDP is 5 percent.

7. Marine fisheries contribute an estimated 3 percent to GDP but it is difficult to estimate their true value because of the high levels of subsistence fishing. The capture fisheries sector is a significant contributor to the Fijian economy based on fin-fish products such as yellow fin, bigeye, albacore and skipjack tuna species. Prawn, seaweed, giant clam and tilapia farming are important at a semi-commercial and subsistence level. There is also an extensive system of mangroves and coral reefs providing habitat for important crustacean, shell, and bêche-de-mer resources.

8. Coastal communities in Fiji are in transition away from a traditional subsistence-based economy to an increasingly market driven economy. The demand for cash, as opposed to in-kind, transactions has increased dramatically often driven by the need to pay for education, health, religious costs, transport and consumables. The growing demand for cash has seen commercial exploitation of both agriculture and fishing resources increasing as witnessed by the movement from hand lines and had spears to gill nets and spear guns resulting in increased catch per unit effort providing surplus fish for sale. With increasing access to markets and new more efficient technology, traditional fishing grounds will face increased pressure and complexity in management decision making. Whereas qoliqolis (traditionally owned fishing areas) provide traditional rights to use resources and to exclude other users they are not yet managed effectively to ensure that impacts from outside the qoliqoli do not reduce productivity and food security of coastal communities in the medium term.

9. Increased demand for social services created by growing communities has not been matched with provision of services by Government. Rural communities are responding by reverting to increased subsistence based lifestyles however with declining resources and cash from wage based employment social well being has declined.

10. The ability of Government to provide services to rural communities is likely to be constrained for the foreseeable future as Government struggles with declining revenues and an ongoing decline in private sector investment and output, increasing public sector costs, the need for constitutional reform, and global economic weakness. Given the limited resource availability and ability to support the rural economy there is a need to ensure well managed coastal and marine resources so that they can contribute in a sustainable manner and to avoid the likelihood of a "gap between needs and available resources". Some communities have already moved into what can be described as commercial fishing albeit on a small scale based on low technology that without effective management will lead to declining coastal ecosystem productivity.

11. Based on current trends and ability of existing coastal ecosystem productivity to support growing demands is simply not feasible in the medium term. As rural populations grow and their needs for cash increase the resource base for many communities will prove unable to sustain extractive resource uses. Development of revenue sharing programs for passive recreational use of reefs, beaches and culture need to be debated, agreed and implemented as fast as possible to diversify the contribution of coastal resources to socio-economic development.

12. The ability to manage outside influences on local coastal resources including sedimentation, pollution etc., need to be prioritized in the national policy and management system. Effective resource management including external impacts will extend the time available to establish local revenue streams from non-extractive uses.

13. For the near future the public sector will not grow substantially. For the CTI Pacific program the implementation phase will operate in a period of significant public austerity with staffing and operational budget constraints. Government programs and budgets will be unable to support the significant expansion necessary to fully deliver site level support through the public sector. The proposed strategy is to encourage recognition of co-management with communities and NGO's as an effective management cost-sharing arrangement. The Government role within this framework would be to focus its limited resources on establishing and implementing management at a larger scale to address both land and sea based threats to the community owned and managed resources.

2. Threats

14. Across all CTI-Pacific countries the major underlying cause for increased risk to the sustainable management of coastal resources is domestic population growth. For Fiji, population growth rates and median age of the population are more favorable than in most countries. Despite this, demand for resources will be significant with 30 to 50% higher demands for fish resources required by 2030. The forecast growth in demand, is such, that the ability of coastal and marine environments to sustain such levels of demand growth in the long run in increasingly uncertain. Associated with the influence of population growth are the following major threats.

15. **Rural Land Use** The increasing population places pressure on land, particularly marginal land, resulting in significant land degradation and soil erosion from smallholder and commercial agricultural practices. There has been a change in the balance between subsistence into commercial agriculture at the village level in Fiji as people seek cash for securing basic services such as education and health.

16. Contributing to these changes in land-use practices in Fiji has been the availability and quality of land, land tenure, labor mobilization and depopulation of some outer islands. The size of farm holdings (60% are less than three hectares) forces farmers into intensive cultivation (often mono-cropping) for high output, short-term production without (or with only minimal) fallow periods. Subsistence gardens are increasingly being forced onto steeper slopes because of the expansion of cash cropping and grazing on the flatter lands.

17. Land tenure and the non-renewal of land leases is forcing smallholder sugar producers off fertile lowlands onto shallower sloping soils resulting in increased sedimentation and soil loss that is being compensated through the increased use of fertilizer to offset lower fertility levels.

18. Land based and near-shore activities such as erosion from poor agricultural and forestry practices, runoff of pollutants and fertilizers, sewerage dumping, siltation from land reclamation projects and impacts from mineral activities all impact coastal ecosystems. Nutrient loadings from agriculture, piggeries, hotels and human settlements without appropriate technology or management end up in coastal ecosystems reducing their productive capacity.

19. Erosion resulting from inappropriate land use and land management practices in the watersheds has led to siltation of rivers resulting in the deterioration of drainage on floodplains, frequent inundation, and formation of shallow bars across the river mouths. This results in downstream sedimentation and flooding with serious implications for settlements, domestic water supplies, infrastructure (roads, bridges) and crops. The input of sediments on the adjacent marine and freshwater ecosystems, particularly in higher rainfall zones, is likely to continue in the long-term.

20. The burning of grasslands, particularly in higher rainfall zones, also contributes to erosion within watersheds. Erosion mitigation practices such as closing logging roads through revegetation and erosion berms, particularly on stream crossings, reforestation of stream sides, and stricter adherence to logging codes of practice should be implemented in all watersheds. Logging should be entirely prohibited in critical watersheds, particularly those in southern Bua, Macuata, and Ra Province.

21. Land conversion in watersheds leads to the degradation of reef and freshwater ecosystems, through increased sediment and nutrient transported into coastal ecosystems. Sediments can smother and shade out corals and other invertebrates and higher nutrients levels cause an imbalance in ecosystems that results in blooms of algae in lagoon systems. Sedimentation and nutrient-loading are known to reduce fish abundance, species diversity, and coral cover in near shore reef ecosystems.

22. Corals can survive heavy sedimentation events for short periods. Longer-term stress induced by extended periods of low-level sedimentation together with nutrient inputs may be responsible for most damage to reef ecosystems.

23. The consequences of land degradation and inappropriate land use practices include negative impacts on the tourist industry. Industry representatives express concern about dirty rivers, frequency of flooding, water rationing and poor water quality, unsightly landscapes, pollution and visible waste. Environmentalists point to the vulnerability of the coral reefs to excessive sediments brought into the lagoons by the flooded rivers from eroding watersheds.

24. There is a general lack of attention by the land use sector in developing and applying best management practices. This results in non-point source agricultural pollutants, excessive off-site effects on stream flows and ecological costs. Currently there is a lack of information on ‘best practices’ for sustainable agriculture being disseminated which is critical in raising awareness amongst groups if their damages to the marine ecosystems from forestry and logging activities are to be reduced.

25. **Urbanization** Current population growth rates are 1.4% per annum and relatively modest in comparison to the other CTI Pacific countries The rate of urban drift is higher than the population growth and currently more than 51% of the population live in urban centers. One consequence is the emergence of jobless persons from rural areas creating squatter settlements.

26. Fiji has an estimated 1,129 km of coastline, and because of the confluence of biophysical, socio-economic, and institutional factors that operate in the coastal zone, applicable management issues are especially challenging. There have been rapid changes in coastal geography associated with increasing reclamation projects undertaken in an attempt to accommodate a growing tourism industry and rapid urbanization. Most national assets and public infrastructure is located in low-lying coastal areas, including major towns, international airports, hotels, sugar-cane fields and most major industrial facilities. The intensification of such development is placing increasing pressure on the coast, and leading to greater risks of physical and economic losses from coastal erosion and the effects of storm surges.

27. Various coastal works such as concrete seawalls, groynes and revetments have been constructed to protect the foreshore from storm damage. Construction has been haphazard and mostly not best coastal engineering practice. Furthermore, these protection structures have been put in place without analysis of wave and current patterns around the islands, reflecting a misconception that coasts are inherently and eternally stable.

28. There is no agreed urban policy and a lack of clarity in planning and management of peri-urban development. The Urban Policy and Action Plan identifies the key priorities to be: (i) haphazard, unplanned urban growth; (ii) limited capacity of Local Councils to implement their urban management mandates; (iii) inadequate affordable housing; (iv) lack of secure tenure, with accompanying inadequate municipal infrastructure and services; and (v) neglect of populations living in peri-urban areas. The formative document for the policy includes some of the building blocks for a strategy that supports Coastal Zone Management (CZM). The key elements of the strategy which could be integrated into a CZM plan would include; (i) a strategic urban land development program; (ii) devolution of local planning and development activities to local government agencies; (iii) capacity building and training for local governments.

29. **Pollution and Waste Management.** The principle source of nearshore water pollution in Fiji is from mining, shipyards and slipways, moorings, sugar mills, timber mills, cement factories, as well as municipal waste disposal sites, sewage, agricultural chemicals, changing land use patterns and tourism developments. A review of Suva Harbour found elevated levels of biochemical oxygen demand (BOD), nutrients (nitrates and phosphates), increased levels of suspended solids, elevated pH and high coliform bacterial levels. Levels of Tibutyl tin, as used as anti-foul on ship's hulls, were reported to being above acceptable background levels. The discharge of untreated sewage has also resulted in faecal coliform concentrations several thousand times higher than accepted safe levels in streams around Suva.

30. **Over fishing & Destructive Fishing Practices** The sustainable future of fishing inshore resources depends on the establishment and effective management of marine resources, the support of traditional no-take areas and the enforcement of rule prohibiting illegal and destructive fishing practices. Destructive fishing practices are widespread reducing the sustainability of the reef fishery. Although legislation is in place, the use of destructive fishing techniques such as dynamite fishing, traditional fish poisons such as *duva* or *derris* is common.

31. Over harvesting of coastal resources such as mangrove wood, the harvesting of undersized fish and crustaceans are becoming widespread. Species that are over harvested include *beche-de-mer,* mangrove crabs, *trochus,* small size Serranidae (groupers) and Lethinidae (emperor fisheries). Population of highly prized species such as giant clams (*Tridacna* and *Hippopus* spp.) and coconut crabs are overexploited and in some places locally extinct.

32. The level of commercial fishing within the inshore zone is not well described. WWF estimates that commercial fleets contribute 6,000 tons to the annual fish catch with target species declining in many areas due in part to overfishing.

33. In addition to the subsistence and commercial fisheries, Fiji is also a major exporter of live coral and fish for the aquaria trade in the Pacific. The sustainable level of harvestable aquaria fish is uncertain and requires detailed information of habitat and catch rates. Logically however, the long-term sustainability of the live aquaria fish trade depends on the maintenance of healthy coral reef ecosystems and effective management.

34. **Tourism Development.** Fiji is the main centre for tourism in the South Pacific and with the decline in the sugarcane and garment industries, it is now the largest contributor to Fiji's economy. Whilst tourism has brought significant economic benefits it has also created tangible environmental threats especially where environmental principles are overlooked in the planning and monitoring phases of tourism development.

35. Key problems associated with tourism development in Fiji are; (i) conflicts between resort operators and local communities (examples of resorts being set up without due recognition of traditional fishing rights in community owned *qoliqoli*; (ii) site selection of some resorts has meant that they are vulnerable to natural coastal erosion, wave action, and storm surges; (iii) some resorts have

exceeded their design capacity leading to inadequate handling of waste streams including sewage effluent.

36. Elevated nutrient levels along the Coral Coast (one resort area) indicate nitrate and phosphate levels exceed levels for healthy reefs. Nutrient levels were highest at sites located near hotels and other populated sites. The elevated levels of nutrients in the coastal waters are of concern given the importance of the Coral Coast for local communities and as a tourist destination.

37. The location and design of many tourism facilities has resulted in the need for modification of the foreshore. This has created long term issues that will increase with sea level rise and storm surge from climate change. The application of appropriate engineering solutions that are effective would be led by Government policy based on robust scientific information.

38. **Natural Hazards and Disaster Management** Fiji is subject to cyclones and experiences earthquakes, landslides, flooding and storm surges. Over the last decade, tropical cyclones, by far the most prevalent and destructive of the natural hazards occurring in Fiji, have caused an estimated FJD500 million in damage and resulted in the loss of about 100 lives.

39. Eleven tsunamis have been recorded in Fiji of which three were generated within Fiji waters. The most damaging tsunami, in 1953, claimed five lives in Suva and Kaduva and flooded parts of Suva City. The wave heights in Suva were estimated to be about two meters and about five meters at Nakasaleka in Kadavu.

40. **Climate Change** Impacts from climate change will include uncertain impacts on fresh water supplies due to higher variability of rainfall and rising sea levels; coral bleaching; coral degradation due to ocean acidification; disturbances to agricultural production due to changes to rainfall patterns alterations; changed human disease patterns and increased climatic extremes such as intense cyclones over a longer annual window, flooding and droughts as a result of extreme weather conditions. Areas that are most likely to be impacted due to climate changes are in low-lying coastal areas, and marine resources and coastal foreshore infrastructures that can be associated with tourism development.

41. Within Fiji, the coastal areas will be the most affected by climate change impacts such as: (i) sea level rise leading to foreshore erosion and in some instances a retreating mangrove system; (ii) increasing sea surface temperatures leading to coral bleaching, and eventual shift in fish biodiversity as corals decline due as well a lag in their growth; the decline in coral growth may also result in a loss of sediment production necessary for maintaining shoreline stability; and the increase in frequency and intensity of storms leading to greater coastal inundation and erosion events.

42. The coastal area around Viti Levu is already under stress from high population concentrations, deforestation, pollution and large areas of erosion due to physical exploitation of some resources. These areas have reduced resilience to climate variability, reduced capacity to adapt and have areas with high value assets that are exposed to storm surges, and sea level rise. Suva Peninsula is the largest and most populated urban area on Viti Levu and is subject to rising water tables in low-lying areas, declining efficiency of in-ground septic systems and overtopping of the shore protection units resulting in serious flooding of Suva Point.

3. Extending Adaptive Community Based Natural Resource Management

43. The importance of near shore fisheries is reflected in the Government commitment to have 30% of its near shore coastal and marine areas under effective management by 2015. The basis for this management is built on traditional ownership systems (qoliqoli) and community based natural resource management. The Fiji Local Marine Management Areas (FLMMA) program has grown organically and currently involves 249 LMMAs involving 387 villages and 10,745 km^2 of coastal reefs and habitats. This represents over half the total number of LMMAs and communities represented in the international network and is indicative of the capacity within the supporting institutions. Communities have embraced the LMMA concept as a primary mechanism for asserting traditional rights whilst also deriving community based coastal marine conservation benefits.

44. Recently, in response to strong demand for improved coastal fisheries management the Fisheries Department has adopted the LMMA approach and agreed to house FLMMA under the overall management of the FLMMA Advisory Board. This institutionalization of FLMMA within Fisheries has provided the latter with a broad community and institutional stakeholder foundation to support this work. At the same time it has provided FLMMA with the support needed to sustain its rapid growth.

45. CBNRM based on traditional rights is necessary but on its own is not a sufficient set of conditions to ensure the management outcomes required for sustainable development and resilient ecosystems. Having established a wide network of LMMA's, FLMMA has played an important role on building the capacity and a cross sector basis for moving towards sustainable development. Many of the communities and supporting service providers involved in FLMMA recognize the threats arising from land based threats and that they remain mostly outside of the realm of CBNRM used within the LMMA program. Nutrient, pollution and sediment issues are increasingly impacting on coastal resources and a more comprehensive management approach is needed.

46. An Integrated Coastal Management (ICM) project was initiated by the Institute of Applied Science at the University of the South Pacific in association with the Coral Resource Centre, University of Rhode Island. The Coral Coast area in Nadroga Province was used for piloting approaches and study sites with coordinated inputs from the various Government ministries and departments, NGOs, local authorities and the local community. The ICM project was the precursor to the recognition of ICM within the legal framework in 2005.

47. The 2005 Environment Act incorporated the need for cross sector integrated natural resource and environmental management to address the changing nature of threats arising from increased population, increased wealth and economic development. The Act provides for integrated approaches by requiring all major sector agencies to establish environmental units and for the Department of Environment to facilitate the mainstreaming of non-regulatory environmental management into these agencies. To assist the Department of Environment the Act (DoE) formed a National Environment Council (NEC) through which the Act could be strategically implemented and applied.

48. For the complexity of coastal zone management the Environment Act mandates the NEC and DoE to develop an ICM management Plan for Fiji. The implementation of the ICM management plan will be achieved under the leadership of a national multi-sector ICM committee that includes a wide range of Sector agencies, and NGO and academic institution members.

49. The RETA program will assist the ICM committee by developing and testing best management practices for managing land based threats to coastal ecosystems within a multi-sector management framework under its leadership.

4. Building Human Resource Capability

50. Domestic capacity for supporting CBNRM, FLMMA, Marine Protected Areas (MPAs) and wider natural resource management exists and there are well networked professionals supporting the range of programs in Fiji including working in the coastal and marine environments. The RETA program will seek to work through these networks and build additional skills and experiences locally to continue to implement ICM effectively.

51. All RETA implementation contracts will seek to maximize the use of local capacity and the opportunity for local capacity both within and outside of the Government sector to participate and build experience and skills in the definition and testing of best management practices for the introduction and extension of ICM and its integration with CBNRM, FLMMA and wider conservation and economic development programs.

52. A critical layer to be built from within the program is Provincial Administration capability. Provincial Administration will be an integral partner for the implementation of the demonstration area program and linking these to their sustainable development framework. Representatives from political and agency level will be included in the planning processes through the implementation program or

through participation in stakeholder forums. The consolidated Tikina coastal development plans will represent the first Provincial level planning process in Fiji.

53. National capability with respect to ICM and the Environment Act 2005 will be mentored through partnering the Project Legal Officer DoE with the Fiji Environmental Law Association (ELA) to develop (i) detailed understanding of current village rules, bylaws, provincial ordinances, and national regulations and laws, (ii) an understanding of the proposed ICM approaches and what these require in the legal institutional framework to be effectively implemented with a degree of compliance, (iii) a road map of priority reforms, and (iv) initial drafts of the agreed priorities. At Project completion there shall be increased capacity both in DoE and the ELA to support continued development of the program.

III. PROPOSED TECHNICAL ASSISTANCE

A. Impact and Outcomes

54. The Program seeks to extend the effectiveness of coastal and marine resource management in Fiji by building coordination and response systems for addressing external threats especially land-based and future climate change threats. The long-term impact of the Program is expected to be the adoption and increased application of ICM throughout the 1,129km of Fiji coastlines with coastal ecosystems maintaining their contribution to Food Security.

55. On completion of the Program there will be agreement on best management practice for managing land based threats and climate change within an ICM planning process that is being progressively implemented. The priority for threat management responses will be environmentally sustainable economic growth and livelihoods that increase the cash incomes of participating communities.

56. Further there will be improved capacity and understanding of ICM concepts, best practices and delivery mechanisms within both Government agencies and the NGO sector including in the Fiji Environmental Law Association. This will be reflected in Provincial Administration road map for building a supportive institutional framework for ICM that enables the integration of CBNRM / FLMMA programs within an ICM framework.

B. Detailed Description Output One: Building Organizational Capability and Management Competency

57. The project will support the strengthening of the National ICM committee by supporting role as policy advisory group for ICM. The project will build knowledge of ICM within both the Department of Environment and the staff and management of sector agencies as part of the mainstreaming program of Department of Environment.

58. The Project will provide training in ICM concepts and principles to the Department of Environment to enable them to more fully participate in the National ICM committee and to develop and implement ICM throughout Fiji. This support includes the provision of a National ICM coordinator position to support the ICM committee and DoE mandates. The coordinator will take the lead in the production of ICM resource materials for best management practices that will then be integrated in the mainstreaming program operated by DoE.

59. ICM training will also be provided to the staff of the Environment Units in each of the major sector agencies created under the Environment Act 2005 as a means of building awareness and mainstreaming ICM into sector planning and programs.

60. Capacity building will also be provided to the Provincial Administration in Ra Province through a workshop based planning session that seeks to integrate the planning systems from community, tikina, and province into a sustainable economic development plan. Within this plan the ICM work supported by the RETA program will be one of the Key Performance Areas for the Province.

C. Detailed Description Output Two: Defining Best Management Practices through Experiential Learning

1. Output

a. Managing Land Based Threats to Coastal Ecosystems

61. On completion in 2015 an ICM planning and implementation model for the North Coast of Ra Province will be designed, implemented and ratified by the National Integrated Coastal Management Committee of the National Environment Council. This model will become the basis for defining and

implementing ICM progressively throughout Fiji. The ICM program shall incorporate best management practices as they emerge from various natural resource management programs in Fiji and from adaptive management programs. Specific outputs include:

- An comprehensive Provincial level plan for management of land based threats to coastal ecosystems for Northern Ra Province
- ICM based development plans for 4 tikina and an estimated 35 communities with a total of 5,000 households an estimated population of 29,000
- Priority threat analysis completed with management response agreed and demonstration programs implemented
- Development-based management responses demonstrated that are environmentally sustainable
- Lessons learned and best management practices identified used to define a national ICM framework for land-based threat management

b. Climate Change Adaptation Preparation

62. On completion a climate change adaptation process will be tested and applied with initial adaptation strategies for communities within the northern Ra Province demonstration area. Specific outputs will include:

- Increased capacity to self organize and improved resilience of communities in demonstration communities
- Assessment of vulnerability hotspots identified and used to target climate change interventions
- Adaptation scenarios prepared in a participatory manner and into ICM plans at community and tikina development plans.
- Lessons learned and best management practices identified used to define a climate change framework for integration with the national ICM framework.
- A national level learning forum with greater regional awareness of climate change adaptation responses in near shore and coastal areas

2. Methods

a. ICM Demonstration Area

63. Demonstration Site. The selection of the Rakiraki – Tavua coast of Ra Province in northern Viti Levu involves 4 tikina being: (i) Nakorotubu, (ii) Rakiraki, (iii) Saivou, and (iv) Nalawa. The total Provincial 2007 population was 29,464. The coast comprises of salt flats, patch and fringing reefs, and mangroves while the predominant land use is production of sugar. This supplies a local mill that has been identified in the sugar industry rationalization plan for possible closure.

64. The area includes the water catchments of the Penang and the Nakuvadra rivers and runs to the ridge of the Nakauvadra mountain range. An inland ridge runs west to east parallel with the coast and its forest cover is considered an important component of terrestrial biodiversity of Fiji, is part of the Yaqara watershed reforestation program being financed by Fiji Water Ltd and implemented by Conservation International and the National Trust of Fiji. The reforestation program is part of a wider Sovi Basin forest conservation program that seeks to use payment for ecological services linked to hydrological protection and carbon offset funding for changing land use to protect the major underground aquifer in Viti Levu and, as such, represents a very significant example of payment for ecological services in the wider Pacific. Further to the financing of environmental services the wider program is capitalizing a USD 5 million trust fund for the purpose of paying the lease and forgone

forest royalty payments to native land holders, providing for a community development fund and meeting the on-going Forest Reserve management costs.

65. There are significant biodiversity reasons for selecting the site with the coastal area being linked to the marine biodiversity hotspot - Vatu i Ra and is considered to play an essential connectivity role that links Viti Levu and Vanua Levu. As a site for developing best practice for the wider ICM planning and development framework there are significant examples of land use issues that typify Viti Levu resource management. These include nutrient movement from sugar production, agrochemical pollution from both sugar production and processing, land use change from increasing populations, possible sediment movement, water pollution from animal husbandry, and water pollution from human settlements. At the same time the possible closure of the sugar mill creates significant opportunity to influence future land use choices through new technologies, market linkages, and access to innovative funding options such as carbon offset financing.

66. As an ICM learning site the Ra coast has significant additional benefits with the presence of Fiji Local Marine Management Areas (FLMMA) already operating in one of the two qoliqoli's in Ra Province. Currently FLMMA (See Appendix C for a description) is supporting communities to the east of the proposed demonstration site and has started dialogue with communities in the northern qoliqoli. Further linkages exist to a new FLMMA site based on Viti Levu Bay where the University of South Pacific will undertake ICM planning financially supported by the European Union CRISP program. The program will add the integration of water and land management planning as a learning program for informing the development of the national ICM framework. To the west in Bua Province, the Wildlife Conservation Society (WCS) is seeking to initiate a sedimentation and erosion study and to assess the impact and movement of sediment into and throughout the coastal zone.

67. The Department of Environment seeks to bring the learning of all these initiatives into a common ICM learning framework that will inform the national ICM committee of the National Environment Council. The learning framework will be used to develop the necessary regulatory, legislative and institutional reforms – see Output 3.

68. Approach and Method for designing, implementing and monitoring the demonstration area is based on the extensive range of best practice already developed in Fiji by a range of institutions. These practices will be combined and applied in the context of managing land based threats to coastal and marine resources for ICM. Ongoing and recent past programs are available for building social engagement, establishing social, economic and biophysical baselines.

69. Stakeholder forum – there is currently a stakeholder forum established for the CI/Fiji Water Carbon Offset reforestation program that will form the basis of the ICM demonstration area stakeholder forum. This will include community representatives from each tikina, local leaders, private sector operators from the tourism sector, agriculture processing sectors, Provincial level and National level agency staff. The stakeholder forum shall be chaired jointly by Provincial Government representatives and the IA.

70. The demonstration program would be started with a 3 day strategic planning forum where the concepts of ICM, CBNRM, ridge to reef and sustainable economic development are discussed to develop a common understanding. These will be used to build a vision of what they mean to local stakeholders and how local stakeholders wish to use these approaches to improve their wellbeing. The forum will also invite stakeholders from the adjacent programs including FLMMA, USP/CRISP and the CI-NT of Fiji to share experience at the local level. The forum would conclude with a broadly based work plan for the Program. The work plan will be elaborated by the IA/EA.

71. Quality Control The work plan will be reviewed by the quality and strategy group (see Output 3) and comments provided to the IA. The comments and the IA responses, and the revised work plan will be presented by the IA and representatives from the stakeholder forum to the national ICM Committee and the NEC for ratification.

72. Data Collection The existing data and information for the area will be collated, sorted and stored in a digital and hard copy library. Additional data needs will be generated through sub contracting relevant experts. Once existing data collation is understood additional needs will be confirmed. These are likely to include:

- A rapid marine and coastal environment assessment that identifies habitats and quality, diversity, biomass, and taxa. Potential suppliers of such services are WCS who should be contracted through FLMMA as part of broadening FLMMA capacity. WCS would use similar methods used for their programs in Kubulau and Macuata. The program will use local expertise and involve intensive transect monitoring over a 2 to 3 week period.
- Water quality testing to measure and monitor nutrients – primarily N, P, and coliform levels from an estimated 20 sites for 3 time per year in PY 1 and 2. The contract would be awarded to Institute of Applied Science (university South Pacific) to utilize their laboratory capability
- Assessment of the Penang sugar mill waste-stream – publicly available data exists for other mills using similar technology which can be used to predict the scale and likely content of the waste stream. Initial samples will be taken to confirm the composition of wastes and company data will be sought through the NEC
- Village level sanitation and environmental health assessments will be completed by Fiji School of Medicine field teams
- Socio-economic baseline survey of coastal communities using the PLA approach applied to the Carbon Offset program used by the CI-NT of Fiji

73. All data will be in stored in GIS layers and linked to the Ministry of Lands base map and the other layers being created under the Program of work for Protected Areas (PoWPa) program by CI. It is envisaged that database development support amounting to 0.5 full time equivalent for 3 years and that the Program should produce a total of 50 to 100 map outputs.

74. Planning Process The planning process will operate at three levels; demonstration area, tikina and village. The primary task will be the tikina development plan process using the PLA program developed by USP based on a 2 – 3 day workshop per tikina with follow up meetings if and when required. The tikina plan will enable the coordination of management systems between villages that is often needed where the impacts of one group or sector are felt by another. Once completed the plan is taken back to community level for socialization in individual villages – there are an estimated 8 to 9 villages per tikina. The community socialization process uses participation to identify each village's priorities. Each planning process will complete a threat, cause and response process using the Miradi threat based management planning and decision support tool. Miradi is increasingly used in Fiji and is currently considered best practice. Once all plans are completed a demonstration area plan will be compiled from the tikina plans in a workshop for stakeholders. The workshop participants will review the need for inter tikina adjustment in response to interactions across administration borders, and will undertake a prioritization program for identifying site level technology demonstrations that specifically address land based threats to the coastal and marine environment.

75. A community awareness and education program will be integrated into the planning process. The design and implementation of this program will be contracted to Live and Learn whose existing capacity in awareness and education provides additional skills.

76. Site Level Demonstrations. The RETA will provide an investment that can be applied to the site level demonstrations based on the outcomes of the tikina planning process and the priorities established by the stakeholder forum. Using the planning priorities from the stakeholder forum, action plans will be developed by the Program to support and implement the site level demonstrations. Action plans will be a joint program and recipient village/community exercise. The Program will provide the cost of materials and any expertise (if necessary) while the labor will be provided by the community as their in-kind contribution. Each demonstration will be required to present an action plan comprising:

- Stated problem and its underlying causes
- Expected output
- Proposed program to deliver output based on best management practice
- Key indicators of success and base line data to enable the assessment of impacts

- Total cost
- Active participation in the learning process through exposure within the community about the program and what it has or is achieving, and cross visits between communities to expose others with similar problems as per their planning process.

77. The first approach to all problems will be to find win-win solutions based around economic development management responses. Example responses include the conversion of land currently growing sugar into fruit and vegetable crops, building sediment traps that can become crop gardens, composting organic solid waste for the production of quality vegetables or fruit to the tourism and domestic markets etc. For the demonstration area it is proposed that site demonstrations be developed for each of the major threats. For example there may be a sanitation threat and a threat solution based on septic tanks. In this case two or three villages may be selected to demonstrate the benefits and impacts of using septic tanks and flush toilets. These would be located throughout priority management zones with the expectation that neighboring communities may seek to start installing septic tanks using their own or other resources.

78. Given the focus of CTI-Pacific is food security a guideline of 20% to 25% of the investment funds would target social well being outcomes such as sanitation and 80% should target economic livelihood and win–win solutions where employment and incomes increase and the pressure on natural resource assets decreases. This could involve substitution of new crops for sugar cane, afforestation, agroforestry, management of piggeries and their potential commercialization, building small enterprises linked to tourism, fresh produce and agriculture commodity value chains.

79. All demonstration site materials will be procured by the IA once the action plan is approved by the IA and Demonstration Area stakeholder representatives. All labor will be provided by the community as is currently practiced in most CBNRM programs. All site demonstration programs will need to be completed in a two year window and the latest disbursement for implementation would be last quarter project year 3.

80. Each year the Project Implementation Officer will convene a stakeholder planning forum that evaluates all the work completed to date and outlines the work plan for the following year. This forum will be linked to the national quality and strategic reviews.

b. Climate Change Adaptation

81. The climate change adaptation program will be implemented at the regional level. Within Fiji the climate change adaptation program will be planned and integrated within the demonstration area work plan and at one other contrasting site, most likely the small offshore island of Gau.

82. The climate change contractor will work with the RA Provincial demonstration program to complete an adaptation plan within the wider ICM program of work. In addition adaptation planning will be undertaken on Gau Island through the USP.

83. Gau Island, in Lomaiviti Province is the 5th largest in Fiji at 136.1km2 It has a coastline of 66 km^2 and an extensive encircling barrier reef. Gau's 3,000 inhabitants engage in semi subsistence farming and fishing as the mainstay of their lifestyle and the 16 villages and 10 settlements are all located on the coast making the island's future particularly vulnerable to the impacts of climate change. Since 2005 the leadership and people of Gau have been working closely with the University of South Pacific and associated NGO and government programs to implement community based resource management plans and decisions. These are aimed at safeguarding their natural systems and providing for the sustainable use of natural resources by blending traditional management systems with more modern integrated approaches to resource management.

84. Considerable progress has been made with a number of participatory workshops and planning initiatives leading to community based action on a wide range of resource management issues. These are based on a strong foundation of community awareness and participation and endorsed by the traditional leadership of Gau Island. This high level of engagement by the people of Gau and their commitment to sustainable resource management, together with the small size and off shore location if the island, makes it an ideal candidate for piloting the application of Climate Change Vulnerability and Adaptation assessment methodology. The results of the pilot will be applicable to

other similar island populations throughout Fiji and the Pacific and importantly, will inform the resource management decisions being taken by the Gau community However, it should be noted that while Gau Island has all the attributes for a successful pilot site, further consultation with Gau Island leadership and communities will be required before final decision is made. Only once this has taken place and the National ICM committee has approved work plans for both the Ra and Gau Island sites will further implementation be possible.

85. Vulnerability analyses will be conducted using the conceptual framework of the IPCC. The IPCC partitions vulnerability to climate change into three elements: the frequency and magnitude of exposure to external shocks (e.g., climate changes), the degree of sensitivity to those impacts, and the adaptive capacity of the community or society experiencing those impacts. The vulnerability of a fishery system (including the broader coastal and social dimensions) is therefore composed of exposure to external threats, the effect of those threats and the ability of people to respond (sensitivity and adaptive capacity) (Smit and Wandel 2006; Füssel 2007).

86. The IPCC framework will be combined with an indicator based approach that includes not just climate change but other sources of vulnerability (see Allison et al. 2009 for a rare fisheries example) and a Sustainable Livelihoods Approach (Carney 1998) to ground the analyses in the lives of rural people. Analyses at regional, national and sub-national scales will be linked based on the work of Zurek and Herichs (2007) for the Millennium Ecosystem Assessment (MA). The ICM demonstration area manager and the climate change program contractor will integrate the vulnerability analysis with the threat analysis undertaken in the ICM planning process.

87. Scenarios and Adaptive Responses. Fisheries are often over fished due to a range of causes. Fisheries will face increased disruption and vulnerability as a result of climate change. Adaptation to climate change in small scale fisheries will require addressing both existing issues as well as new issues arising from climate change. Although aquaculture and biotechnical interventions such as inshore Fishing Aggregation Devices (FADs) will be part of the answer, securing the benefits derived from inshore fisheries has to be the highest priority. There can be no solution to the looming biodiversity conservation, food security, and economic development crisis without a transformation in the management and governance of inshore fisheries as well as the management of land based threats to coastal ecosystems.

88. Effective responses to climate change will require actions at the three primary scales of governance: national, provincial and community. Further, it will require the integration of policy and action among sectors, such as health, environment and education to better mirror the factors that influence the lives of people. Climate change adaptation and marine resource management will succeed or fail at the community or village level and as such the Program will introduce vulnerability assessment outcomes and future scenarios into the tikina development planning process – see above). Through these already proven planning systems the important interactions and feedback patterns between coastal and land-based livelihood activities, for example upstream farming practices, logging, etc., that have profound effects on the coastal zone. Climate change adaptation measures must be integrated into broader rural development initiatives.

89. Assessments of the potential impact of climate change on fisheries have tended to emphasize predicted changes in resource production and distribution and make only broad inferences about consequent socio-economic vulnerabilities. Assessments across the many domains of a fishery system and the multiple pathways for impacts through and on fishery systems is critical for adaptation policy and action. Assessing how vulnerability to climate change might itself change requires a dynamic assessment framework that accounts for changes in all elements of vulnerability over time (Füssel, 2007). Scenarios are useful tools to estimate future socio-economic conditions, accounting for alternative futures within the data-sparse context of Pacific Islands states. Scenarios will be developed using techniques developed by Brown et al. (2001), Chuenpagdee et al. (2001) and Tompkins et al. (2007).

90. The climate change contractor will include the capacity to generate local climate change scenarios that can be used in both the vulnerability and adaptation planning processes.

91. In the absence of the foregoing analysis it is difficult to provide specific examples of adaptations as these will be specific to communities, countries and climate change threats. Broadly

adaptations will occur through improved policies and development pathways at national levels, improved capacity to self-organize for collective action at community level, and diversified livelihood platforms at the household level that reduce vulnerability through greater livelihood mobility. Although infrastructure interventions are often identified priorities, local community level responses with support from local and national government will play an important and cost effective role in successful outcomes.

D. Detailed Description Output Three: Creating Enabling Conditions

1. Output

a. Learning Framework

92. The project will build a multi-level learning network for ICM at the demonstration area, national and regional level to strengthen understanding of ICM concepts, build implementation capacity and inform the National ICM committee of best management practices for ICM and best implementation approaches in Fiji.

b. Legal and Regulatory Reform Capacity

93. The Project will develop national legal capacity in the natural resource and environmental management by developing and agreeing on a road map for creating the legal and regulatory framework for Integrated Coastal Management through the partnering of the Fiji Environmental Law Association and the Project Legal Officer of DoE.

c. Information Systems

94. The Project shall develop a digitized data base that will be transferred into the Ministry of Lands database along with the creation of a access portal to the data for the Department of Environment.

2. Methods

a. Learning Framework

95. At the national level the Program will support the formation of a quality and strategy review team. The IA/EA and Project Coordinator shall form the team which will comprise three individuals being (i) a prominent private sector business person, (ii) a person representing community interests, (iii) a technical expert. The identification of the team shall be through the Project Coordinator who will compile a long list of no less than 8 candidates that will be provided to the EA. The EA will confirm acceptability of proposed candidates in terms of institutional and political acceptability. The IA will select from the acceptable candidates to fill the business and community representatives.

96. The technical expert may change each year according to the technical issues that are envisaged. The role may be a national role but equally should the need arise the role could be filled from the regional learning framework that will be managed by the Pacific Round Table and IUCN.

97. The quality and strategy review team will be convened by the EA with the Director of the natural resource unit and will include the Director, National Trust of Fiji and the Project Coordinator.

98. The role of the team is to review (i) annual work plans prepared by the IA, (ii) review the demonstration area work plan and approach, and (iii) provide independent review and audit of the progress reporting and evaluation in October each year. The team will review work plans before they are approved and will provide the EA and the National ICM Committee written comments on which approvals can be made.

99. The annual review and evaluation program is scheduled to fit into the national planning and budgeting time line. A contractual requirement of the EA will be to convene a participatory evaluation program at the demonstration site level where all subcontractors and the IA and stakeholder will present their work for the year, achievements, successes and failures. The evaluation will also reflect

on processes and procedures and ascertain were improvements and efficiencies can be achieved. The evaluation process will provide the basis for the synthesis of lessons learned and best management practice that will be compiled into an annual report and electronically distributed throughout the wider learning network.

100. One role of the quality and strategy team will be to provide a mechanism for the program to access high level executive decisions for issues relating to coordination, sector roadblocks etc. This will be through informing the national ICM committee and also through direct personal linkages to senior politicians. It is hoped that the quality and strategy review team will also elevate the role and responsibilities of the National ICM committee to a standing where it is broadly accepted by government agencies and becomes functional in the proactive leadership group for ICM.

101. For two of the four program years the regional learning framework will add a person from one of the other participating countries into the evaluation team. Whenever possible the chair of the Round Table will participate.

102. Following the national level evaluation the IA and the EA from each country will participate in the annual regional evaluation that will involve all countries and will be convened and hosted by the Pacific Round Table each year. At the regional evaluation meeting each country EA and IA will present the findings of the national evaluation and identify key lessons learned. A scoring system for rating achievement and implementation performance will be tested as a means of creating increased incentives for quality strategic programs. The regional session will address key themes such as legal and regulatory approaches, best management practices, policy frameworks, information systems, planning tools and legal and regulatory changes. The regional round table will require a minimum of two project participants, one stakeholder and one non-government institution.

b. Legal and Regulatory Reform

103. The need for regulatory and legal reforms is widely accepted in Fiji with some of the key sector legislation dated and inadequate for the emerging need for most sectors to address resource management and sustainable development programs based on CBNRM. For the Environment Act there remains a paucity of regulations to enable the Act functions to be properly implemented.

104. The CTI-Pacific program will adopt a strategic approach of building best management practice that can be commonly understood and agreed. Once agreed the sector also needs to ascertain what is necessary for wider implementation including the regulatory and legal requirements for implementation and compliance at village, provincial ordinances, and national levels.

105. The program will provide financial support to the Fiji Environmental Law Association (ELA) to build specialized skills in review, research and assessment of current institutional frameworks and to work with sector stakeholders, the IA/EA and the national ICM committee. The ELA role will be to identify requirements for effective ICM implementation and then prepare initial drafts of reforms for wider consultation. The Program shall provide resources for the ELA to involve the DoE Project Law Officer in their program of work.

106. Specifically the ELA contract will seek the following outputs related to ICM: (i) detailed understanding of current village rules, bylaws, provincial ordinances, and national regulations and laws, (ii) an understanding of the proposed ICM approaches and what these require in the legal institutional framework to be effectively implemented with a degree of compliance, (iii) a road map of priority reforms, and (iv) initial drafts of the agreed priorities. These outputs shall be achieved through participation in the demonstration program and the programs in adjacent sites such as the CRISP/USP program in Viti Levu Bay.

107. Financial support will allow the ELA to participate in key demonstration area activities, to undertake inventories and review existing by-laws, village rules, provincial ordinances and national laws and regulations that may influence ICM. The participation of the ELA through the life of the Project will facilitate greater access and communication between project stakeholders and should enable a road map of future reforms to be developed.

108. At Project completion there shall be increased capacity both in DoE and the ELA to support continued development of legal and regulatory framework for natural resource management.

109. To ensure outputs are relevant the Fiji ELA will participate in the annual quality and strategy program during October where they will be required to report their program of work and their findings. The initial road map will be developed by October in Project year 3 and the initial drafting of priority reforms will be started in year 3 and 4.

c. Information Systems

110. The project will support the development of an ICM database built around the demonstration area and for data sets being created by the other ICM initiatives of USP/CRISP, CI and NT-F-Fiji. The support will be for digitizing data sets and production of thematic maps. The support is provided on the basis that all the data involved will be transferred to the Ministry of Lands GIS data base.

111. Once transferred to the Ministry of Lands, the Land Information Systems Unit will develop and provide a portal for the Department of Environment based on a viewer system and the ability to produce simple thematic maps. The transfer to the Ministry of Lands will be undertaken in Project Year 3 to ensure that there is time for the Portal to be put in place. The project will support the license cost for the portal for Year 3 and 4 only.

E. Detailed Description Output Four: Project Management and Support Services

112. The lack of human resource capacity within the Department of Environment nationally and the lack of decentralized environment sector staff in the Project Area is a significant constraint for successful program implementation. The cross sector nature of the proposed ICM demonstration program requires actors from over a wide range of sectors and from across all levels of government and the community. To be an effective demonstration a learning framework will be essential to inform stakeholders to enable adaptive management to emerge based on best management practice.

113. Program management will be provided through the National Trust of Fiji - the Implementing Agency. The NT-F will provide support to the DoE through a contracted Project Coordinator that will provide administrative support for reporting, ensuring a strong linkage to the National ICM committee through at least quarterly meetings, provide a lead role in the annual program evaluation and planning process, and ensure that work plans are agreed and reported to the Executing Agency and ADB.

114. The NT-F will be supported with the inclusion of a Project Implementation Officer who will be responsible for the implementation of the program. Overall program implementation by the NT-F will require the use of local subcontractors for activities such as ICM demonstration area planning, water resource quality assessments, sanitation and environmental health assessments, marine assessments , socio-economic survey of coastal communities, and an overall ICM demonstration area coordination and implementation contract. The NT-F will be responsible for preparing an annual work plan, contracting of service provision, coordination of contractors and a demonstration area learning program.

115. A further function of the NT-F will be to coordinate with regionally contracted services in the RETA including the regional learning program, the climate change adaptation program, and proposed capacity building programs that are agreed as part of the RETA wide activities.

F. Costs and Financing

1. Summary Cost Estimate

116. The total RETA program is estimated to cost USD 1.38 million including price contingencies set at 5% per annum for the life of the Program and for the additional year between data collection and expected Program start up in October 2010. In total price contingencies account for 10% of the total cost.

Table 1: Total Cost Estimate by Component

(USD)

Item			Amount
A.	**Base Cost**		
	1	Component 1: Organizational Capacity	$181,459
	2	Component 2: Best Management Practices	$748,869
	3	Component 3: Enabling Conditions	$140,980
	4	Component 4: Project Management	$168,209
		Subtotal	**$1,239,516**
B.	**Contingencies**		**$137,124**
Total			**$1,376,640**

Notes: *I Fiji Dollar = 0.53 USD.*

117. By component, 13% of the total base cost expenditure is invested into organizational capacity building, which is a reflection of the limited staff and role of DoE in the project implementation. Component Two aims to test and build best management practices while building experiential skills in stakeholders from the national to local level accounts for 56% of the total costs. Enabling conditions through support for legal reforms, learning framework, and information systems including the evaluation and quality development program with the Round Table accounts for 9% whilst Project Management including implementation responsibility accounts for 12%.

2. Summary Costs by Expenditure Category

118. Table 2 provides the detailed costs by expenditure category. These are only indicative due to the site based demonstrations defined by the ICM planning process. While Project Management costs account for 10% of all costs.

Table 2: Estimated costs by expenditure category

(USD)

Item			Total Cost	% of Total Base Cost
A.	**Investment Costs**			
	1	Civil works	$191,839	15%
	2	Planting materials	$139,390	11%
	3	Field and Operations	$21,200	2%
	4	Enteprrise development	$58,300	5%
	5	Studies	$142,040	11%
	6	Planning processes	$58,300	5%
	7	Capacity building	$294,349	24%
	8	Training	$58,300	5%
	9	TA - local	$21,200	2%
	10	TA - int'l	$0	0%
	11	Project management	$159,729	13%
	12	Office equipment	$27,560	2%
	13	Local transport	$67,310	5%
		Subtotal (A)	**$1,239,516**	**73%**
B.	**Contingencies**			
	1	Physical	$0	0%
	2	Price	$137,124	11%
		Subtotal (B)	**$137,124**	**11%**
Total Project Cost (A+B)			**$1,376,640**	

3. Proposed Financing

119. The proposed aggregate financing plan is presented in Table 3 with GEF financing 68% and ADB and the Government sharing the remaining 32%. The GEF climate change funding to Fiji totals USD 360,482 of which USD 239,858 will be incorporated into the proposed regional climate change contractor for implementing the regional comparative program in the Fiji CTI–Pacific Demonstration Area. The remainder will be allocated through the proposed NT-F-Fiji contract for integration of the climate change program back into the ICM program and into the National Learning framework.

120. ADB will finance the field studies, the support for the Fiji Environmental Law Association and the Pacific Round Table for the programs regional learning framework based on evaluation and best management practice identification each year.

Table 3: Financing Plan

(USD)

Source	Total	%
Asian Development Bank	$202,292	15%
GEF - International Waters	$582,683	42%
GEF - Climate Change	$360,482	26%
GEF - Biodiversity	$0	0%
Government	$231,184	17%
Total	**$1,376,640**	**100%**

121. The Government will finance the mainstreaming of ICM capability through training programs, the support to the National ICM Committee, and the Program Coordinator and their costs to be located within DoE but contracted to the NT-F-Fiji.

4. Proposed Contract Packages

122. A total of four contract packages are proposed. Package 1 is the GEF funding to be implemented by the IA in country, package two includes both the ADB and Govt counterpart funding and will be held by the NT Fiji . Package 3 is for approximately USD 36,000 and represents the Fiji

share of the proposed round table contract with IUCN for the annual regional evaluation and synthesis of best management practices. Package 4 totaling USD 239,858 is the regional climate change program and is the proportion of this program that will be spent within Fiji. Of the total country allocation from climate change of USD 363,640 – USD 123,792 will be allocated to the NT-F contract for the integration and coordination of the program with the demonstration area program.

Table 4: Indicative Contract Packages

(USD)

Item			Total Cost
	Issuer		
1	ADB	National Trust of Fiji - GEF	$727,236
2	ADB	National Trust of Fiji - ADB	$58,433
3	ADB	IUCN (1)	$35,979
4	ADB	Climate change contractor	$239,858
		Government Contribution	$231,184
		Total by ADB contract (includes contingencies)	**$1,061,506**
		Total by ADB contract + government	**$1,292,690**

Note (1) Includes $35,979 for Roundtable and $83,950 for environmental law

G. Implementation Arrangements

123. Implementation arrangements seek to continue to build national capacity. As such no international expertise is required other than existing expertise in Fiji. Where INGO expertise is contracted implementation of work programs must incorporate nationals for building experience and capacity.

124. **Program Executing Agency.** The Program will be executed by the Department of Environment, the Ministry of Local Government, Urban Development, Housing and Environment. The main functions of the Department are to promote the sustainable use and development of Fiji's natural resources and ecological processes through the efficient implementation of policies, legislation and programs and to fulfill Fiji's obligations under regional and international environment-related conventions and treaties. The Department of Environment is responsible for the implementation of the Environmental Management Act, which contains revised requirements for environmental impact assessment (EIA), new pollution controls, and for the coordination, formulation, review and implementation of the National Environment Strategy.

125. Currently the DOE comprises seven units (Administration and Finance Unit; Waste & Environment Impact Assessment (EIA) Units; Natural Resource Management Unit; Ozone Depleting Substance Unit (ODS); National Capacity Self Assessment Unit (NCSA); Legal Unit – Environment Management Act (EMA); Environment Awareness Unit), and has a current staffing structure of 17 established positions and 2 unestablished positions.

126. The Principle Environment Officer of the Natural Resource Management Unit and the GEF focal point will be the major counterparts for the Project and responsible for the implementation and administration of the program. As part of its mandate, DoE will provide the linkage to the National ICM committee and the National Environment Council whose function it is to define, develop and oversee the implementation of the preparation of an ICM plan for Fiji.

127. **Program Implementing Agency.** The Program will be implemented by the National Trust of Fiji (NT-F). The National Trust of Fiji's mission is to "consolidate, enhance and reinforce the role of the National Trust of Fiji in the conservation, protection, sustainable management and research of Fiji's natural and cultural heritage for the benefit and enjoyment of the peoples of Fiji, the Pacific Islands and the world".

128. The NT-F and its associated subcontractors will work closely with Provincial Government agency staff to ensure their participation where ever possible as a means of building awareness and capacity at the sub-national level. This should include providing the Provincial Government a prominent role in the Stakeholder Forum, including them in all training and planning processes across all levels.

129. The current functions of the National Trust are to: (i) promote the permanent preservation for the benefit of the nation of lands (including reefs), buildings, furniture, picture and chattels of every description having national, historic, architectural or natural interest or beauty; (ii) protect and augment the amenities of any such land or buildings and their surroundings and to preserve their natural aspect and features; (iii) protect plant and animal life; and (iv) provide for the access to and enjoyment by the public of such lands, buildings and chattels.

130. The NT Strategic Plan outlines eight strategic objectives: governance and development; community participation; capacity building; policy frameworks; financial sustainability; strengthened partnerships; sustainable management of heritage sites, and; awareness and education. Currently the NT-F is implementing the GEF funded POWPA program for DoE. The modality of implementation involves the NT-F subcontracting technical services within a coordinated planning framework.

131. The CTI-Pacific program will adopt a similar modality with the NT-F contracted under a single source Program Management contract. The single source contracting is justified as there is no international expertise required for implementation and the NT-F has a central role in working with local communities, government and the NGO sector. The NT-F also has strong linkages to key actors in the RETA Program including (i) FLMMA, (ii) Conservation International and the Fiji Water Program, (iii) IUCN.

132. The NT-F will employ a Project Coordinator to work with DoE and a Project Implementation officer to work direct with the NT-F and service providers. Implementation activities will be subcontracted to entities for the following services (potential service providers are provided in parenthesis):

- ICM Demonstration Area Management and Implementation Coordination (CI International)
- Socio-economic PLA surveys (FLMMA/USP)
- Tikina and Community Planning (FLMMA/USP)
- Coastal and marine assessments (FLMMA/WCS)
- Sanitation assessments (Fiji School of Medicine)
- Water quality assessments (USP –IAS)
- Site best management practice support (NT-F/CI)
- Data Capture and Map Production (NT-F)
- Development of ICM community/school awareness and education programs (Live and Learn)
- ICM awareness and training for Government Agencies (USP)

133. The NT-F will provide Project Management functions including:

- Engage with the Provincial Government through a MOU
- Establish the Demonstration Area Stakeholder Forum
- Annual work plan coordination and preparation
- Implementation oversight
- Procurement and contracting

- Financial Management and reporting
- Coordination with the regional Climate Change Program and training provider contractors
- Six Monthly Project Progress reports

134. Monitoring and evaluation has been designed into the program through the quality and strategy review process and the associated learning framework. NT-F will ensure that these processes are timely and reported to DoE and the National ICM Committee.

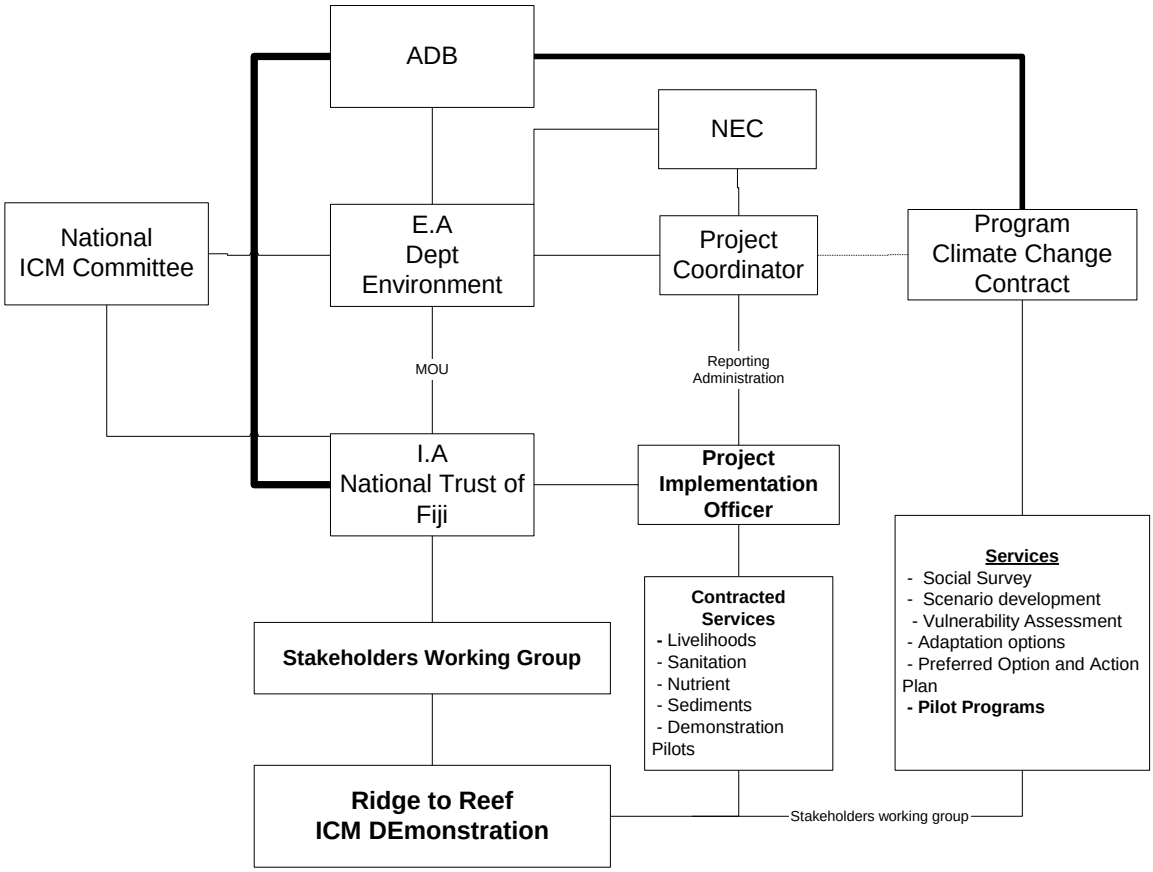
135. The NT-F will work through the Project Coordinator and the DoE to provide support to the National ICM committee and their involvement in the Program. The DoE will hold monthly coordination and briefing meetings with the NT-F, program staff and program subcontractors to ensure smooth implementation.

136. Climate change activities will be implemented through a regional contractor. The Regional Coordinator will prepare a program work plan and personnel schedule for the Fiji climate change components and will align this with the NT-F work plan before month 6. The work plan agreement will include a dates for activities and provide a means for both programs to be coordinated within the Demonstration Area Program. The defining program timeline will be defined by the overall planning framework for the Demonstration area under the control of the NT-F subcontractor.

137. The IUCN will be contracted for provision of round table support and for support to the ELA in Fiji – these will be two contract packages with differing expected outcomes. The procurement of ELA services through IUCN reflects the IUCN role of providing office space and an international mentor for the local lawyer to be contracted by ELA.

138. The proposed implementation arrangement for the demonstration area program is presented in Figure 1.

Figure1: Diagrammatic Representation of Implementation Arrangements



APPENDIX A: REGIONAL TECHNICAL ASSISTANCE DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
Impact Increased resilience in the capacity of coastal and marine ecosystems to contribute to food security	ICM being implemented on an increasingly higher proportion of the Fiji Coast line resulting in lower pollution, nutrient levels and sedimentation	Government records	**Assumptions** Govt. commitment and policy response strengthens as results show benefits to communities **Risks** Govt. resources unable to support policy implementation Public sector reform
Outcome Integrated coastal management defined and institutionalized	ICM planning process and best management practices defined and supported by regulatory framework	ICM committee minutes Policy documents Regulations and laws drafted and ratified	**Assumptions** NEC is activated ICM Committee formed and supported Govt. commitment policy strengthens as results show benefits to communities **Risks** Weakened policy/legislative formulation environment and commitment Public sector reform prioritizes short term growth
Output 1. Strengthened Management Competency for integrated coastal management mainstreamed	ICM committee formed, functioning and leading the development of ICM procedures and programs 2 ICM courses delivered to DoE before end of PY 2 2 ICM courses per year for PY 2, Py 3, delivered to sector environment units and provincial government	Committee minutes Project records Course evaluation and participation records	**Assumptions** Govt. commitment and policy response strengthens as results show benefits to communities Environment units are staffed and receptive to training **Risks** Govt. Resources unable to support policy implementation DoE unable to support the NEC
Output 2 Defining Best Management Practices through Experiential Learning 2a. Managing Land Based Threats to Coastal Ecosystems	Community agreement and commitments to local Tikina management plans Contracted field surveys relating to coastal assessments, water quality, sanitation, coastal community socio-economic status completed by mid PY2 Miradi threat Analysis completed for each tikina by Mid PY 2 Demonstration area planning process for land based threat management	Tikina Management plans and community confirmation records Contract documentation Project records Threat analysis reports Planning process documentation	**Assumptions** Communities will be receptive to ICM concept Timely commissioning and implementation of service contracts will be achieved. **Risks** Insufficient attention/poor messaging given to participatory process and forums Contracting/planning slippage due to capacity issues and competing agency priorities

2b. Climate Change Adaptation Preparation	for ICM in Ra Province completed by the end of PY 2 Community Education and Awareness contracted (PY2) and delivered by end of PY 3 Site based management demonstrations based on planning process identified and implemented by end of PY 3 Vulnerability hot spots identified for coastal ecosystems by the end of PY 2 Adaptation scenarios prepared with participatory programs in each community and assessed for likely effectiveness and costs National and regional forums to develop common strategies and comparative	Action plans and annual evaluation reports Consolidated vulnerability report for the Demonstration Area Scenario reports Community and tikina management plans incorporating adaptation program National and regional reports that synthesize adaptation experience	Contractor unable to maintain the time line
Output 3. Enabling conditions for managing land based threats to coastal ecosystems 3a. Legal and regulatory capacity 3b. Building ICM learning framework	ICM legal and regulatory reform roadmap prepared and agreed by end PY 2 Initial priorities drafted by the Fiji Environmental Law Association by mid PY 4 Quality and strategy team formed by month 7 Demonstration area stakeholder forum established and meeting by month 9 Annual evaluation program completed and feeding into planning program by mid October Participation of Director NRU (Dept of Env) in one evaluation in another CTI-Pacific Country Annual participation in	FELA records and contract documentation Report to ICM committee ICM Committee minutes Project records Project records Annual work plans Regional evaluation minutes	**Assumptions** Appropriate individuals can be identified and recruited in timely way to support legal process and the Quality and Strategy team **Risks** Insufficient priority accorded recruitment and implementation for both processes Learning process and framework not maintained or becomes fragmented by individual project

3c. Building ICM information data base and access	regional evaluation and planning forums ICM database developed and reported by end of PY 2 Maps of demonstration area Maps by the end of PY 2 Environment sector resource data portal into the Ministry of Lands GIS and database by end PY 3	ICM GIS database records and maps Portal contract with DoE	
Output 4. Project management support	Project management contract awarded by month 2 Project coordinator and implementation officers appointed by month 4 Annual work plans completed by mid October Annual reports and financial management reporting completed on time	Project office records Contract documents Work plans and program records	**Assumptions** Timely sign off by Government ADB contracting completed in a timely manner Strong priority given program implementation by EA/IA. **Risk** Project timetable slippage due to insufficient or weak capacity and priority accorded project
Activities with Milestones 1.1 ICM Committee formed with TOR, agreed membership and quarterly meeting by month 6 1.2 6 ICM training courses contracted and delivered to government Environment Unit 2.1 Demonstration stakeholder forum completed with agreed work plan by Month 9 2.2 6 studies subcontracted by Month 10 2.3 Miradi threat analysis for 4 tikinas completed by mid PY 2 2.4 Tikina development plans prepared with community support by end of PY2 2.5 ICM demonstration area action plan completed 2.6 Site demonstration plans completed and implemented by mid PY 4 2.7 Climate change vulnerability complete by Mid PY 2 2.8 Scenarios and adaptation strategies prepared for priority hotspots and integrated with Tikina and community management plans by mid PY3 2.9 National and regional adaptation strategies reviewed and assessed 3.1. Fiji ELA contracted to support ICM committee and demonstration area program 3.2 Regulatory and legal reform road map prepared and agreed by Mid PY 3 3.3 Initial drafting completed on priority reforms 3.4 ICM quality and strategy team formed 3.5 Annual evaluation and planning sessions completed by mid October 3.6 Participation in National and regional evaluation forums undertaken 3.7 Data base formed of existing and program generated data by end PY 2 3.8 Portal access for the environment sector by end of PY 3 4.1 Project management contract awarded by month 3 4.2 Project staff contracted by month 6 4.3 Annual work plans evaluated and new work plans finalized by late October each year 4.4 Project financial procurement, disbursement and reporting provided.			Inputs ADB USD 202,292 Government USD 231,184 GEF -Int Waters USD 582,683 -Clim Change USD 360,482 Total USD 1.38mill Inputs (USD) Civil Works 196,630 P Materials 139,390 Ent Devel 21,200 Surveys 142,040 Planning 58,300 Cap Building 272,089 Training 58,300 Local TA 21,200 Project Mngte 159,729 Equipment 27,560 Transport 67,310 Contingency 137,124 Total 1.38 million

APPENDIX B: CONSERVATION INTERNATIONAL AND FIJI WATER PROGRAM

139. Conservation International has a small but effective program in Fiji which has been working with partners for over ten years to establish the Sovi Basin Nature Reserve. The Project aims to protect over 20,000 ha's of Fiji's most important watersheds and sustain the habitats, unique biodiversity and climate benefits of the forest. The key to establishing the Reserve is the capitalization of a $US5 million Trust Fund which will endow the project and provide revenue for lease and forgone forest royalty payments to the land owners; fund a community development fund and cover the long term management costs of the Reserve. On capitalization, which is expected to be achieved in the near future, CT will formally hand over the responsibility for management to the Fiji National Trust.

140. Establishing the Sovi Basin Nature Reserve is the cornerstone for a larger more visionary goal to establish a 100,000 ha Viti Levu Conservation Corridor linking the upland watersheds of the Sovi Basin and Yaqara Valley in a network of protected areas. The network will sustain these important habitats, protect their unique biodiversity and provide new economic livelihood opportunities to the land owners of the region including the potential for carbon sequestration from reforested and protected lands.

141. As a first step towards this goal CI is working with financial support from Fiji Water and in partnership with appropriate government and NGO agencies in the upper Yaqara watershed. This work will underpin the establishment of a scientific and policy foundation for the reforestation and carbon offset components of the program. Current activities are focused on the identification of reforestation opportunities through participatory land use planning at the tikina and village levels. The CI Yaqara Valley project area is in Ra Province adjacent to the proposed ICM demonstration site with linkages between the projects through two common tikina districts. CI is willing to extend the geographical scope of its participatory and land use planning process to embrace the four coastal tikina's which form the Ra Province North Coast ICM demonstration area.

APPENDIX C: LOCALLY MANAGED MARINE AREA NETWORK (FLMMA)

142. The Fiji Locally Managed Marine Area Network (FLMMA) was established in 2002 and has the distinction of being the first independent country level offshoot to be formed out of the internationally acclaimed Locally Managed Marine Area (LMMA) Network. Its mission is to provide a forum to share experiences and information about locally-managed marine areas (LMMAs) and community-based adaptive management (CBAM), and to work collaboratively to promote and improve this approach. It links practitioners (communities, traditional leaders, individuals, organizations, and researchers) involved in various community-based marine conservation projects in the country with the aim of improving management efforts.

143. The mission and ideals of the LMMA Network were introduced to Fiji in 2000 by USP and national and international NGO's. The Fiji network has grown dramatically into a nationally important program embracing government agencies, educational institutes, NGO's and community based organizations. Managed by a stakeholder representative Advisory Board and executing its mission through eight thematic Working Groups, it is currently delivering training, technical and scientific support and management skills to more than 240 community managed marine areas and building its members and partners capacity through shared experiences and lessons and through targeted training.

144. By 2008 FLMMA was supporting 249 LMMAs involving 387 villages and 10,745 km2 of coastal reefs and habitats. This represents over half the total number of LMMAs and communities represented in the international network and is indicative of the high degree to which Fiji institutions and communities have embraced the LMMA concept as a primary mechanism for achieving community based coastal marine conservation. In 2008 alone, the FLMMA Network was responsible for 42 training and capacity building workshops attended by nearly 700 individuals bring to 3,430 the number of training recipients since the network's inception[1]. Importantly, these results are highly significant in terms of Fiji's internationally stated PoWPA goal of achieving 30% of its near shore coastal and marine areas under effective management by 2015.

145. FLMMA serves a vital coalescing and catalytic function for community based marine conservation and partnership development in Fiji. It ties into the Fiji NBSAP goals and targets, the POWPA and to the Ministry of Fisheries and Forests goals and the GEF SGP Country Strategy. Its success and the high degree of community and institutional support it receives highlight the importance Fijians place on sustaining inshore fisheries as a major food source.

146. This has been a significant factor behind recent establishment of an Inshore Sustainable Fisheries Management Division within the Department of Fisheries and the formal adoption by the national government of the LMMA approach. This represents a significant departure from the Department's previous licensing and rent capture focus and promotes inshore conservation in partnership with FLMMA. With FLMMA's assistance the Fisheries Department is now tasked with conducting resource assessments of all of Fiji's *qoliqolis* (traditional coastal management areas) and developing management plans for sustainable fisheries.

147. Recently the Fisheries Department agreed to house FLMMA under the overall management of the FLMMA Advisory Board. This institutionalization of FLMMA within Fisheries has provided the latter with a broad community and institutional stakeholder foundation to support the work of its new Division. At the same time it has provided FLMMA with the support needed to sustain its rapid growth.

148. In the long run, the partnership between FLMMA and Fisheries should provide a powerful national mechanism to further mainstream the development and implementation of adaptive responses to inshore fisheries management issues and the sustainable management of vital coastal and marine resources.

[1] LMMA Network Annual Report 2008

APPENDIX D: DETAILED COSTS BY YEAR AND FINANCIER

	Year 1 USD	Year 2 USD	Year 3 USD	Year 4 USD	Total USD	Total USD w/ Contgies	IW Total Ctgies	CC Total Ctgies	BD Total Ctgies	ADB Total Ctgies	Govt Total Ctgies
Dept of Environment coordinator	12,422	16,563	16,563	12,422	57,969	65,575	0	0	0	0	65,575
Project implementation officer - National Trust	12,422	16,563	16,563	12,422	57,969	65,575	32,788	32,788	0	0	0
National Trust - local transport	9,540	12,720	12,720	12,720	47,700	54,227	27,114	27,114	0	0	0
National Trust - meeting costs	9,540	9,540	9,540	9,540	38,160	43,175	21,587	21,587	0	0	0
National Trust - office equipment	3,180		0	0	3,180	3,339	1,670	1,670	0	0	0
National Trust -accounting & overheads	5,300	5,300	5,300	5,300	21,200	23,986	11,993	11,993	0	0	0
DoE - local transport	4,770	6,360	6,360	2,120	19,610	21,960	0	0	0	0	21,960
DoE - meeting costs	4,240	4,240	4,240	2,120	14,840	16,612	0	0	0	0	16,612
DoE - office equipment	3,180	0	0	0	3,180	3,339	3,339	0	0	0	0
Demonstration area											
Ra stakeholder forum	7,950	7,950	7,950	7,950	31,800	35,979	2,878	11,873	0	0	21,227
National ICM committee meeting	1,590	1,590	1,590	1,590	6,360	7,196	0	0	0	0	7,196
Data collection				0							
* water quality	10,600	0	0	0	10,600	11,130	0	0	0	11,130	0
* marine coastal baseline	26,500	0	0	0	26,500	27,825	27,825	0	0	0	0
* sediment traps	2,650	0	0	0	2,650	2,783	0	0	0	2,783	0
* sugar mill effluent	2,650	0	0	0	2,650	2,783	0	0	0	2,783	0
* sanitation & solid waste assessment	23,850	0	0	0	23,850	25,043	0	0	0	25,043	0
* socioeconomic survey of coastal tikinas	15,900	0	0	0	15,900	16,695	0	0	0	16,695	0
GIS data entry	5,300	5,300	5,300	0	15,900	17,544	17,544	0	0	0	0
GIS maps	0	1,590	0	0	1,590	1,753	1,753	0	0	0	0
Threat analysis - Miradi	7,950	0	0	0	7,950	8,348	8,348	0	0	0	0
Tikina planning process	21,200	29,150	0	0	50,350	54,398	40,798	13,599	0	0	0
Site pilots							0	0	0	0	0
* afforestation	0	29,150	36,040	0	65,190	73,859	73,859	0	0	0	0
* sanitation	0	31,800	31,800	0	63,600	71,872	71,872	0	0	0	0
* SME opportunities											
tourism	0	21,200	53,000	0	74,200	84,727	76,254	0	0	8,473	0
ag crops for tourism	0	21,200	53,000	0	74,200	84,727	76,254	0	0	8,473	0
piggery development	0	47,700	21,730	0	69,430	77,744	70,747	0	0	6,997	0
Training for Dept of Environment	0	13,250	13,250	0	26,500	19,060	0	0	0	0	19,060
Training for sector depts	0	5,300	5,300	0	10,600	7,624	0	0	0	0	7,624
Support for environmental law	18,550	18,550	18,550	18,550	74,200	83,950	0	0	0	83,950	0
Strategy & Quality team	1,855	1,855	3,975	1,855	9,540	10,849	10,849	0	0	0	0
Evaluation forum	795	795	795	795	3,180	3,598	3,598	0	0	0	0
Roundtable	7,950	7,950	7,950	7,950	31,800	35,979	0	0	0	35,979	0
ICM resource materials	10,600	10,600	10,600	10,600	42,400	47,972	0	0	0	0	47,972
Community awareness & education	0	10,600	10,600	0	21,200	23,957	0	0	0	0	23,957
Climate change			0	0	0	0	0	0	0	0	0
TA	5,300	5,300	5,300	5,300	21,200	23,986	0	23,986	0	0	0
Studies	10,600	10,600	10,600	10,600	42,400	47,972	0	47,972	0	0	0
Pilot projects - civil works	15,900	15,900	15,900	15,900	63,600	71,958	0	71,958	0	0	0
Pilot projects - equipment	5,300	5,300	5,300	5,300	21,200	23,986	0	23,986	0	0	0
Pilot projects - operations	5,300	5,300	5,300	5,300	21,200	23,986	0	23,986	0	0	0
Overheads	10,600	10,600	10,600	10,600	42,400	47,972	0	47,972	0	0	0
	283,484	**389,815**	**405,715**	**158,934**	**1,237,948**	**1,375,039**	**581,070**	**360,482**		**202,304**	**231,184**

APPENDIX E: NATIONAL TRUST CONTRACT - GEF
TERMS OF REFERENCE

A. Background

ADB will contract the National Trust of Fiji to implement the GEF- funded component of the Project.. The National Trust will contract a Project Implementation Officer to administer the contract and will sub-contract several Fiji organizations to provide implementation services.

The duration of the contract is for four years – the expected life of the Project.

B. Key Obligations of this Contract

The National Trust will organize and complete the following activities and outputs:

1. Engage a Project Implementation Officer that will work with the National Trust as the overall administrator and Project coordinator. This will involve coordinating sub-contractors, monitoring their performance, organizing stakeholder and community meetings, and producing reports for Government and donors on the Project..
2. Coordinate and pay for local transport, particularly to-and-from the Project demonstration area.
3. Coordinate and pay for key meetings, such as those for Project stakeholders and the Ra Province stakeholder forum.
4. Purchase an office equipment package to administer the Project.
5. Provide Project accounting and related services to the Project.
6. For the demonstration area under this contract, the National Trust will
    a. Coordinate meetings of the Ra province stakeholder forum
    b. Manage sub-contracts for data collection on
        i. marine coastal baseline
        ii. GIS data entry and production of GIS maps
    c. Manage sub-contracts on
        i. Threat analysis – Miradi
        ii. Tikina planning process
    d. Coordinate subcontracts for site pilots, possibly including the following:
        i. Afforestation
        ii. Sanitation
        iii. Tourism enterprise development
        iv. Agriculture crops and value chains for tourism markets, and
        v. Piggery development
7. Co-ordinate the operations of the Project's
    a. strategy & quality team
    b. annual evaluation process

C. Coordination with Other ADB Contractors on the Project

The National Trust will coordinate with other ADB contractors on the project. These will include

- a regional contract to the IUCN to provide roundtable and cross-country learning to each of the five countries participating in the RETA project, including Fiji, and
- a regional contract to a climate change contractor to provide a climate change vulnerability assessment and adaptation program to each of the five countries participating in the RETA.

D. Contract Milestones

The National trust will agree to Project milestones and deliverables with the ADB and the schedule of payments from ADB to the National trust will depend on completion of the agreed milestones.

NATIONAL TRUST CONTRACT – ADB AND GOVERNMENT
Terms of Reference

A. Background

ADB will contract the National Trust of Fiji to implement the ADB and Government of Fiji-funded components of the Project.. The National Trust will contract a Project Implementation Officer to administer the contract and will sub-contract several Fiji organizations to provide implementation services.

The duration of the contract is for four years – the expected life of the Project.

B. Key Obligations of this Contract

The National Trust will organize and complete the following activities and outputs:

8. Engage a Project Coordinator that will work with the Department of Environment to produce required reports for the ADB and GEF, organize regular meetings of the National ICM committee, assist the Strategy & Quality team to organize its work; and assist the Roundtable to organize its activities.
9. Coordinate and pay for local transport..
10. Coordinate and pay for key meetings, such as those for the National ICM committee.
11. For the demonstration area under this contract, the National Trust will
    a. Manage sub-contracts for data collection on
        i. water quality
        ii. sediment traps
        iii. sugar mill effluent
        iv. sanitation & solid waste assessment
        v. socioeconomic survey of coastal tikinas
12. Coordinate and manage sub-contracts for training
        i. Delivered to Department of Environment staff
        ii. Delivered to environmental units in government sector agencies
13. Coordinate a sub-contractor that will produce education materials on the ICM process
14. Coordinate a sub-contractor that will deliver community awareness and education programs on ICM

C. Coordination with Other ADB Contractors on the Project

The National Trust will coordinate with other ADB contractors on the project. These will include

- a regional contract to the IUCN to provide roundtable and cross-country learning to each of the five countries participating in the RETA project, including Fiji, and
- a regional contract to a climate change contractor to provide a climate change vulnerability assessment and adaptation program to each of the five countries participating in the RETA.

D. Contract Milestones

The National Trust will agree to Project milestones and deliverables with the ADB and the schedule of payments from ADB to the National trust will depend on completion of the agreed milestones.

E. Program Management Contractor – Staff Job Descriptions.

1. Program Coordinator.

The NT F will employed a Program Coordinator to work with Dept of Environment (Executing Agency). The successful candidate will have a degree in a natural resource or appropriate sector management (e.g. agriculture, forestry fisheries, planning) and will have proven record of networking with both government and non government agencies in Fiji. The candidate must be acceptable to both the IA (National Trust – Fiji) and the Department of Environment – Natural Resource Management Unit Director) and be familiar with and able to work effectively in support of the purpose and goals of the ICM and National Environment Committees.

The Project Co-ordinator will:

- Maintain liaison between the Implementing Agency (National Trust of Fiji) the Executing Agency (Dept of Environment)
- Finalize the consolidated project plan and associated work plans
- Support the Implementing Agency and service providers to coordinate ICM demonstration site activities
- Ensure strong linkages with the National ICM Committee and the National Environment Committee.
- Provide Monthly, Quarterly and Annual reports to the DoE and ICM and National Environment Committees.
- Establish the Quality and Strategy Review Team and oversee implementation of the Q&S Review process
- Meet reporting requirements to ADB/GEF.
- Report directly to the Director National Trust of Fiji and GEF Focal Point.

2. Program Implementation Officer

A Program Implementation Officer will be employed by the National Trust of Fiji to mobilize service providers through subcontracts and to work with the Project Coordinator on overall project implementation and oversight. The successful candidate will have a degree in a natural resource management or related sector discipline and/or at least five years experience in project management and co-ordination of government and non government agency inputs into multi-disciplinary programs. The candidate will also have demonstrated competence in contract and financial management.

Specific responsibilities will be:

- Developing terms of reference and sub-contracting agreements with the identified service providers for the various Program sub-components, particularly in the areas of:
    - ICM Demonstration Area Management and Implementation Coordination (CI)
    - Socio-economic PLA surveys (FLMMA/USP)
    - Tikina and Community Planning (FLMMA/USP)
    - Coastal and marine assessments (FLMMA/WCS)
    - Sanitation assessments (Fiji School of Medicine)
    - Water quality assessments (USP –IAS)
    - Site best management practice support (NT-F/CI)
    - Data Capture and Map Production (NT-F)
    - Development of ICM community/school awareness and education programs (Live and Learn)
    - ICM awareness and training for Government Agencies (USP)

- Liaising with Demonstration Project implementing agencies on subcontract progress
- Financial Management and reporting including:
    - Raising invoices to the ADB for Program milestones and agreed upon out of pocket expenses
    - Paying implementing agencies based on subcontract milestones
    - Providing cost and billing records
- Additional Procurement and contracting as needed
- Coordination with the regional Climate Change Program and training provider contractors

Supplementary Appendix B
Vanuatu Detailed Project Design
Country Program

Draft Final Technical Assistance Report

for

RETA 6741 Strengthening Coastal and Marine Resources in the Coral Triangle of the Pacific

ADB, GEF and AIMS Financed

Figure 2: Program Areas of Work

(Larger ellipse being the area proposed for habitat mapping and resource assessment)

IV. INTRODUCTION

1. The following Appendix presents the country level program for Vanuatu within the Regional Technical Assistance (RETA) program for the Coral Triangle Initiative – Pacific program. The RETA is operating within five countries including Timor Leste, Solomon Islands, Papua New Guinea, Fiji, and Vanuatu. The overall Project documentation will comprise a consolidated RETA technical assistance document and a GEF CEO endorsement template. These documents will be highly aggregated data and descriptions that will not define detailed country level programs.

2. The RETA has prepared individual country reports to present detailed country level programs to support review, ratification and most importantly implementation of the program.

V. ISSUES

A. Background

149. Over the last decade the Vanuatu economy has performed better than all other Pacific Island Countries. With growth rates in excess of 6% per annum the economy has benefited from stable political and economic policy, increased competition especially in the airline and telecom sectors leading to increased demand from lower prices and increased investment.

150. Tourism growth continues with more than 100,000 visitor arrivals by air expected in 2009, and a further 60,000 to 70,000 by cruise ship. Other strong economic sectors are the construction sector with the increased investment linked to tourism, road infrastructure and the rapid rural subdivision on Efate and Santo based on expatriate leasing of coastal lands.

151. Despite such strong economic performance there has been minimal spillover of benefits to local communities in the form of employment, market opportunities reflecting poorly developed value chains due to limited by skills, infrastructure, and coordination within and between sectors.

152. Public sector capacity remains highly constrained with few if any resources available for operational costs. Consequently, Government outreach is limited to the national and provincial level. Few Government programs reach directly to the community with the NGO community is often relied on to provide essential public sector services.

153. The economy still resembles the features of a classic dual economy with the majority of the population (65% to 70%) reliant on subsistence for daily needs. The growing requirement for cash especially in relation to energy use, core Government services such as school fees and health care creates additional pressures for the subsistence economy. The transition from subsistence to cash economy has resulted in a significant increase in urban population currently estimated to be growing at over 4% per annum with 25% to 35% of the total population living in an urban environment in 2009.

154. Rapid population growth has resulted in a low median age with 40% of the total population under the age of 15 yrs. While the total fertility rate (TFR) per women remains high it is declining. The impact on future population growth is limited in medium term due to the rapid growth in the number of women of child bearing age. Lower TFR is closely aligned with education levels and the participation of women in paid employment. Currently both education and paid employment indicators for women are well below that for males. The 2009 population is estimated to be 245,000 and forecasts expect an increase to 366,177 by 2030.

155. Urban populations report significantly higher levels of hardship and poverty in terms of households and individuals below the Basic Needs Poverty Line (BNPL). Port Vila has over 30% of households falling below the (BNPL) due to rapid in-migration in search of paid employment. Rural poverty in terms of food consumption is low but can be considered moderate in BNPL terms.

156. The high levels of social hardship, the development of road infrastructure in Efate and Santos, and the growing marketing of Vanuatu as a tourism destination have created significant outcomes for coastal resource management in the form of the sale and subsequent subdivision of significant tracts of coastal land. The subdivision provides a one-off capital injection to local communities but also raises concern about the future capacity of traditional subsistence systems to support growing populations. Another risk is the likely impact of rural coastal subdivisions on the coastal environment.

157. From a social perspective nearly 50% of all households are considered coastal and between 35% to 55% of households report fishing in coastal environments as their primary food and income source with a further 20 to 30% reporting it as a secondary economic activity. Current fish consumption data suggests an annual consumption of 20kg per person. Based on projected population growth, the demand for fish is expected to increase from 8,200t in 2010 to 13,600 t in 2030 excluding the impact of increased economic growth and the growing need for local communities to access cash. Bell et. al.(2008) categorize Vanuatu as being unable to supply future fish demands with the coral reef fishery productivity estimated at 3,750 tonnes per year compared to total off take needs of 2,500t in 1996; 8,200 tonnes in 2010; and 13,600 tonnes in 2030.

158. The total fisheries sector has an estimated 10,500 to 11,000t offtake per year of which 20% is by artisanal fishers, 78% for commercial tuna and the remainder small pelagic for the local market. There is an obvious need to recognize the importance of such fishing activity in economic development planning and the sale of coastal property. Approximately 50% of households rely on these resources for essential food and as a means of earning cash for essential household items. The threats being increased demand with access to markets and new fishing technologies to gain essential cash, the threat of sanitation and other land based pollutants from increased real estate subdivision, and the management of land wards threats from the intensification of agriculture.

B. Capacity

1. DoE Mandate

159. **Mandate for the Department of Environment** The Department of Environment (DoE) is responsible the conservation, sustainable development and management of Vanuatu's terrestrial, marine and air environments.

160. The DoE is responsible for the development of National Policies or National Plans relating to the environment. According to the Environmental Management and Conservation Act 2002, the purpose of a National Policy or Plan would be to 'promote the environmentally sound and safe management and conservation of the natural resources of Vanuatu; and to provide for the co-ordination of related activities.' Since the enactment of the Environmental Management and Conservation Act 2002 no national plans have been ratified.

161. The DoE seeks to manage the:

(i) state of all natural resources
(ii) current use of natural resources
(iii) quality of Vanuatu's environment
(iv) social and economic development trends and their likely impact upon the environment

162. The promotion of environmental management responsibility in Government from an operational unit to a separate Government Department was included in the Environmental Management and Conservation Act (2002). The DoE was however, only formed in March 2009 with a mandate to manage the country's natural resources.

163. The DoE has legal jurisdiction over the management of environmental resources prescribed under provisions of the Environmental Management and Conservation Act of 2002, Wild Bird

protection Act of 1988, International Trade (Fauna & Flora) Act No.56 of 1989 and National Park Act No.7 of 1993.

164. The DoE also has responsibility for ensuring the Government's obligation under international conventions such as the Stockholm Convention (2002) and the Convention in biological Diversity (Ratification) Act No.23 1992 are fulfilled.

165. The DoE is within the Ministry of Lands and Natural Resources (MOLNR) also implements several donor funded projects, including the Local Conservation Initiative (LCI) Project funded by UNDP, and the Program of Work for Protected Areas (PoWPA) funded by the GEF and UNDP. The LCI project works to facilitate, adapt and strengthen local resource management initiatives by traditional landholders, chiefs and their communities and to strengthen local, provincial and national capacity to support local biodiversity conservation activity. The project is implemented in sites in Gaua, Tanna and Santo Island.

166. The Program of Work for Protected Areas (PoWPA) is outsourced and provides support to fill the implementation gap between policy and legislation to enable the creation of a protected areas system in Vanuatu. The project aims to identify and remove legal and institutional barriers and build capacity for registration of community conservation areas as described in the Environmental Management and Conservation Act 2002.

167. DoE has also delegated a marine ecosystem resilience program that is being implemented by the FD under the guidance of the National Advisory Committee of Climate Change (NACCC).

168. To achieve this, the RETA believes Vanuatu should aim to:

- Work at a national level to strengthen cross sectoral cooperation, to remove policy and procedural inconsistencies, and foster a strategic national approach to Protected Area (PA) identification, recognition and management;
- Build the capacity necessary to test and finalise the procedures for site recognition, management plan preparation and registration for priority sites on 2 islands (including biodiversity inventory, monitoring and management planning).

169. Staffing levels within the DoE are inadequate with an acting Director and four staff including one administration role. An additional two staff are to be recruited prior to the end of 2009 and a recruitment process for a permanent Director is currently underway. During 2010, three more staff are to be recruited and a further two will move from Project financed positions to staff. By 2012 total staff should be 12 including the one administration role.

170. The RETA considers this is the minimum number of staff to operate a basic organization and that without these positions filled the RETA funding to DoE strengthening should not proceed. To assist in the building of DoE the RETA proposes that two RETA program staff positions be recruited to provide implementation capacity during Project start up and that on completion of program year 2 these positions transfer to the DoE as staff positions. As such these Program positions will be recruited on terms commensurate with Government salaries but with access to the agreed field work costs that apply to Program staff.

171. **Environmental Impact Assessment (EIA)** The DoE is responsible for establishing a framework for determining whether a project, proposal or development activity requires an EIA. The initial screening process to ascertain if an EIA is required is administered by the Ministry, Department, Government Agency, local government or municipal council that receives the application. The process is inherently weak with those responsible for screening having strong vested interests and incentives for Projects to proceed. A more formal and independent screening process would provide a significant improvement in the integrity EIA for the future.

172. According to the Environmental Management and Conservation Act 2002, an EIA is required if a project, proposal or development activity may:

(i) affect coastal dynamics or result in coastal erosion;

(ii) result in the pollution of water resources;
(iii) affect any protected, rare, threatened or endangered species, its habitat or nesting grounds;
(iv) result in the contamination of land;
(v) endanger public health;
(vi) affect important custom resources;
(vii) affect protected or proposed protected areas;
(viii) affect air quality;
(ix) result in the unsustainable use of renewable resources;
(x) result in the introduction of foreign organisms and species;
(xi) result in any other activity prescribed by regulation.

173. **Biodiversity** Under the Environmental Management and Conservation Act 2002, a National Advisory Council for Biodiversity is to be established. The Director of the DoE will Chair the Council, which is responsible for advising the Minister on any matter relating to the implementation of the *Convention on Biological Diversity* including the management of future bioprospecting. To date the National Advisory Council has not been formed.

174. **Community Conservation Areas (CCA's)** The DoE mandate covers community conservation areas (CCAs). This responsibility involves identifying sites with national biodiversity significance, and engaging with customary landowners to protect the biodiversity. Once agreements are reached each site can be registered as a Community Conservation Area. If customary landowners agree to establish a Community Conservation Area, they can seek assistance and advice from DoE. CCA's can also be registered for marine and coastal resources. While there are several CCAs registered with DoE the registry is a poorly maintained with no protocols for quality control resulting in the recent decision to delete all entries and to rebuild the registry from scratch.

C. Fisheries Department Mandate

175. The Department of Fisheries (FD) under the Fisheries Act No.55 of 2005 is responsible for the management, development and conservation of all fisheries within the jurisdiction of the Republic of Vanuatu which includes the waters of the exclusive economic zone, the territorial sea, the archipelagic waters, and the internal waters.

176. **Designated Fisheries:** The FD is responsible for designating a fishery if it is of national interest and requires management and development measures for its effective conservation and optimum utilization. For each designated fishery FD must prepare a management and development plan. In the preparation of a Fisheries Plan FD must consult with appropriate Government Agencies, fishermen, Local Authorities and affected persons. To date there is a ratified plan for Tuna and several others in the process of ratification including for Beche De Mere, and Coconut Crab. Each fishery management plan must:

- identify each fishery, its characteristics, and the level of exploitation;
- specify objectives to be achieved
- specify management and development strategies
- specify information and other data to be provided by license holders
- account for traditional fishing methods and practices
- measures included in the plan i.e., restrictions on the right to fish, when, where and how to fish, fees to be collected may be enforced by regulation

177. **Local Fishing Vessels** The department is responsible for issuing licenses to local fishing vessels used for commercial use and imposing conditions such as provision of information in respect of vessels activities. Currently the policy is not applied.

178. **Foreign Fishing Vessels:** FD is responsible for advising the Minister on access agreements to Vanuatu waters with other governments, associations and legal entities. FD is responsible for

reviewing and issuing foreign fishing licenses and for regulating foreign fishing activities. FD is responsible for investigating non-compliance and regulating a vessels authorization to fish license.

179. **Vanuatu Whale Sanctuary**. A country-wide Whale Sanctuary exists with the purpose making illegal the killing, harming, harassing, removal of marine mammals in Vanuatu waters, and in accordance with international law. FD has the right to exempt the taking of dugongs for traditional ceremonial purposes

180. **Marine Reserves:** The Minister may, after consultation with owners of any adjoining land and with the appropriate Local Government Council, declare any area of Vanuatu waters and the seabed underlying those waters to be a marine reserve. Within a marine reserve it is an offence to:

- engage in fishing
- take or destroy any coral
- dredges or takes any sand or gravel
- disturbs the natural habitat or
- take or destroys any wreck or part of a wreck

181. The Minister may also form regulations for the establishment, management and protection of marine reserves. Currently there are few such reserves including the President Coolidge wreck and dive site, Santo Island, and Port Patrick Trochus ban in Aneiletyum. Whereas the DOE promotes communities to seek reserve status FD discourages the reserve gazetting due to a concern of creating an excessive demand for their services. Under the Fisheries Reserve provisions only A community Tabu area would qualify making the gazette notice extremely hard to apply.

182. **Compatibility between Fisheries and Environment Acts**

183. Under the existing provisions local marine reserves can be gazetted under the Fisheries Act as well as being registered under the Environmental Management and Conservation Act. The DoE is promoting the registration process for LMMA and community based MPAs with the intent that such areas once registered would be gazetted under the Fisheries Act. The current view of the FD is not to gazette areas due to their concern that communities will then seek FD support for compliance, technical support and grievance management. There is a conflict between the definition of Marine reserves and the EAFM based on community owned coastal resources. The only part of a Community Based Management area i.e., the CCA that will qualify for reserve status is a no-take zone, and then, only if no-take status is permanent. The conflicting needs and approaches between community conservation areas and marine reserves needs to be addressed to meet the realities of an EAFM.

184. Both acts have major weaknesses in this regard especially with respect to the range of powers and the degree of precedence between the two pieces of legislation. The resolution of this is required before EAFM can realistically proceed. A strategic element of EAFM is the ability to reserve high priority habitat areas linked to spawning aggregations, juvenile feeding grounds and wider feeding areas.

185. The current review of the Fisheries Act by FFA may address this issues however this will require more leadership from FD and the acceptance of effectively managed Marine Reserves as a foundation for the integrity of EAFM in coastal ecosystems. Once the FFA review is completed the Environmental Management and Conservation Act 2002 will need to be reviewed for consistency with regulations put in place to support appropriate implementation.

186. CTI-Pacific recommends that the FD policy and regulatory group prepare a national strategy on the management of coastal fisheries as a means of clarifying the concepts being applied, develop common understanding of the EAFM concept and principles, and identifying the institutional needs for implementing the strategy. This should be implemented through a sector wide working group including NGOs, Provincial Staff and Provincial Fisheries Officers.

187. Other institutional reform will include the identification of regulatory needs for implementing the revised Fisheries Act, and the Environmental Management and Conservation Act. One option is to draft these as a single regulatory approach responding to both pieces of legislation.

188. **FD capability** The FD has recently recruited an additional 15 staff with total staffing of the FD now 43. The FD will have sufficient staff to undertake its mandate with Provincial Fisheries Officers appointed to most Provinces. The major capability constraint is the effective use of staff skill sets and the FD ability to change its focus from management of fishing activity to the management of fishery resources. While new concepts such as EAFM are talked about there remains little detail about how and who can implement these and to date even less actual examples.

D. Threats

189. Across all CTI-Pacific countries the major underlying cause for increased risk to the sustainable management of coastal resources is domestic population growth. For Vanuatu the population growth, and the young age of the population are a cause for concern. Increased demands will be significant with a 70% increase in demand for fish resources expected by 2030. The forecast growth in demand is such that many question the ability of natural resource endowments to sustain such levels of demand in the long run with Bell et. al. 2008 noting a shortfall in Vanuatu of some 5,000t in 2010 and 10,000t in 2030. Associated with the influence of population growth are the following major threats.

190. **Rural Land Use.** It is estimated that 75% of the population is dependent on subsistence or commercial agriculture in particular, beef, cocoa, coffee, copra, and kava with niche markets for vanilla and pepper. Subsistence agriculture is based on slash and burn rotation and cultivation practices that have harmful effects on coastal environments when the rotation length is too short. With population growth, the move to commercial agriculture and leasing of land for tourism and residential subdivision the rotation length will decline.

191. **Urbanization**. The urban population has doubled since 1990 reaching 47,600 in 2003, an estimated at 76,300 in 2009 which constitutes 25% to 30% of the total population. By 2030 the urban population will account for 166,200 or more than 40% of the total population that is estimated to be 366,200. The movement of people from rural areas to Port Vila has resulted in informal settlements on the outskirts of Port Vial as internal migration to urban areas accelerates. With the majority of wage based employment limited to the two major urban areas and specific tourism resorts the rate of internal migration will continue. The cost of living in urban areas of Vanuatu is significantly higher than rural environments due to the cost of housing and utilities and services. More than 50% of Vanuatu's poor live in Port Vila.

192. The upgrading of the 'around the island road' on Efate and the eastern coastal road in Santo is accelerating urbanization and subdivision of coastal lands. While the road itself has significant impacts on run-off and sedimentation the associated pattern of development creates significant increases in demand for Government services relating to solid waste management, sanitation, as well as potential social issues relating to contested access to coastal beaches and coastal resources. Current significant stretches of coastal waterfront land on Efate is already leased to developers of coastal subdivisions.

193. **Pollution and Waste Management.** Poor urban and community planning has resulted in substandard housing for large parts of the population. More widespread is a lack of collective sewage systems and/or the poor management of the increasing density of individual septic tank systems. In areas adjacent to urban centers coastal ecosystems are increasingly polluted.

194. Management of solid waste is a growing problem especially for the Municipality of Port Vila. The average waste stream for Port Vila is estimated as 0.6kg/capita/day and comprises both organic waste and inorganic being mostly packaging. There is little recycling.

195. The final disposal of household, commercial and industrial waste relies in the Bouffa Sanitary Landfill in Port Vila in 1995. However the issues of collection of waste from the expanding population, littering, enforcement and the life of the landfill still need to addressed

196. **Overfishing and Destructive Fishing Practices.** Reports suggest that there is already over fishing in reef and some coastal areas around Vanuatu with inadequate fish to meet current demand. The FD focus has increasingly moved to coastal fisheries but the focus remains on fishing management as opposed to sustainable management of fish resources. Explosives and using poison to kill fish is prohibited under the Fisheries Act, however as there is minimal monitoring and enforcement it is not known if these methods are still being used.

197. The status of coral reefs is uncertain with incomplete data sets. There is limited monitoring and without increased data and temporal monitoring it is difficult to determine the exact state of the country's reefs and fisheries.

198. **Tourism Development.** Tourism is an important source of revenue for Vanuatu accounting for 40% of the GDP in 2008. The contribution of services to GDP has increased 10% over the last 10 years compared to agriculture that decreased from 23% to 15%. Tourism will continue to gain importance with the introduction of competition for airline destinations.

199. The tourism industry is concentrated in Port Vila which contains 90% of Vanuatu's hotel capacity. It is estimated that the 2010 visitor arrivals by air will exceed the 100,000 in 2009 and that an additional 70,000 to 80,000 visitors will arrive by cruise ship. Currently 55% of every dollar of revenue leaks from the Vanuatu economy. Sector priorities include diversification of destinations within Vanuatu increasing the value of each visitor and to promote new products and services linked to the natural environment**.**

200. Future Tourism growth is at risk from declining natural and coastal environment standards. Tourism officials are highlighting that tourists visit to experience natural environments and unless these are maintained future growth in visitation and revenues is at risk. Tourism officials are some of the most vocal in calling for a more effective Environmental Management and Conservation Act. Resort and accommodation sites along with cruise ship mooring sites all have potential risks associated with coastal environments. One of the major sub-sectors is charter sport fishing although there are some operators already reporting declining fish sizes.

1. Vulnerabilities

201. Vanuatu is rated as being environmentally vulnerable (SPC,2008) with specific vulnerabilities being linked to its exposure to natural disasters, future climate change and biodiversity loss. The key driver to vulnerability was rated as population growth, along with volcanic and earthquake events, high intensity rainfalls, isolated low lying areas, a endemic species with the lack of protected area systems and marine protected areas

202. **Natural Disasters** Vanuatu has been classified as being highly vulnerable to a wide range of natural hazards. Volcanoes are a feature on nearly all the islands of Vanuatu. Nine volcanoes are still active, the most active being Mount Garet located on the Gaua Island.

203. Earthquakes are frequent in Vanuatu. The USGS recorded about 4,000 earthquakes of magnitude greater than 4 between 1961 and 1982. The last major earthquake occurred in January 2002 and was located 35 km west of the capital Port Vila. Reaching 7.3 on the Richter scale, this earthquake caused widespread damage to buildings and infrastructure.

204. Tsunamis occur occasionally as the result of earthquakes, The last tsunami, which resulted in approximately twelve fatalities, occurred in November 1999, following a 7.3 earthquake located near the island of Pentecost

205. During the cyclone season (November to April), cyclones have caused extensive damage to infrastructure (bridges, houses) as well as to food gardens, commercial crops, tree crops and forests. Cyclones also have a major influence on the coastal zone, including coral reef systems, shallow water marine communities and mangrove areas. The largest and most destructive cyclone to hit Vanuatu in recent times was Cyclone Uma in 1987.

206. **Climate Change**. Impacts from climate change are likely to mean an increase in water temperatures and higher sea levels. Existing assessments have identified three sets of low lying islands as being critically vulnerable to climate change while others are rated as being at risk.

207. The coastal environment will face increased stress as a direct result of climate and sea level changes creating pressure on the foreshore and coral reef system and leading to potential decline in local food options. The global increase in atmospheric carbon dioxide causes acidification of oceans, which will inhibit the building of coral reefs. Rising sea levels and sea surface temperature will result in coral bleaching and coral diseases. The combination of these factors is likely to reduce the robustness of coral colonies and hence make them more prone to physical damage from storms and waves actions. This will lead to a loss of coral cover and declines in fish populations associated with the corals and an even larger deficit in fish supply.

208. Shoreline mangrove communities are capable of keeping up with sea level changes as they migrate inland. However with only small areas of mangroves remaining these depend on the accumulation of sediments to allow for self-propagation. Frequent storm surges, increased coastal erosion and continued human activities in areas that presently favor mangroves, will become major factors affecting the capability of the mangrove and foreshore systems to cope with sea level rise.

209. Coastal erosion is severe in many of the islands throughout the country and this severity will become more obvious as sea level rise impacts. The most vulnerable areas are the low lying islands and those islands, which lack the natural protection of coral reefs and mangrove forests. Coastal erosion can be reduced if the natural ecosystems are maintained or strengthened and infrastructure planning is guided by vulnerability risk assessments. Adaptation can also be assisted through the location and engineering designs of infrastructure.

210. **Biodiversity Loss.** Vanuatu's biodiversity is not well understood. Detailed studies are limited to few genera and of the biota of smaller or less accessible islands and these highlight high levels of endemism. There is considerable variation in the distribution of species within and between islands. This variation is of particular scientific interest for understanding on-going processes of immigration, range extension and contraction and sub-speciation.

211. Vanuatu's flora is more closely allied with the Solomon Islands to the north with some elements from Fiji and a few from Australia or New Caledonia. However, there is considerable variation between different plant communities. Fauna demonstrates closer affinities with the Solomon Islands. Internally there is a biogeographic divide with the islands to the north of Efate demonstrating significant differences from the islands to the south. Vanuatu's reef ecosystems total approximately 410sq km and support similar species to that of the Australian Great Barrier Reef and New Caledonia. Colonization of coral reefs is considered to be assisted by a dispersal pathway through the Solomon Islands to the Great Barrier Reef in Australia.

212. The biodiversity of Vanuatu is in part determined by the age of the islands, the separation of islands, the rugged interiors separating catchments and lowland habitats, which are barriers to many species. These features have favored rapid speciation and subspecies evolution and high levels of endemism.

213. The Vanuatu National Biodiversity Strategy Action Plan (NBSAP) identifies ten conservation goals and six priorities for action with supporting strategies including:

- Ensure sustainable management and conservation of Vanuatu's biodiversity
- Develop appropriate policy, planning and legal mechanisms for the management of biodiversity
- Improve knowledge about biodiversity in Vanuatu
- Improve the capacity of national, provincial, NGO and community organisations to manage biodiversity
- Increase local awareness of the importance and value of biodiversity
- Community participation in the management and conservation of biodiversity

214. To date there have been few if any financial commitments to implement the National Biodiversity Strategic Action Plan which has as a consequence had little impact of protecting Biodiversity.

215. Over fishing is a major threat to marine biodiversity in Vanuatu. Reef fisheries are mostly over fished, notably in the vicinity of Efate, but are generally under exploited near the outer islands. The Fisheries Department (FD) is inadequately resourced to monitor key fishery catches (such as Tuna) in Vanuatu waters.

216. Land based threats to marine biodiversity vary from island to island, but include the following:

- Pollution from inadequate waste management
- Depletion of marine resources through uncontrolled use of newer fishing methods
- Destruction of mangroves.
- Disruption to marine ecosystems due to increased sedimentation from soil erosion resulting from logging
- Failure to respect size limits, closed seasons and traditional tabus set to ensure resource use is sustainable.
- Lack of widespread community cooperation to address environment management issues.
- Impacts of infrastructure and development activities

217. Vanuatu's National Conservation Strategy (NCS) (1993), National Biodiversity Strategy and Action Plan (NBSAP) (1999) and Vanuatu's National Capacity Self Assessment (2007) have included participatory initiatives to analyze protected area priorities and define capacity needs. These policy documents place importance on strengthening the national institutions for MPA management. Both the NCS and the NBSAP include objectives and activities toward achieving an effective network of protected areas, and highlight both thematic and geographical priorities. Progress on MPA development has been slow due to a lack of national level coordination, clear standards, procedures for the legal recognition of MPAs and the complexity of resource ownership.

218. Existing locally established and managed MPAs are scattered and opportunistic. Govan, 2008 reports that there are 55 Marine Managed Areas (MMA) of which 20 are active with 44 LMMA, CCA and no take zones (all the same areas). The data is inconsistent and unreliable with the area of no-take zones exceeding the area of CCA and LMMAs.

219. Historically MPAs or MMAs have been established in an opportunistic manner and are more focused on establishing cultural rights, or for marketing community based tourism. They address local priorities including economic development, and resource management rather than national biodiversity conservation priorities. Key threats to effective MPA management include:

- Conservation in Vanuatu is not planned or resourced within the public sector.
- Difficulty enforcing MPAs at the village level, with poaching and trespassing being common issues
- Inadequate government funds and resources have been allocated to meet the biodiversity conservation goals for MPA's as required in legislation.
- The key bodies mandated by policy e.g. Biodiversity Advisory Council, have not been formed or are inactive
- Individuals, communities, provinces and national government do not share a coherent set of goals for protected areas and environmental resource conservation.
- Government institutions do not have staff dedicated to management of PAs and no budgets specifically for management of PAs or support to PAs

VI. PROPOSED TECHNICAL ASSISTANCE

A. Impact and Outcomes

220. The Program seeks to build a platform for extending effective coastal and marine resource management in Vanuatu through the strengthening of marine biodiversity conservation, implementing Ecosystem Approaches to Fisheries Management (EAFM) and Integrated Coastal Management (ICM), testing Climate Change adaptation and the integration of these management tools into National Spatial Planning.

221. The long-term impact of the Program is expected to be fish stocks able to support increased catch levels from the application of improved management systems across an increasing proportion of the coastal zone. Through improved management coastal ecosystems will continue to contribute to economic development and food security.

222. On completion of the Program the outcomes of the project will be increased fish and improved livelihoods from increasingly resilient of coastal ecosystems, increased management capability and increased management tools for applying integrated coastal management (ICM) to address coastal food security and coastal livelihood development and reducing vulnerability to natural disasters and climate change.

B. Detailed Description Component One: Building Organizational Capability and Management Competency

1. Outputs

223. By 2015, the Department of Environment (DoE) will be an operational organization with capacity, and leadership for delivering its responsibilities in strategic elements of its mandate related to natural resource management, conservation and community based programs. Additional capacity building in regulation, compliance and policy will be developed along with the capabilities to implement planned institutional programs.

224. The RETA will support the strengthening of the SHEFA Province Efate Land Management Area (ELMA) program by providing training for field staff (e.g., park rangers), provincial line agency staff and national line agency staff in integrated coastal management principles, sustainable economic development, ecosystems based management approaches, and eco-tourism roles in the coastal zone.

225. The project will build knowledge of ICM within the Department of Environment and the staff and management of sector agencies and provincial and local stakeholders as part of mainstreaming environmental programs within sector line agency policies and plans. The training will support the extension of lessons learned through other parts of Vanuatu.

226. The program will provide two ICM coordinator positions, one to assist DoE to coordinate the CTI-Pacific Program implementation and the other to support implementation of the ELMA ICM demonstration program. After two years of wage support form the Program these positions will become DoE staff positions and will build capability within the DoE Conservation and Community outreach work programs.

2. Methods and Approach

a. Background

227. The RETA shall support DoE to build capacity in key strategic elements of their mandate that relate to:

- Protecting biodiversity and developing conservation management

- Enhancing regulatory, policy and compliance functions
- Introducing sustainable development of natural resources, and in particular use of integrated management approaches.

b. Capability Building Program

228. The project will support organizational development and individual development training for the DoE, and in particular to support capacity development in DoE around the following three key strategic themes.

229. **Organizational Development** will support and benefit DoE and other organizations. The primary output will be a stronger organization while individuals within the organization will gain increased skill and competence. The training will be structured around a mix of course material to introduce concepts and supporting exercise and action based training where the skills taught and applied as part of each individuals role in the organisation.

230. The following training will be provided to an estimated 20 trainees including DoE and Provincial Staff:

a. Organisation and administrative functions
   (a) Report Writing
   (b) Budgeting and cost control
   (c) Project management
   (d) Data collection and analysis
   (e) Training in record keeping and information cataloguing
   (f) Stakeholder management and communications
   (g) Organizational strategy and development

b. Community-based management of natural resources – an existing course delivered as part of the USP training contract.

c. Integrated Coastal Management – delivered as part of the USP training contract

d. Conservation management, managing protected areas, marine biodiversity assessment and management, including rapid assessment of biodiversity – Delivered by FD/South Pacific Commission (SPC) /South Pacific Regional Environment Program (SPREP).

e. Climate change: vulnerability assessments and adaptation options – delivered by Regional Contractor

f. Sustainable development, including economic growth levered from not degrading natural resource assets – delivered as part of the USP training program

231. Specialist mentoring program will be provided for the development of domestic capacity within the DoE and supporting sector stakeholders both Government and Non-Government. Priorities include:

(i) Legal skills in natural resource management (international mentor for legal staff in DOE)

(ii) Government administration (mentors from other government agencies)

232. This training should be delivered in the above priority order. However, each training course will be open to staff from provincial governments, NGOs, and community leaders.

233. **Individual Training** will mostly benefit the individual, although having stronger individuals usually means the organization also benefits. In total the number of trainees per course topic is estimated to be 8 to 10 of the 12 DoE staff, 12 Provincial and NGO representatives. These should be short courses of 3 days - 1 week in duration and will be open to DoE staff, provincial governments, NGOs, and community leaders. This training needs to be interspersed with activities in the learning demonstration area. Training in the following areas is recommended:

- Report writing (12 DoE, 12 others)
- Communications, including presentations
- Organizing and running meetings
- Time management
- Community engagement
- Team leading and project leadership skills
- Data collection and analysis for natural resource assessment and accounting
- Policy analysis

234. **Schedule and Timing** Individual training in a topic will be delivered at the same time as organizational training in the same topic – e.g., report writing for organizations and report writing for individuals should taught in the same broad time frame. Organizational report writing will focus on DoE standards for report writing, DoE templates, and general government guidelines for writing different types of reports. Individual report writing will focus on developing specific skills in individuals in report writing.

235. The first three priority training areas in government administration should be completed prior to the start of demonstration area programs. Training in other priority topics in addition to government administration should take place in conjunction with activities in the learning demonstration area

C. Detailed Description Component Two: Defining Best Management Practices through Experiential Learning

1. Output 2.1: ICM Demonstration

a. Integrated Coastal Management Demonstration for the EFATE Land Management Area program

236. On completion in 2015 a Ridge to Reef management plan will be developed for Northern Efate based on the integration of EAFM, community management planning, ELMA and Tourism plans into an ICM plan that is ratified by the Council of Chiefs, the SHEFA Provincial Administration, and the DoE. Considerable work has been done on coastal management plans and the RETA will build on this work.

237. The ELMA program will be used to pilot and test the approach that DoE will use to progressively apply ICM programs to other provinces based on best management practices as they emerge from natural resource management programs.

238. Specific outputs include:

- A SHEFA Province ratified ICM plan for the ELMA region that addresses land based threats to coastal environments, coastal habitat management priorities and coastal fishery strategies and plans

- ICM based development plans for a total of 5 Area councils covering an estimated 50,000ha including Northern Efate and 7 coastal islands with a total of 1,221 households supporting a total population of 6,817 in 1999
- Ecosystem based coastal fisheries plans including livelihood improvement programs of ELMA communities, East Santo and Epi islands providing the basis for implementing ICM at these sites in the future
- Priority coastal habitats registered under the Environmental Management and Conservation Act 2002 as a Community Conservation Areas and gazetted under the marine reserve provisions of the revised Fisheries Act.
- Coastal Habitat maps and skills to complete coastal habitat mapping and coastal resource assessments
- Livelihood options demonstrated for environmentally sustainable economic development in 21 communities using approximately 60% of total resources
- Community education materials for supporting ICM, ELMA, and EAFM that targets community leaders, land users and community fishers. The contract award will be to Live and Learn
- Lessons learned and best management practices identified and used to define a national ICM framework for land-based threat management

b. Climate Change Adaptation Preparation and Pilot Adaptation

239. On completion of the Program, climate change adaptation options will be agreed and piloted for vulnerable communities within the northern Efate – ELMA Program demonstration area and the critically vulnerable Paama island. Paama is at risk from volcanic activity, from inundation, and sea level rise and the increase in extreme events. Specific outputs will include:

- Increased capacity to self organize and improved resilience of communities in demonstration communities
- Assessment of vulnerability hotspots identified and used to target climate change interventions
- Adaptation scenarios prepared in a participatory manner and integrated with ICM plans at community, district council, and provincial development plans
- Lessons learned and best management practices identified and used to define a climate change framework for integration with the National Advisory Council for Climate Change (NACCC) programs
- A functional national level learning forum with greater regional awareness of climate change adaptation responses in near shore and coastal areas

c. Method

i. ICM Demonstration Area

240. ICM involves the integration of all sectors that influence in the coastal zone and its environments. Whereas Ecosystems Approach to Fisheries Management seeks to address threats to the coastal environment, ICM seeks to manage threats to both coastal lands land and water building greater coastal resilience. EAFM is an integral part of ICM but as envisaged is not considered broad enough to provide for all management needs,

241. Demonstration Site. The ELMA region includes the islands of (i) Nguna, (ii) Pele, (iii) Emau, (iv) Kakula, (v) Moso, (vi) Lelepa, and (vii) Eretoka and (viii) Efate where the following area councils will be included: Malorua, North Efate, Eton District councils. The ELMA program started in 1996 seeks to protect 19,000ha of forest in the upper catchments of Efate from the increased threat of logging from walk about sawmills. Currently, the Forest Department (FoD) has licensed a total of 25

sawmills in Efate and there is growing pressure for logging the remaining forest resources in the head waters of the Islands major catchments. The program area includes a total of 16 communities with an estimated 8,000 to 8,500 population in 2010.

242. The CTI-Pacific involvement in the ELMA program site is delineated by watershed and includes the following watersheds:

- Kutuku River
- Mangalilu/Lelep
- Tanoliu/Malafu
- Emua/Paunanguis
- Epule river
- Epau/PangPang

243. The current ELMA protection program works via an agreement with 17 Chiefs from the Council of Chiefs and SHEFA Provincial Administration. The program is funded by the SHEFA Province with an extremely limited budget of USD 6,000 per annum. As a result progress is slow. Provincial By-Laws have been introduced to stop non-sustainable development of the 19,000 ha of forest. The 2009 work program involves community management planning with three communities being (i) Mangalulu, (ii) Emau, and (iii) Epau. For many of the remaining communities management plans are in the process of completion resulting in a total of 14 communities needing to complete the full planning cycle.

244. Future programs aim to incorporate reforestation for logged areas, building ecotourism businesses and products and developing botanical research for new local products such as medicinal herbs.

245. As an ICM learning site, the ELMA can be improved with the addition of provincial coastal waters that extend seaward 6 miles or approximately 10km. Within the Coastal waters and including Eretoka Island and part of Lelepa Island is Vanuatu's first World Heritage Site – Chief Roi Mata's Domain with an area of 886 ha and a buffer zone of 1,275ha. Forestry has forest woodlot plans and is implementing these as community based forestry.

246. Other initiatives in the proposed area include a JICA funded fisheries restocking program, an extensive Reef Check Vanuatu monitoring program, past work by Procfish in marine resource studies and marine biodiversity, and an ongoing FSP implemented program for community development and management planning.

247. The GEF funded PoWPA program has identified priority marine protected areas to be further studied and assessed for inclusion in the PoWPA priority site program[2].

248. The Tourism sector is promoting a tourism investment zone in North Efate and has been approached by potential investors seeking to invest in the region. To date access to land and social land conflicts have slowed tourism investment occurring although there has been one hotel and several home stay operations established.

249. The Department of Environment and SHEFA Provincial Administration seeks to bring the learning of all these initiatives into a common management and ICM learning framework that will inform the development and implementation of an EAFM and ICM approach in Vanuatu. The learning framework will be used to develop the necessary regulatory, legislative and institutional reforms – see Output 3.

250. Approach and Method for designing, implementing and monitoring the demonstration area is based on (i) strengthening the existing ELMA program and (ii) providing a coordination and learning

[2] THE RETA teams attempts to meet with POWPA staff, also funded by GEF were refused by the PoWPA project manager and as such the RETA is reliant on second hand and often dated information only.

framework for other stakeholders to work collaboratively and contribute to the same overall goals – sustainable development and economic growth. For some aspects of the program Vanuatu best practice is already emerging i.e., community based development and management plans using the FSP, RSTP approaches that will underpin the soon to be announced decentralization program for demand led development planning.

251. These practices will be combined and applied in the context of managing land based threats to coastal and marine resources for ICM. Ongoing and recent past programs are available for building social engagement, establishing social, economic and biophysical baselines reducing the start up costs and enabling greater emphasis to be placed on pilot programs to address threats and livelihoods.

252. The approach seeks to build upon the demand driven management that is encapsulated within the community development and management planning systems. The demonstration program will integrate these approaches to EAFM assessment relating to habitat structure, resource assessments, fisheries management zoning and zoning regulations and marine reserves. In addition to be integrated with EAFM (effectively the fisheries sector plan) other sector plans relating to infrastructure, tourism and forestry will also be integrated with community plans. The resultant output will be an ICM plan for the ELMA region.

253. The ICM plan will include prioritization of pilot programs to address threats that are identified at the community level as well as priorities for securing sustainable resource management, and sustainable livelihoods. The ICM plan will include the climate adaptation programs and where these are prioritized they will form part of the pilot implementation programs

254. Stakeholder forum – there is currently a Council of Chiefs agreement and stakeholder forum established for the ELMA program. The CTI-Pacific program seeks to work through the same arrangement. In doing so, a start up meeting and agreement with the Council of Chiefs will be necessary – this meeting will need to provide a detailed briefing of the program and seek approval for its implementation. Once approval is obtained a wider stakeholder workshop for 2 to 3 days will be convened. The purpose of the workshop is to develop common understanding of ICM, CBNRM, ridge to reef , EAFM, Miradi threat analysis, and the community, area council and provincial planning processes through which these can be accomplished. The understanding of these will be used to build a vision of what they mean to local stakeholders and how local stakeholders wish to use these approaches to improve their wellbeing. The forum will also invite stakeholders from the adjacent Provinces to observe as part of building a learning framework. The work plan will be elaborated by the IA/EA which will form the basis for implementation.

255. Success and sustainability will be built on identifying successful threat management responses linked to livelihood development programs. The Stakeholder forum workshop shall be jointly chaired by the SHEFA Province and the DoE and will produce a broad 4 year plan for the demonstration area and a detailed annual work plan with responsibilities and timelines.

256. Quality Control The work plan will be reviewed by the quality and strategy group (see Output 3) and comments provided to the implementing Agency (IA). The comments and the IA responses, and the revised work plan will be presented by the IA and representatives from the stakeholder forum to the Council of Chiefs and the DoE for ratification.

257. Data Collection The existing data and information for the area will be collated, catalogued and stored in digital and if necessary hard copy. The data collation program to be undertaken by Project Coordination staff with data provided from all sectors being copied, catalogued and archived in a Program library. A data management contract will be awarded to Department of Lands, Land Information System Unit, for digitizing existing and survey data onto a national base map and the production of agreed thematic maps. Data gaps will be filled through sub contracting relevant surveys and studies. These are likely to include:

- A coastal and marine habitat mapping contract to implement a habitat mapping exercise based on satellite imagery, field ground truthing and the production of high level habitat management maps for the coastal environment. The satellite imagery interpretation will need to be contracted outside of Vanuatu due to inadequate skills and equipment in

country. The purpose of the habitat mapping input to the ELMA demonstration is both for capacity building and for management input.

- Ground truthing will be integrated with a rapid coastal assessment. Based on the satellite images priority ground truthing sites will be selected and at the se sties appraoxiamtely 24 transects will be surveyed
- Current technology reviews recommend[3] the use of multi-spectral platforms offering a blue band such as Quickbird, IKONOS, Geoeye etc. The use of Remote Sensing (RS) requires relatively easily attained skills. The FD has one GIS trained staff member and another that could be trained in these techniques. These two staff will implement habitat mapping for FD in the field. Training will be required in:
  a. Visual interpretation linking image with field observation
  b. Understanding of coral geomorphology
  c. Correcting for sun glint
  d. Geo-correction to GPS measurement
  e. Masking and mosiacing to allow classification by segment and their merging
  f. Understanding statistical classification
  g. Depth correction
- The two FD staff will continue to be involved throughout the field observation and habitat mapping programs. The Program will procure the services of an RS expert and appropriate satellite imagery from which field ground truth sites will be identified.
- At each of these sites multiple transects will be used to interpret the habitat image. Data will be used to produce thematic maps that will then be used to produce coastal and reef fisheries management plans based on an EAFM approach. Transect surveying will be a joint implementation arrangement between FD and Reef Check Vanuatu.
- The team trained will form the core team for the habitat mapping proposed for 4 provinces –see Output 3 – that will enable the roll out of EAFM across Vanuatu in the future.
- During the ground truthing for the RS image, the FD will complete a rapid marine and coastal environment assessment that identifies habitats and quality, diversity, biomass, and taxa. The program will use local expertise and involve intensive transect monitoring over a 2 week period.
- Development planning for 21 communities and the integration of community stakeholders in to EAFM and ICM plans

258. All existing data and new data generated will be passed to the Land Information System Unit of the Department of Lands for incorporation into the database, and for the production of thematic maps. It is envisaged that data base development time would amount to 0.5 full time equivalent for 3 years and that the Program should produce a total of 50 map outputs.

259. Planning Process The planning process will operate at three levels; ELMA Provincial level, Area Council level, and Community level. Existing planning processes will be modified to fully integrate EAFM and ICM management. This will be achieved through community stakeholder groups being involved in the production of habitat maps, habitat management decisions and the negotiation of management rules for habitat and fisheries management. Similar involvement will be necessary to incorporate the trade-offs arising from land based threats.

260. The primary task will be the community level development and management plans. The existing program for FSP will be applied along with a socio-economic assessment for baseline

[3] see Andrefouet,S., 2008. Coral reef Habitat Mapping using Remote Sensing: A User Vs Producer Perspective. Implications for Research, Management and Capacity Building. Spatial Science, Vol 53, No 1 June 2008

purposes. The area council planning session will focus on common programs, shared threats and offsite effects between communities within a 2 day workshop.

261. Each planning process will complete a threat, cause and response process using the Miradi threat based management planning and decision support tool. Miradi is increasingly used in the Pacific and is currently considered best practice.

262. Once all plans are completed a demonstration area plan will be compiled from the Area Council plans. The ELMA Provincial plan would seek to complete an overarching development and management plan along with priority actions to be undertaken. The workshop will take 3 days and will include the preparation of action plans for the priority pilot programs to be funded by CTI-Pacific.

263. The workshop for all stakeholders will review the need for inter-area council adjustments due to interactions across administration borders, and will undertake a prioritization program for identifying site level technology demonstrations that specifically address threats to the coastal and marine environment.

264. EAFM The coastal environment shall also be planned within an ecosystem based approach for coastal fisheries management. The FD in partnership with Reef Check Vanuatu shall complete (i) habitat description and mapping - define and describe the ecosystem in terms of scale, diversity. extent and composition, (ii) rapid coastal resource assessments of resource health and integrity, (iii) Miradi assessment of threats including the identification of both causes and possible management response, (iv) define management zonation for the maintenance, protection, mitigation, and rehabilitation, and (v) implementation using a CBNRM approach that learns and adapts management strategies through user orientated monitoring programs.

265. The EAFM plan will identify management zones by objective including the location of reserves. Where the plan identifies options for limiting catches or reserving areas the FD will work within the community management planning process to identify options for minimizing the loss of fish catch. This could simply be a livelihood program or could involve reintroductions of fish or molluscs, the provision of value adding technology and the provision of temporary offshore FADS that can be used for catching small pelagic species while coastal resources are recovering.

266. Site Level Demonstrations. Using the planning priorities from the stakeholder forum, planning workshop action plans will be developed by the Program to support and implement the site level pilot programs. Preparation of action plans will be a joint responsibility between the RETA ELMA program and recipient village/community.

267. For agreed priorities the RETA will finance the cost of materials and any expertise (if necessary) while the labor will be provided by the community as their in-kind contribution. The RETA will provide an investment that can be applied to the site level demonstrations based on the outcomes of the planning processes and the priorities ratified by the various stakeholder fora. Each pilot will be required to present an action plan comprising:

- Stated problem and its underlying causes
- Expected output
- Proposed program to deliver output based on best management practice
- Key indicators of success and base line data to enable the assessment of impacts
- Total cost
- Active participation in the learning process through exposure within the community about the program and what it has or is achieving, and cross visits between communities to expose others with similar problems as per their planning process.

268. The first priority for funding will be proposals that include solutions based around economic development management responses to priority threats. This could involve substitution of shifting agriculture with permanent crops, afforestation, agroforestry, management of piggeries, building small enterprises linked to tourism, fresh produce and agriculture commodity value chains.

269. For the demonstration area pilot sites will be developed for each major threat. For example, there may be a sanitation threat and a threat solution based on septic tanks. In this case households would be supported with implementing the agreed solution to demonstrate the benefits and impacts of using in this example septic tanks and flush toilets. These would be located throughout priority management zones with the expectation that neighboring households may seek to start installing septic tanks using their own or other resources. Similar strategies can be designed and introduced to address solid waste management where containers are used for inorganic waste and its subsequent disposal. Given the low number of communities, options for piloting different threat responses in each village will be considered wherever possible.

270. Given the focus of CTI-Pacific is food security a guideline of 20% to 25% of the investment funds would target social well being outcomes such as sanitation and 80% should target economic livelihood and win–win solutions where employment and incomes increase and the pressure on natural resource assets decreases.

271. All demonstration site materials will be procured by the IA once the action plan is approved by the IA and Demonstration Area stakeholder representatives. All labor will be voluntary and provided by the community as is currently practiced in CBNRM programs.

272. All site demonstration programs will need to be achievable in a two year window and the latest disbursement for implementation would be last quarter project year 3.

273. Each year the Project Implementation Officer will convene a stakeholder planning forum that evaluates all the work completed to date and outlines the work plan for the following year. This forum will be linked to the national quality and strategic reviews.

ii. Climate Change Adaptation

274. The climate change adaptation program will be implemented by a regional contractor working in partnership with the National Advisory Council Climate Change (NACCC) and the NACCC core technical team and the EA/IA.

275. Currently NACCC has a significant portfolio of adaptation and assessment programs – see Appendix B. The NACCC has two priorities being (i) a focus on pilot adaptation work based on existing vulnerability assessments and (ii) vulnerability assessment work for areas not yet completed.

276. The climate change adaptation program will be planned and integrated with the North Efate ELMA demonstration work plan and will include the offshore islands, some of which have significant coastal erosion.

277. The adaptation program will be fully integrated with the ELMA demonstration work plan and will maximize its investment in pilot adaptation programs and their evaluation. Implementation is dependent upon approval of the proposed work plan by the ELMA stakeholder forum and the NACCC.

278. Vulnerability analyses will be conducted using the conceptual framework of the IPCC and the computer generated models of the NACCC built on the SIMCLIM software using social datasets, climate data, DEM, Aerial photography. The IPCC partitions vulnerability to climate change into three elements: the frequency and magnitude of exposure to external shocks (e.g., climate changes), the degree of sensitivity to those impacts, and the adaptive capacity of the community or society experiencing those impacts. The vulnerability of a fishery system (including the broader coastal and social dimensions) is composed of exposure to external threats, the effect of those threats and the ability of people to respond (sensitivity and adaptive capacity) (Smit and Wandel 2006; Füssel 2007).

279. The IPCC framework will be combined with an indicator based approach that includes not just climate change but other sources of vulnerability (see Allison et al. 2009 for a rare fisheries example) and a Sustainable Livelihoods Approach (Carney 1998) to ground the analyses in the lives of rural people. Analyses at regional, national and sub-national scales will be linked based on the work of Zurek and Herichs (2007) for the Millennium Ecosystem Assessment (MA). The ICM demonstration area manager and the climate change program contractor will integrate the vulnerability analysis with the threat analysis used for managing local threats.

280. The RETA contractor will apply and compare the vulnerability assessment approaches with the NACCC methods as well as approach. The RETA will focus on deriving adaptation from community level up which is in contrast to the technical assessment approach used by the NACCC core team to date.

281. Scenarios and Adaptive Responses. Fisheries are often over fished due to a range of causes. Fisheries will also face increased disruption and vulnerability as a result of climate change. Adaptation to climate change in small scale fisheries will require addressing both existing issues as well as new issues arising from climate change. Although aquaculture could defer the loss of stocks, biotechnical interventions such as inshore Fishing Aggregation Devices (FADs) only defer addressing the issue of declining fish stocks. There can be no solution to the looming biodiversity conservation, food security, and economic development crisis without a transformation in the management and governance of inshore fisheries as well as the management of land based threats to coastal ecosystems.

282. Effective responses to climate change will require actions at the three primary scales of governance: national, provincial and community. Further, it will require the integration of policy and action among sectors, such as health, environment and education to better mirror the factors that influence the lives of people. Climate change adaptation and marine resource management will succeed or fail at the community or village level and as such the Program will introduce vulnerability assessment outcomes and future scenarios into the Area Council development planning process – see above). Through these already proven planning systems the important interactions and feedback patterns between coastal and land-based livelihood activities, for example upstream farming practices, logging, etc., that have profound effects on the coastal zone. Climate change adaptation measures must be integrated into broader rural development initiatives.

283. Assessments of the potential impact of climate change on fisheries have tended to emphasize predicted changes in resource production and distribution and make only broad inferences about consequent socio-economic vulnerabilities. Assessments across the many domains of a fishery and through the multiple impacts on fishery systems are critical for adaptation policy and action. Assessing how vulnerability to climate change might itself change requires a dynamic assessment framework that accounts for changes in all elements of vulnerability over time (Füssel, 2007). Scenarios are useful tools to estimate future socio-economic conditions, accounting for alternative futures within the data-sparse context of Pacific Islands states. Scenarios will be developed using techniques developed by Brown et al. (2001), Chuenpagdee et al. (2001) and Tompkins et al. (2007).

284. In the absence of the foregoing analysis it is difficult to provide specific examples of adaptations as these will be specific to communities, countries and climate change threats. Broadly adaptations will occur through improved policies and development pathways at national levels, improved capacity to self-organize for collective action at community level, and diversified livelihood platforms at the household level that reduce vulnerability through greater livelihood mobility. Although infrastructure interventions are often identified priorities, local community level responses with support from local and national government will play an important and cost effective role in successful outcomes.

2. Output 2.2 Climate Change Adaptation

285. Climate change adaptation will be undertaken in the ELMA site where vulnerability assesment and scenarios will be incorporated in the Area council level planning and the Provincial level planning and will fund pilot adaptation program in both offshore islands and Efate –(see above). In contrast to ELMA the RETA will support pilot adaptation programs in Paama which ahs already been assessed as being critically vulnerable by NACCC.

286. By 2015 the Project will have identified and implemented adaptation strategies for one of the three regions identified as being critically vulnerable[4]. The vulnerability assessments proposed that the Government responses should be ICM driven. Critically vulnerable areas where found to be low lying and sometimes densely populated island groups within the country, namely the Torres group,

[4] See Philips, B., 2008. Vanuatu Vulnerability Assessment: An approach to integrated regional assessment

Shepherds group, Paama island and the small Tafea outer islands. The climate change adaptation program will seek to identify adaptation strategies and costs for one of these island groups, namely Paama and then to contrast these adaptation strategies with those designed for the Efate demonstration site.

a. Method

287. The regional climate change contractor will work with the NACCC to prepare a work plan for the building on past work at Paama island. The focus of the work plan will be to identify adaptation options using similar approaches as the ELMA demonstration site in Efate but not duplicating work already completed by the NACCC. The adaptation strategy options will be presented to the NAC Climate Change and prioritized with NACC before the end of Project Year 2. Based on the NAC decision the priority adaptation programs will be implemented using the same rules as for the ELMA pilot programs. The CTI-Pacific program will provide materials, transport and support catering but will not pay for local labor.

288. The priority on these critically vulnerable islands is to move past assessment and to test scenarios and pilot preferred options. The pilots are likely to be far more strategic and wider reaching than in less vulnerable sites.

289. The contractor will assist the NAC Climate Change complete a national level review of the findings from national climate change programs, the ELMA demonstration area and the most vulnerable island pilot case study. The consolidation will be used to inform a national adaptation policy and a plan for future work.

3. Output 2.3 Ecosystems Approach Fisheries Management Demonstrated

290. On completion there will be a national strategy for the management of Inshore and Near Shore Fisheries based on the application of Ecosystem Approach to Fisheries Management. The strategy will be implemented by FD in partnership with Reef Check Vanuatu at two locations being (i) South-east Santo Island involving 4 sites covering 30 to 40km of coastline linked to 6,700 people and 1300 households in the 1999 census, and (ii) Epi Island, SHEFA Province consisting 80 to 100km of coastline, 44,641ha supporting a population of 4,542 in 926 households. The EAFM will be supported for priority implementation and will be included in the quality and strategy team program – see Output 3. The specific outputs will include:

- Habitat maps and rapid coastal assessments for each location
- EAFM plan with defined management targets, management objectives, management interventions and a priority plan of action
- Community baseline and management plans that incorporate the management zonation recommendations for fisheries management to align fisheries management with the needs for livelihood improvement, and local economic development.

a. Method

291. The habitat mapping in the Efate ELMA Demonstration Site will be supported by an external contractor to implement, train and supervise the RS program. For the Santo and Epi island EAFM program, the FD team will undertake the whole program with only technical mentoring at two points in the process being the image interpretation and a review of final interpretation. These inputs will include one in country visit and one home office review of the final interpretation.

292. The program will be supported by the second part of the RS expert contract for coastal and marine habitat mapping supervision based on satellite imagery, field ground truthing and the production of habitat maps for the coastal environment. The program will be implemented by FD and the two staff trained in the ELMA program will be responsible for the implementation of the habitat mapping program.

293. The Research Division of FD will provide the leadership in the rapid resource assessment and the ground truth program of work using the same methods and approach applied in the ELMA site.

294. At each site the FD shall complete (i) habitat description and mapping - define and describe the ecosystem in terms of scale, extent, and composition, (ii) rapid coastal resource assessments of resource health and integrity, (iii) define management zonation for the maintenance, protection, mitigation, and rehabilitation, and (iv) implementation using a CBNRM approach applies management strategies through user-orientated monitoring programs defined in community management plans.

295. The EAFM plan will identify management zones by objective including the location of marine reserves. Where the plan identifies options for limiting catches or reserving areas the FD will work within the community management planning process to identify options for minimizing the impact of reduced fish catch. This could simply be a new livelihood program or could involve reintroductions of fish or molluscs, the provision of value adding technology and the provision of temporary offshore FADS that can be used for catching small pelagic species while coastal resources are recovering.

296. Data will be used to produce thematic maps that will then be used to produce coastal and reef fisheries management plans based on an EAFM approach. The team trained will form the core team for the habitat mapping proposed for 4 provinces –see Output 3 – that will enable the roll out of EAFM across Vanuatu.

4. Output 2.3: Sustainable Program Financing

297. By 2015, the Program will produce the following outputs relating to sustainable financing:

- Policy for raising fees and revenues from natural resource use for the financing of ICM programs
- A project design document for the monetization of forest carbon associated with the ELMA forest protection area totaling 19,000 ha
- A detailed feasibility study for the introduction of a revenue program based on coastal resource use including:

  h. raising user fees for recreational fishing associated with areas adjacent to Taboo areas, FADs and open sea inshore fishing,

  i. a marine biodiversity fee levied on the tourism sector through either a bed or arrival tax to be used for local ICM program implementation

a. Methods

298. A policy analysis program will be implemented by the regulatory and policy group of DoE with support from a short term technical expert (2 person months) provided by the Project Management contractor. The program will form a sector working group and will develop a work plan for completion over the first year of the RETA Program. The work plan will include the development of a policy options paper covering the raising of fees and revenues, options for fund management, mechanisms for fund distribution.

299. The mobilization of a carbon measurement expert with experience in alternative carbon standard models, and the preparation of a carbon project design document forestry expert to work with ELMA Program staff to review the potential for carbon monetization, identify the preferred carbon standard and measurement requirements, outline a program of work to be undertaken to develop the data sets for the preparation of a project design document, and the preparation of the Project Design Document for the sale of carbon. The expert shall assist GoV to place the project design document into the international market to seek a carbon offset sale.

300. Detailed feasibility analyses of introducing user-pay systems linked to coastal resources will be contracted to local providers in program year 2. The studies will be required to estimate potential charges, procedures for their introduction, systems for fund management, and defined uses for the use of funds. Contracts will be awarded separately for a total input of 3 person months each.

D. Detailed Description Component Three: Enabling Conditions

1. Output

a. Output 3.1 Learning Framework

301. The project will build a multi-level ICM learning network that operates across levels ranging from demonstration area, area council, provincial administration, national and regional (CTI-Pacific).

302. The learning framework seeks to:

- strengthen understanding of ICM and EAFM concepts,
- build implementation capacity,
- inform the National Advisory Committee of Biodiversity, National Advisory Committee of Climate Change,
- identify best management practices for Marine Biodiversity Conservation, ICM, EAFM, and
- develop implementation approaches customized for Vanuatu.

i. Methods

303. At the national level the Program will support the formation of a quality and strategy review team. The IA/EA and DoE Project Coordinator shall form the team which will comprise three individuals being (i) a prominent private sector business person, (ii) a person representing community interests, (iii) a technical expert. The identification of the potential team candidates shall be through the Project Coordinator who will compile a long list of no less than 8 candidates that will be provided to the EA. The EA will confirm acceptability of proposed candidates in terms of institutional and political acceptability. The IA will select from the acceptable candidates to fill the business and community representatives. The team will be accompanied by a local lawyer who will collate the necessary information on essential reforms to enable EAFM and ICM in Vanuatu. The lawyer shall work closely with the EA to build a vision of establishing a Sustainable Development Council which would seek to build an agenda of ecologically sustainable growth.

304. The technical expert may change for each year according to the technical issues that are envisaged. The role may be a national role but equally should the need arise the role could be filled from the regional learning framework that will be managed by the Pacific Round Table and IUCN.

305. The quality and strategy review team will be convened by the EA with the Director of Environment and will include the Senior Officer of the DoE Conservation program and the Project Coordinator.

306. The role of the team is to review: (i) annual work plans prepared by the IA, (ii) prepare forecast budgets, (iii) review the demonstration area work plan and approach, and (iv) provide independent review and audit of the progress reporting and evaluation in August/September each year. The team will review work plans before they are approved and will provide the EA and the Project Implementation Contractor with written comments as well as briefing the NACCC and NAC Biodiversity.

307. The annual review and evaluation program is scheduled to fit into the national planning and budgeting time line. A contractual requirement of the EA will be to convene a participatory evaluation program at each of the Program sites where all subcontractors and the IA and stakeholder will present their work for the year, achievements, successes and failures. The evaluation will also reflect on processes and procedures and ascertain were improvements and efficiencies can be achieved. The evaluation process will provide the basis for the synthesis of lessons learned and best management practice that will be compiled into an annual report and electronically distributed throughout the wider learning network.

308. One role of the quality and strategy team will be to provide a mechanism for the program to access high level executive decisions for issues relating to coordination, sector roadblocks etc. This will be through informing a National Advisory Committee for Biodiversity and through their direct personal linkages to senior politicians. It is suggested that the quality and strategy review team will elevate the role and responsibilities of the NAC–Biodiversity to a standing where it is broadly accepted by government agencies and becomes functional in the leadership for Marine Conservation and Management.

309. For two of the four program years the regional learning framework will add a person from one of the other participating countries into the evaluation team. Whenever possible the chair of the Round Table will also participate.

310. Following the national level evaluation the IA and the EA from each country will participate in the annual regional evaluation that will involve all countries and will be convened and hosted by the Pacific Round Table each year. At the regional evaluation meeting each country EA and IA will present the findings of the national evaluation and identify key lessons learned. A score-card system for rating achievement and implementation performance will be tested as a means of creating increased incentives for quality strategic programs.

311. The regional session will address key themes such as legal and regulatory approaches, best management practices, policy frameworks, information systems, planning tools and legal and regulatory changes. The regional round table will require two project participants, one stakeholder and one non-government institution.

312. In the final year the quality and strategy team will evaluate the total project and use this with Government to scope the possible extension of the program.

b. Output 3.2 Legal and Regulatory Reform

313. By 2015, the Environmental Management and Conservation Act 2002 and the Fisheries Act (currently being reformed) will provide consistent and effective management and protection of the coastal zone of Vanuatu. The Fisheries Act will support effective EAFM in coastal and marine environments including the requirement for the FD to implement reserves as management tools. The Environment Management and Conservation Act will support the movement from Environmental protection to an overarching focus on sustainable development with effective environmental protection, conservation management and coastal management detailed in terms of required actions by DoE and wider Government.

i. Methods

314. The RETA will support the FD to undertake a multi-sector process of developing a national strategy for managing coastal resources using an EAFM. The strategy development process is seen as a means of developing common understanding and consensus on what EAFM is and how it can be applied to the challenges of Vanuatu's coastal resources and a community owned and managed resource.

315. The strategy should be used to inform the FFA legal review of the Fisheries Act which also needs to consider the issues raised by the RETA in Appendix F.

316. The Environmental Management and Conservation Act will be reformed in a strategic manner rather than the current incremental reform basis – see Appendix F. To support this the RETA proposes to add a national legal adviser to the Quality and Strategy Review team for the first two years and thereafter provide increased inputs to develop a reform plan and set of recommended reforms for the EMCA to be enacted in Year 4.

c. Output 3.3 Coastal Habitat Mapping

317. Ecosystem Approach to Fisheries Management (EAFM) has not been applied in Vanuatu. The Program will support the defining and trialing EAFM and its merge into Integrated Coastal Management. A perquisite for building EAFM on a large scale is the access to habitat data and coastal

resource assessments. On Completion of the RETA detailed habitat maps for the following provinces (i) SANMA, (ii) PENAMA, (iii) MALAMPA, and (iv) SHEFA Provinces

i. Method

318. A habitat mapping program exercise based on satellite imagery, field ground truthing and the production of high level habitat management maps for the coastal environment. The satellite imagery interpretation will need to be contracted outside of Vanuatu due to inadequate skills and equipment in country. The purpose of the habitat mapping input is to support the implementation of EAFM across Vanuatu. The program will utilize the capability established under the Efate ELMA demonstration program through the use of RS technology tested and adapted during the demonstrations and EAFM programs.

319. As such the two FD staff trained in RS and habitat mapping will continue to apply their skills across a wider scale. Following image interpretation sites for ground truthing will be identified and site multiple visual assessments transects will be used to ground truth the imagery across different habitat categories. Data will be used to produce thematic maps of the agreed habitat typologies.

320. During the ground truthing of imagery a rapid marine and coastal environment assessment that identifies habitats and quality, diversity, biomass, and taxa will also be completed by the FD.

d. Output 3.4 Marine Biodiversity Network Planning

321. On completion of the RETA the following outputs will be in place:

- A marine protected area network designed provincially and nationally
- Initial community engagement for the formation of these protected areas.

i. Method

322. The Environmental Management and Conservation Act includes provision for the formation of the NAC Advisory Council for Biodiversity. The RETA requests that this be established priori to Program effectiveness as the NAC will establish the mandate for marine biodiversity conservation.

323. Currently the PoWPA program is identifying sites for inclusion in the Marine Protected Area Network. The process is based on a high level review of options and then site assessments for identified priorities. While using the existing data and expert opinion the approach has significant data set constraints regarding coastal and marine habitats.

324. Further the NAC for Biodiversity although provided for in the Environmental Management and Conservation Act 2002 has yet to be formed and it is unclear if there is any effective legal basis for creating Marine Protected Areas. For example, the Fisheries Marine Reserve provisions state that it is an offence to:

- engage in fishing
- take or destroy any coral
- dredges or takes any sand or gravel
- disturbs the natural habitat or
- take or destroys any wreck or part of a wreck.

325. Most LMMAs will require seasonal no take zones, use zones and strict no take zones and as such the Fisheries Act Marine Reserve will only apply to the no-take zone.

326. The development of habitat mapping by the RETA Program provides a basis for more systematic design of the Marine Protected Area Network at both a Province and National level. The

RETA proposes that the DoE establish the NAC - Biodiversity urgently, and that the NAC - Biodiversity be used as the platform through which marine protected areas be designed using habitat data sets, existing resource data sets that will increasingly be captured on GIS and the socioeconomic data sets from community management plans.

327. The RETA will support the use of conservation planning software such as MARXAN or equivalent software for planning Marine Protected Area Networks and applying this with the new data sets including the habitat data. The proposed network will then be created through a series of negotiations with affected communities.

e. Output 3.5 Information Systems

328. The Project shall develop digitized data base to support ICM and EAFM management systems and how these support CBNRM in Vanuatu with DoE and Provincial Administration having web based or portal based access to the data base, thematic maps and data queries.

i. Methods

329. The database will be formed under contract by the Department of Lands (DoL), Land Information System Unit using a nationally approved base map and the sector database. Provided technology is upgraded, the DoL will provide access to data transferred into the Ministry of Lands database along with the creation of an access portal to DoE and FD.

330. The initial collation of data related to each Program site will be passed to the Department of Lands for digitizing and incorporation onto the GIS platform. The Department will produce maps and data support to the Program.

E. Detailed Description Component Four: Effective Project Management

331. The lack of human resource capacity within the DoE and the FD is a significant constraint for successful program implementation. The cross sector nature of the proposed ICM demonstration program and the EAFM pilots requires actors from over a wide range of sectors and from across all levels of government and the community. To be an effective demonstration program a learning framework will be essential to inform stakeholders to enable adaptive management to emerge based on best management practice.

332. A critical element in the learning framework will be to access appropriate technical skills and leadership for implementation of the three proposed pilot sites, the building of enabling conditions, and strengthening of the DoE. Program management will be contracted to a service provider by ADB contracting a firm to provide Program Management and linked to the Executing Agency – the Ministry of Lands and Natural Resources.

333. The consulting firm will provide a full time Project Director, Accountant, Procurement and project administrator. The firm will also be responsible for providing technical skills including:

- ICM Expert for 7 person months over 3 years
- Remote Sensing expert for 5 person months over 2 years
- Carbon Measurement and Design Document expert for 3 person months
- Sustainable financing expert for 2 person months

334. The Firm shall provide administrative support for reporting to the EA on a monthly basis and to wider Project stakeholders on a quarterly basis. The Firm will support the quality and strategy team in the annual program evaluation and planning process, and ensure that work plans are agreed and reported to the Executing Agency and ADB.

335. The Program will support implementation with a Program coordination officer at DoE and a project implementation support officer at ELMA for support of the Efate demonstration site.

336. Overall program implementation will use local subcontractors for activities such as field surveys, ICM demonstration area planning, water resource quality assessments, sanitation and environmental health assessments, socio-economic survey and coastal community management and development planning, education and awareness materials, feasibility assessments of revenue and sustainable financing. The firm will support both the DoE and the FD in preparing an annual work plan, contracting of service provision, coordination of contractors and a demonstration area learning program.

337. A further function of the firm will be to coordinate regionally contracted services in the RETA including the regional learning program, the climate change adaptation program, and proposed capacity building programs that are agreed as part of the RETA wide activities.

338. Demonstration site program management will be a joint responsibility. For the Efate Demonstration Site program management will be a joint program between the existing ELMA program management and DoE, FD, supported by the Consulting Firm. The management relationship will be guided by a MOU detailing responsibilities.

339. The major responsibilities of the ELMA management team are:

- Overall Program Leadership and stakeholder involvement
- Terrestrial program coordination
- Planning process coordination at the community and area council and Provincial level

340. DoE responsibilities will include:

- Planning the ICM strategy and process
- Integration of the ICM strategy into the ELMA planning framework
- Supply of Miradi threat skills
- Supply of regional training programs on a timely basis
- Management of the quality and strategy team and evaluation program
- Leadership and management of the learning program
- Approval of work plans and contracting of services for the ICM program
- Management of Subcontractors
- Maintaining and building the relationship between the program and the Department of Lands Information Systems unit
- Registration of community marine conservation plans

341. FD will be responsible for:

- Planning the EAFM program
- Scheduling the expert input for RS input to habitat mapping
- Habitat mapping
- Coastal and resource assessments
- Ecosystem based fisheries management concept for the coastal zone
- Negotiation of management rules by zone including marine reserves, no take zones, fishing effort best practices, and gear restrictions.
- Forming and gazetting Marine Reserves under the Fisheries Act
- Evaluation of the EAFM approach prepare initial guidelines for application in Epi and Santo
- Implementation of Epi and Santo Island EAFM program

- Habitat mapping program to enable the expansion of EAFM

F. Project Costs

1. Summary Cost Estimate

342. The estimated total cost of the CTI-Pacific Program is USD 3.0 million including price contingencies. Price contingencies are set to 5% per annum for the life of the Program and for the additional year between data collection and expected Program start up in October 2010 and amount to 10% of total cost.

343. By component 11% of the total base cost expenditure is invested into organizational capacity building, which is a reflection of the limited staff and role of DoE in the project implementation. Component Two aims to test and build best management practices while building experiential skills in stakeholders from the national to local level accounts for 47% of the total costs. Component Three: Enabling conditions through support for legal reforms, learning framework, information systems and extensive habitat and resource assessments including the evaluation and quality development program with the Round Table accounts for 10% whilst Project Management and technical support costs (see Table 4) 21% of the total costs. Total Project contingencies equate to 10% or USD 304,950.

Table 5: Project Investment Plan

(USD)

Item			Amount
A.	**Base Cost**		
	1	Component 1: Organizational Capacity	$344,387
	2	Component 2: Best Management Practices	$1,369,734
	3	Component 3: Enabling Conditions	$361,071
	4	Component 4: Project Management	$627,378
		Subtotal	**$2,702,570**
B.	**Contingencies**		**$304,950**
Total			**$3,007,520**

Exchange rate 95 vat per USD1

2. Summary Costs by Expenditure Category

344. Table 2 provides the detailed costs by expenditure category. These are only indicative due to the site-based demonstration investment being defined by the ICM planning process. In total 21% of the total cost will go towards hard investment in the pilot site programs. The high cost of planning reflects the community based approaches being used in ICM and EAFM while the cost of studies and surveys is indicative of the data needs of ICM and EAFM approaches.

Table 6: Summary Detailed Cost by Expenditure Category

(USD)

Item			Total Cost	% of Total Base Cost
A.	**Investment Costs**			
	1	Civil works	$267,370	10%
	2	Planting materials	$89,971	3%
	3	Field and Operations	$139,608	5%
	4	Enteprrise development	$89,971	3%
	5	Studies/contracts	$268,103	10%
	6	Planning processes	$313,301	12%
	7	Capacity building	$249,835	9%
	8	Training	$230,100	9%
	9	TA - local	$19,830	1%
	10	TA - int'l	$336,809	12%
	11	Project management	$521,472	19%
	12	Office equipment	$42,693	2%
	13	Local transport	$133,437	5%
		Subtotal (A)	**$2,702,570**	**100%**
B.	**Contingencies**			
	1	Physical	$0	0%
	2	Price	$304,950	11%
		Subtotal (B)	**$304,950**	**11%**
Total Project Cost (A+B)			**$3,007,520**	

3. Proposed Financing

345. Project financing totals USD 3.0 million of which Government is financing USD 490,410. Approximately 25% of Government share is in kind for the office facilities for the Project Management Office. In addition the Government share include the two project supported positions for 2 years salary after they transfer back to the DOE as staff in year three and four.

Table 7: Project Financing Plan

(USD)

Source	Total	%
Asian Development Bank	$205,178	7%
GEF - International Waters	$583,393	19%
GEF - Climate Change	$364,153	12%
GEF - Biodiversity	$1,364,387	45%
Government	$490,410	16%
Total	**$3,007,520**	**100%**

4. Proposed Contract Packages

346. A total of 4 contract packages awarded by ADB are proposed. The main contract being in two parts for the Program Management Contractor will include funds for subcontractors totaling USD 868,354 that can not be used by the contractor without prior permission of the ADB and the EA. Details of the subcontracts are presented in Table 4.

Table 8: Proposed Contract Packages

(USD)

Item			Total Cost
	Issuer		
1a	**ADB**	**Contract 1a - Program Mgmt Contractor - Project Office**	**$1,232,365**
1b	**ADB**	**Contract 1b - Program Mgmt Contractor - Subcontracts**	**$822,636**
2	**ADB**	**Contract 2 - Regional contract - USP**	**$166,191**
3	**ADB**	**Contract 3 - Regional contract - Round Table / IUCN**	**$59,103**
3a	**ADB**	**Contract 3a - Regional contract - IUCN legal**	**$11,689**
4	**ADB**	**Contract 4 - Regional contract - Climate Change**	**$225,126**
5	Project	Contract 5 - Subcontract - Fisheries	$152,690
6	Project	Contract 6 - Subcontract - Fisheries/Reef Check	$26,512
7	Project	Contract 7 - Subcontract - Remote sensing	$81,228
8a	Project	Contract 8a - Subcontract - Community NGO Efate	$122,376
8b	Project	Contract 8b - Subcontract - Community NGO Santo	$74,760
8c	Project	Contract 8c - Subcontract - Community NGO Epi	$11,577
9	Project	Contract 9 - Subcontract - Live and Learn	$22,050
10	Project	Contract 10 - Subcontract - Min of Lands - GIS unit	$0
11	Project	Contract 11 - Subcontract - Shefa province	$331,443
		Government in-kind	$96,735
		Government total contribution (including in-kind)	$490,410
		Total by ADB contract - 1a,1b,2,3,3a,4 (includes contingenci	**$2,517,110**
		Total by ADB contract (1a,1b,2,3,4) + government contributi	**$3,007,520**

Project = Project Management Contractor

5. Project Management Costs

347. Project Management costs are broken out by category in Table 5. Management staff and office support costs total USD 421,085 some 35% of the total Project Management cost and 13% of total project costs. The remaining costs are to supply capacity to DOE for the first year until GoV transfers the positions into its recurrent budget, technical assistance to support component two and three, equipment and evaluation costs. .

Table 9: Breakout of Project Management Costs

Program Management Office staff (3)	$255,788
Local travel, meetings, other	$165,297
Office equipment	$14,963
TA - int'l	$364,903
DoE & ELMA Coordinators (2)	$58,829
DoE & ELMA local travel, meetings, other	$217,043
DoE & ELMA office equipment	$19,451
Field equipment	$9,213
Planning and studies	$54,628
Quality and evaluation	$36,136
Training - ELMA rangers	$0
Total	**$1,196,251**

G. Implementation Arrangements

348. Implementation arrangements will seek to build national capacity whilst also providing the necessary disbursement and fund flow options for an ADB Technical Assistance. The multiple agency involvement at Program implementation level is addressed through elevating the Project Management Office to the Executing Agency – Ministry of Lands and Natural Resources. Placement at the Ministry level will minimize the difficulties of Departments from differing Ministries working within the project.

1. Executing Arrangements

349. **Program Executing Agency.** The Program will be executed by the Ministry of Land ands Natural Resources within which the acting D-G Lands is Vanuatu's GEF Focal Point. The Ministry has direct line control over the DoE and the Environmental Management and Conservation Act 2002 which has the oversight for sustainable development and natural resource management along with Environmental Protection.

350. The DoE also has responsibility for reporting through the GEF focal point on matters relating to international compliance and progress for the conventions that Vanuatu has ratified. The Project focal point for the Government of Vanuatu will be the D-G Lands.

351. **Program Management Office.** The Program will support a program management office (PMO) that will be located in the Department of Environment but report to the Ministry of Lands and Natural Resources. The Program Management office will be the office space for a Project Management Contractor recruited by ADB and through which funds will be dispersed to the respective implementing agencies or subcontractors. The Contractor will provide a full time Project Director, Financial Accountant and a contracting and administrative support person.

352. In addition the contractor will mobilize technical experts relating to (i) ICM, (ii) carbon forestry, (iii) remote sensing, and (iv) sustainable financing expert. While these experts will work with implementing agencies they will be administered by the PMO who will ensure Terms of Reference are agreed and delivered on departure.

353. Locating the PMO within the Department of Environment offers the additional benefit of providing mentoring and professional development as the Department establishes its staffing and operational capability.

354. The contractor will be responsible for developing a consolidated work plan, coordinating demonstration implementation, contract service providers, and provide administrative support for the ADB and GEF funds with quarterly and six monthly reports, and financial management and reporting according to the terms of contract.

355. The contractor will provide Project Management functions including:

- Engaging with the Implementing Agencies and Provincial Government through a MOU
- Annual work plan coordination and preparation
- Implementation oversight
- Procurement and contracting
- Financial Management and reporting
- Coordination with the regional Climate Change Program and training provider contractors
- Six Monthly Project Progress reports

356. Monitoring and evaluation has been designed into the program through the quality and strategy review process and the associated learning framework. The contractor will ensure that these processes are timely and reported to DoE, the Ministry of Lands and Natural Resources.

2. Implementing Arrangements

357. The implementation of the Program components will be undertaken by different agencies with responsibility for implementing demonstration and support programs.

358. **The Department of Environment** will implement their own strengthening program through staff recruitment, training and the participation of two project coordination and implementation staff. One of the staff members will support the ELMA demonstration project for the first two year and will become familiar decentralized and community level natural resource and environment issues, planning and ICM. The other position will work in DoE for the first two years as a project coordinator for the DoE and represent their role in each of the demonstration programs. Both positions will convert to DoE staff position on the first day of Project Year three and will be GoV funded positions that will continue to work for DoE on program related activities through the following two years.

359. Key issues for the DoE, other than building its own capability, relate to building a process for designing a national marine biodiversity network based on socio-economic, biological, geographic data layers. To achieve this and to give the work a mandate within the Environment Sector the National Advisory Committee for Biodiversity will be formed and supported by the strengthened Conservation group of the DoE.

360. DoE will also work closely with SHEFA province to ensure the smooth implementation of the ELMA demonstration site and also ensure that learning and best management practices are identified and understood. The ELMA demonstration will be an important contributor to the design of Vanuatu's approach to ICM and its wider application which is within the DoE mandate.

361. DoE will also need to clarify the roles of CCA's, the purpose and role of their registration and how these integrate or link to Marine Reserves. Further regulatory development and legal reform may be necessary depending on the final content of the revised Fisheries Act currently being developed.

362. A number of key policy issues relating to sustainability of conservation and resource management initiatives need to be advanced and resolved. These include the potential to raise and capture resource rentals for the specific purpose of implementing improved resource management, the future of carbon forestry financing in Vanuatu and how the monetisation of carbon can be completed successfully and then used for the long run support of conservation and livelihood development.

363. The DoE will work with local contractors and technical experts provided by the Project Management Office to review policy options and seek broad consensus within Government on these issues before proposing specific policies for their use. The role of DoE will be to coordinate and advocate for more sustainable financing solutions for conservation and integrated coastal management.

364. In summary key functions and roles of DoE include:

- Planning the ICM strategy and process
- Integration of the ICM strategy into the ELMA planning framework
- Supply of Miradi threat skills
- Supply of regional training programs on a timely basis
- Management of the quality and strategy team and evaluation program
- Leadership and management of the learning program
- Approval of work plans and contracting of services for the ICM program
- Management of ICM Subcontractor inputs
- Maintaining and building the relationship between the program and the Department of Lands Information Systems unit
- Registration of community marine conservation plans

365. **SHEFA Provincial Administration** includes the Efate and associated islands and has a mission of providing the most effective and efficient delivery of services and to protect the resources and tradition of the Native Population and the rights of all people living in SHEFA Province. The province mandate is derived from the Vanuatu Decentralization and Local Government Act #1, 1994 which a Province the right to draft necessary by-laws to maintain the interests and welfare of its citizens. The total population of the Province is 54,612 based in 12,500 households and 213 villages spread over 144,500 ha with approximately 8,100ha of reefs. The Province is the hub for Vanuatu tourism with over 10 million in tourism revenue collected annually in the province. The province has a total staff of 53 persons spread over 15 islands.

366. The province has a program to establish a ridge to reef management program for natural forests and biodiversity that has been progressing with the support of Peace Corp volunteers and limited bilateral support. In the last 2 years SHEFA appointed a fulltime staff member and has moved forward with land owner agreements and is about to move into a trial community management planning program. The CTI-Pacific RETA will seek to support this initiative and broaden it through the integration of EAFM with the land based program currently being formed. Finally the RETA will develop an integrated coastal management program as part of the wider ridge to reef management framework.

367. The ELMA project office will act as the implementing agency in coordination with the DoE and FD. The RETA will support the ELMA office with some limited office equipment, assignment of a implementation officer for 2 years and the funding of a far larger work plan that will enable the ELMA planning program to be accelerated and implementation pilots started within the RETA time frame.

368. SHEFA will be responsible for coordination and preparation of work plans, and will in return receive access to RETA training, data analysis, surveys and mapping programs. Key functions include:

- Overall Program Leadership and stakeholder involvement
- Terrestrial program coordination
- Planning process coordination at the community and area council and Provincial level
- Participation in the quality and strategy review program each year.

369. **Fisheries Department** The Fisheries Department will act as the implementing agency for the (i) piloting of EFAM in east Santo and in Epi islands and the completion of (ii) habitat mapping and rapid resource assessments in 4 provinces in preparation for introducing EAFM. The FD will also be an implementing partner with SHEFA province for the ELMA demonstration program.

370. Within FD the Policy and Regulatory Division along with the Research Division will be responsible for Program implementation. The program will build on a SPC/SPREP funded program for building marine ecosystem resilience through the implementation of EAFM at two sites being Aneityum and eastern Malekula.

371. FD will be responsible for:

- Planning the EAFM program
- Scheduling the expert input for RS input to habitat mapping
- Habitat mapping
- Coastal and resource assessments
- Ecosystem based fisheries management concept for the coastal zone
- Preparation and adoption of a Vanuatu near shore and coastal fisheries management strategy

- Negotiation of management rules by zone including marine reserves, no take zones, fishing effort best practices, and gear restrictions.
- Forming and gazetting Marine Reserves under the revised Fisheries Act
- Evaluation of the EAFM approach prepare initial guidelines for application in Epi and Santo
- Implementation of Epi Island and Santo Island EAFM program
- Habitat mapping program to enable the expansion of EAFM
- Participation in the quality and strategy review program each year.

3. Regional Contractors

372. **Climate Change Adaptation Contractor** The RETA will provide a single regional contractor for the implementation of the climate change adaptation program. For Vanuatu this contractor will be responsible for total climate change funding less project overheads and coordination costs.

373. The contractor will be required to develop a work plan that is fully integrated with the ELMA work plan so that activities such as community level planning can be shared rather than replicated. The work plan will be submitted to the National Project Director in the PMO and the NACCC both of which will be required to ratify the plan.

374. The second site has been identified through a recent vulnerability assessment completed under the auspices of the NACCC. The work plan for the Paama site will focus on identification of adaptation options, assessment of the relative costs of these options, negotiating these with local communities and the NAC CC. The majority of the work will target implementation of demonstration adaptation sites within a learning and evaluation framework.

375. The Contractor will also work with the NAC CC to consolidate the lessons learned from adaptation programs and develop a future work plan.

376. **Regional Training Program** The RETA will contract the University of South Pacific (USP) to provide regional training in a range of courses including CBNRM, conservation and marine conservation, sustainable development options. The contract will require USP to deliver courses in Vanuatu to enable increased participation and to allow action based training to be fully integrated with the course and demonstration areas.

377. The training programs will offer positions to Government agency staff both national and provincial, NGOs and local community leaders and stakeholders.

378. **Regional Evaluation** IUCN will be contracted for providing round table support for supporting and hosting the annual regional evaluation program that will build on the national level quality and strategy programs. Each year the environment round table meeting will provide a session to CTI countries to have a joint evaluation and for identification of best management practices and lessons learned.

379. The proposed implementation arrangement for the demonstration area program is presented in Figure 1.

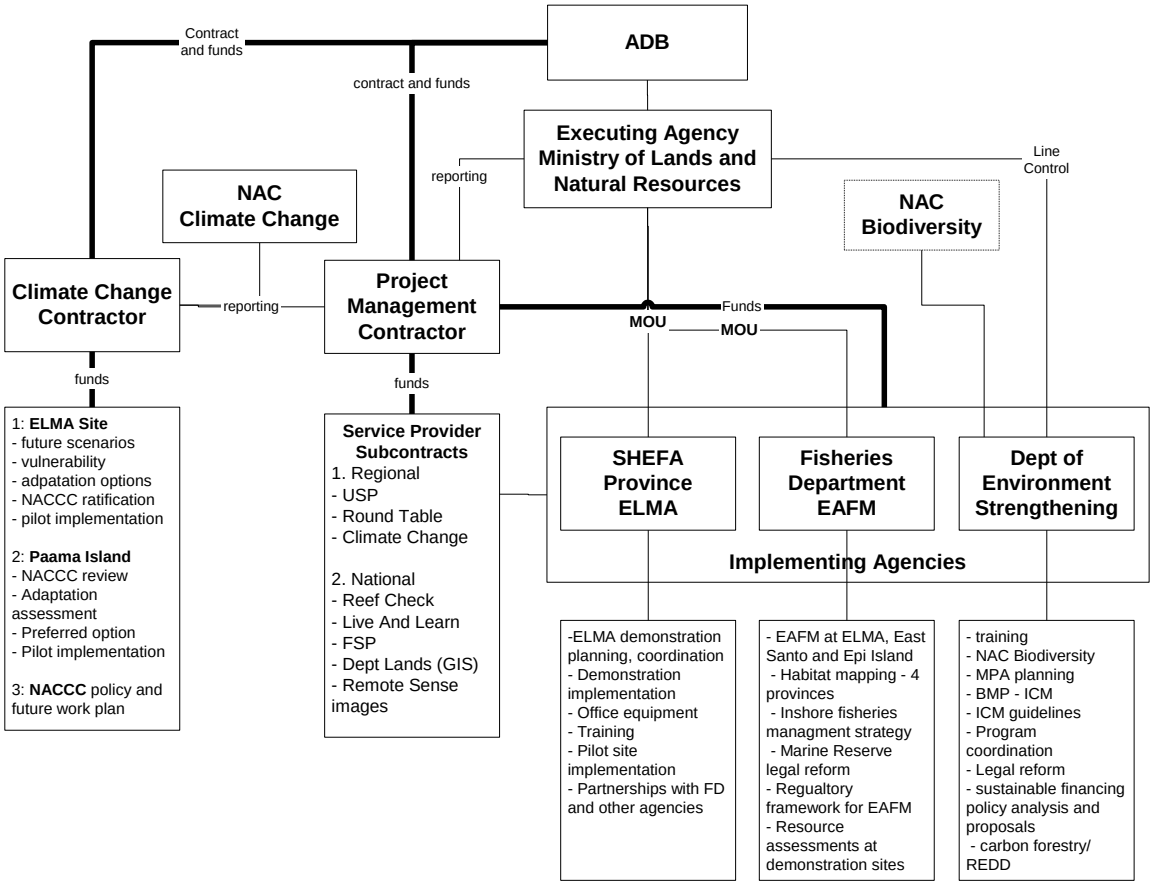


Figure 3: Proposed Institutional Arrangements

APPENDIX A DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
Impact Increased resilience in the capacity of coastal and marine ecosystems to contribute to food security	Productivity of marine ecosystems under management supporting a 10% increase in catch levels Coastal ecosystems assessments reporting increased diversity, and biomass relative to baseline in 2011-2012 Increased diversification in coastal community household income sources compared to surveys undertaken for management planning	Provincial data Fisheries coastal assessment and monitoring Government Statistics Monitoring surveys	**Assumptions** **-** ICM is effective in managing current and future threats - plans are fully implemented **Risks** - no compliance due to social and traditional land use disputes - Failure to adapt to changing threats
Outcome Integrated coastal management and ecosystem approach to fisheries management defined and institutionalized	10% (approximately 650 sq km) of coastal waters under EAFM by 2016 Coastal habitat mapped with supporting resource assessment for 4 of 6 provinces ELMA ICM site with sustainable financing and with local livelihoods increased by 20% relative to households outside of ELMA by 2020 National Marine Protected Areas plan with 15 areas ratified and with management plans by 2020	Fisheries data Coastal maps and GOS data set in Department of Lands ELMA records MPA planning map and registry for MPAs in DoE MPA management plans	**Assumptions** **-** that implementing agencies treat it as a project and do not build ICM and EAFM into their work plans **-** adequate funds for continued implementation - adequate support provided to community resource management **-** priority biodiversity areas can be reserved or protected **Risks** - EAFM becomes a top down technically dominated program
Output 1. Strengthened organizational capability and management competency in DoE and coastal management stakeholders	DOE staff numbers total 12 in 2013 Organization structures and strategy aligned with training in organization procedures competed by PY 3 Staff trained in ICM, conservation management and sustainable development concepts in PY 3 2 staff trained in community based resource management Senior staff mentored in	DoE records for staff and achievements Job descriptions and workplan Project records Training evaluation forms with demonstrated application of skills in 12 months	**Assumptions** **-** Staff appointed and available for training **-** Director provides leadership and controls based on agreed procedures and work-plans - trainees will be in roles to apply skills **Risks** - Staff appointed on time - DoE does not involve NGO or provincial / local level stakeholders in training

	legal and regulatory aspects of NRM by PY 3		
Output 2 Defining best management practice through experiential learning **2.1 ICM demonstration for Efate Land Management Area**	ICM ratified Plan for 8 islands including north Efate covering 50,000ha of land, 6817 population and 750sqkm of coastal habitat by mid PY 2 Habitat maps and ecosystem approach to fisheries for 750 sqkm including management zones and rules by end of PY 2 21 community management plans with fisheries management, sanitation and livelihood program by end PY 2 Pilot site best management practice for ICM threat management in 21 villages by the end of PY 3 ICM plans for area councils, and ELMA level including area livelihood programs based on sustainable economic development by the end of PY 2 Annual learning evaluation meetings at site level with best management practices agreed and collated. Plans at community, area council and ELMA level incorporate strategies for adapting to climate change vulnerability by end PY 2 Pilot community and area council level climate change adaptation programs agreed and implemented by mid PY 4	DoE and NAC records and minutes FD records Maps available and Lands Dept GIS data base DoE community management plans record and archive Project records and reports Minutes of planning meeting and annual work plans Pilot action plans ratified and being monitored	**Assumptions** **-** integration of fisheries, land management, tourism planning systems within community management plans and their implementation **-** EAFM management zones can be maintained in Community management plans **-** Stakeholder cohesiveness and support for ICM - climate change adaptation is feasible **Risks** - ICM plans are not implemented - learning framework not implemented
Output 2.2 Climate change adaptation for most vulnerable islands	Adaptation options defined for Paama island totaling 400ha, approximately 90 sqkm of coastal waters and supporting about 2,000 people		**Assumptions** **-** pilot adaptation canbe implemented under current scenario **-** Future scenarios are representative of most likely scenario - feasible adaptations are

	Feasible pilot adaptation programs implemented by mid PY 4 Review of national climate change adaptation programs with lessons learned used to design future work priorities		available and socially accepted - relocation is not required **Risks** **-** that no response is not the preferred response
Output 2.3: Ecosystem Approach Fisheries Management Implemented	EAFM plan based on habitat and coastal assessment, and management zones integrated with community management plans for eastern Santo for approximately 150 sqkm of coastal habitat, linked to 1300 households and 12 communities b y Mid PY 3 EAFM plan based on habitat and coastal assessment, and management zones integrated with community management plans for Epi Island 458 sqkm of coastal habitat, linked to 930 households and 4 communities b y Mid PY 4	Community fisheries management plans EAFM management plans for east Santo and Epi Island – FD	**Assumptions** - EAFM is implemented and negotiated with community resource owners and managers - the new Fisheries Act will support EAFM implementation within a community based natural resource management system **Risks** **-** adaptation requires significant infrastructure
Output 2.4: Sustainable Financing Established	Policy statement on the capturing of revenues from commercial resource users developed and agreed by end of PY 3 Detailed feasibility studies for the design of user pays management systems linked to coastal fisheries, and coastal tourism completed and implemented by mid PY 4. Project Design Document for the monetization of forest carbon from avoided deforestation and community forest management in ELMA protection area presented to the market by end of PY 2	Draft policy statements and DoE Ministry of Lands records	**Assumptions** - Financing can be collected and disbursed with integrity **Risks** **-** lack of capability to use funds collected efficiently
Output 3. Enabling conditions for ICM and EAFM established **Output 3.1. National Learning framework operating with annual**	Quality and strategy team formed by mid PY 1 Annual evaluations involving the quality and strategy team identifying lessons learned and	Quality and strategy team minutes and recommendations Project records	**Assumptions** **-** lessons identified will be incorporated into future decisions **-**

evaluation and planning by Sept each year	preparing annual work plans.	ELMA management office records	**Risks**
Output 3.2: Legal and regulatory Reform	National inshore and coastal fisheries management strategy prepared by FD by mid PY 2 Reformed Fisheries act reviewed to ensure consistency with EAFM including effective marine reserves that allow both no take and seasonal closures by mid PY 3 enacted Environment Management and Conservation Act and Fisheries reformed to accommodate a range of differing protected area designations including management zonation for EAFM by mid PY 3 Review of CCA registration procedures to ensure quality control systems are in place and the integrity of the registry are maintained Draft national ICM strategy and road map for drafting law or regulations within the existing Spatial Planning legal framework by mid PY 4	Fisheries Dept records Project records DoE records and draft documents Draft strategy	**Assumptions** **-** that EAFM will be able to demonstrate sufficient benefits to create an incentive for adoption - Legal reviews achieve coherent and consistent interpretations of marine protection systems **Risks** **-** legal framework unchanged
Output 3.3 Building Coastal data sets for EAFM implementation	Marine habitat mapping and coastal assessments completed for the major islands within SHEFA, MALAMPA, SANMA, and PANAMA provinces by mid PY 3 A national plan for the implementation of EAFM across the 4 Provinces by end PY 3 including budget lines in FD annual budget	Habitat images, maps and data points Habitat data sets – Dept of Lands National Plan	**Assumptions** **-** FD will continue to promote EAFM in areas with baseline datasets and community plans **Risks** **-** assessment and data remain unused
Output 3.4 Provincial and National Marine Protected Area planned	NAC Biodiversity formed and meeting regularly to ratify the planning of terrestrial and marine protected areas by end PY 1	NAC formative meeting minutes and ongoing minutes MPA plans Project records	**Assumptions** **-** Adequate data to enable network planning **Risks** - community resource owners

	Marine protected area planning for SHEFA, MALAMPA, SANMA, and PENAMA provinces completed and approved by NAC Biodiversity by mid PY 4 Initial community engagement for forming Marine Protected Areas completed by end PY 4		not engaged in protected area system
Output 3.5: Coastal and Marine Information Systems established	MOU with Department of Lands to support spatial database for Coastal, EAFM and ICM data sets including the digitization of data, and preparation of maps by end PY 1 Data for ELMA demonstration site digitized and mapped by mid PY 2 and mid Y 3 Habitat maps for all demonstration site and 4 provinces by mid PY 4	MOU Database Maps	**Assumptions** - digital sets sufficient and accessible to crate maps - data provided to Department of Lands **Risks** - data not shared or maintained
Output 4. Project management support Output 4.1: Effective Project management	PMO contract awarded by month 2 PY 1 PMO staffed and annual work plan by month 4 PY 1 Technical consultants mobilized and inputs integrated with training and planning program Project performance reports completed on time for at least 95% of requirements	Project records Client evaluations	**Assumptions** - PMO contracted on time - Government agencies will work collaboratively **Risks** Sectors work independently
Activities with Milestones 1.1 Contract DoE Program Coordinator role 1.2 Complete DoE organization development training 1.3 Specialist mentoring program 1.4 Individual training and skill development 2.1 Establish EMLMA MOU and stakeholder forum on ICM and CTI-Pacific 2.2 Community level planning for 21 communities 2.3 Habitat mapping and EAFM for estimated 750 sqkm of coastal waters of Efate 2.4 ICM land based threat identification 2.5 Training Park Rangers 2.6 Area council and ELMA Provincial planning meeting and prioritization 2.7 Data collation and digitization and mapping 2.8 Site level pilot programs implemented 2.9 Climate change adaptation priorities confirmed 2.10 Climate change adaptation pilots implementation 2.11 Habitat mapping of East Santo and Epi island with resource assessments			Inputs ***Finance (USD)*** ADB 205,178 Government 583,393 GEF - Biodiversity 1,364,387 - Int Waters 583,393 - Clim Chge 364,153 Total 3.0 million ***Inputs (USD)*** Civil Works 267,370 P Materials 89,971 Field ops 139,608 Ent Devel 89,971 Studies 2868,004~~168~~

2.12 EAFM and community planning involving up to 16 communities	Planning	313,301
2.13 Sustainable financing for ELMA policy report	Cap Blding	249,835
2.14 REDD forest carbon PDD completed and supplied to market	Training	230,100
2.15 Two user pay instruments designed and approved	Consultants	3~~35~~6,809~~645~~
3.1 Quality and strategy team formed and evaluating work plans, and work progress	Project Mngte	521,472
3.2 National and regional progress evaluations	Equipment	42,693
3.3 Review of revised fisheries act and consistency reforms with EM&C	Transport	133,437
3.4 Establish law and regulations for EAFM and marine protected areas		
3.5 Habitat mapping and resource assessment in 4 provinces for EAFM roll out	Total base Costs	2,702,570
3.6 NAC Biodiversity established and operating		
3.7 Marine protected area planning		
3.8 Spatial data bases and mapping completed for all sites	Contingency	304,950
4.1 Project Management contractors contracted, PMO staff		
4.2 Work planning with all stakeholders	Total	3,007,520
4.3 Subcontracting completed		
4.3 TA contracting and mobilization completed		
4.4 Reporting and financial management		

APPENDIX B: CLIMATE CHANGE ADAPTATION PROGAM

Table 10: Current Project Portfolio for NAC Climate Change

Project Name (donor)	Value of assistance	Location	Objective	Timing	Status
National Adaptation Plan of Action (Global Climate Change Alliance)	EU 5.2 mill	Undecided	• Agriculture and food security • Water Resource Management • Sustainable tourism • Marine resource management - reef focus • Sustainable Forest Management	2010 to 2015	In planning, EOI issued for development of implementation plan
Pacific Adaptation in Climate Change (GEF UNDP – implemented through SPREP	USD 750,000	Epi Island	• Climate proofing coastal road infrastructure	2009 to 2014	Underway Is getting satellite images of Epi
Coastal fisheries resilience using EAFM	USD 190,000	Malekula (east) Aneityum	• Ecosystems approach to fisheries	2010-2013	Still in planning wit FD
Integrated Land Use Planning (GTZ)	EU 1mill	Undecided	• Climate change integrated with land use planning • Agriculture adaptation to climate change • Pilot adaptation program linked to Forestry department	2010 2015	
Phase 2 Carbon Credit Project	USD 400,000 (200,000/phase)	National	• Ground truth imagery from phase one • Quantification of carbon stock carbon accounting • Forest carbon inventory	2010 start?	Direct links to CTI-Pacific carbon accounting
Vulnerability response Project (AUSAID)	USD 100,000 Plus pipeline USD 200,000	• Aniwa • Banks Group of Islands • Aneityum • • Mataso • Makura • Offshore islands for Efate	• Adaptation responses linked to rainwater collection systems • Water supply schemes • Vulnerability assessment for Off-shore Efate Islands	Ongoing	Efate Island linkage
2nd National Communication Project (GEF/UNDP)	USD 450,000	National	• National Situation report • Vulnerability assessment of remote and small islands	Pipeline	Confirmed but awaiting funding approval

APPENDIX C: DETAILED COSTS BY FINANCIER

.	Base (USD)						Financing with Contingencies (USD)				
	Year 1	Year 2	Year 3	Year 4	Total	Total USD w/ Contgies	IW	CC	BD	ADB	Govt
Project coordination - staff (1 Dir, 1 Fin, 1 Admin)	45,000	60,000	60,000	60,000	225,000	255,788	51,158	51,158	102,315	51,158	0
Project coordination - local transport	13,700	13,700	13,700	13,700	54,800	62,001	12,400	0	49,601	0	0
Project coordination - office equipment	14,250	0	0	0	14,250	14,963	0	0	0	14,963	0
Project coordination - meeting costs	10,000	10,000	10,000	10,000	39,999	45,255	22,627	0	22,627	0	0
Project coordination - accounting and overhead	12,825	12,825	12,825	12,825	51,300	58,041	17,412	11,608	23,216	5,804	0
ICM TA (7 months total)	86,600	45,800	24,130	0	156,530	169,358	84,679	0	84,679	0	0
Capacity Building											
DoE - field coordinator	11,249	15,000	15,000	15,000	56,248	63,944	0	6,394	23,659	0	33,890
DoE - local transport	12,450	8,730	8,730	8,730	38,638	43,413	0	8,683	34,730	0	0
DoE - meeting costs	20,000	20,000	20,000	20,000	80,001	90,514	0	18,103	72,411	0	0
DoE - office equipment	11,400	0	0	0	11,400	11,970	0	0	0	11,970	0
Training - CBNRM	59,200	0	0	0	59,200	62,160	0	0	62,160	0	0
Training - ICM	0	42,200	0	0	42,200	46,525	0	0	46,525	0	0
Training - conservation mgmt	0	14,400	0	0	14,400	15,876	0	0	15,876	0	0
Training - biodiversity assessment	14,400	0	0	0	14,400	15,120	0	0	15,120	0	0
Training - climate change	0	0	14,400	0	14,400	16,670	0	16,670	0	0	0
Training - sustainable development	0	0	22,900	0	22,900	26,509	0	0	26,509	0	0
Training - project mgmt, admin	5,000	0	0	0	5,000	5,250	0	0	0	0	5,250

.	Base (USD)						Financing with Contingencies (USD)				
	Year 1	Year 2	Year 3	Year 4	Total	Total USD w/ Contgies	IW	CC	BD	ADB	Govt
Demonstration area											
Efate - ELMA project coordinator	11,249	15,000	15,000	15,000	56,248	63,944	0	6,394	15,986	6,394	35,169
Efate - ELMA local transport	10,000	10,000	10,000	10,000	39,999	45,255	0	9,051	22,627	13,576	0
Efate - ELMA meetings	15,751	12,000	12,000	12,000	51,752	58,248	0	11,650	26,211	0	20,387
Efate - ELMA office equipment	7,125	0	0	0	7,125	7,481	0	0	0	7,481	0
Efate - ELMA community plans (21 communities)	42,000	42,000	0	0	83,999	90,404	0	0	90,404	0	0
Efate - ELMA remote sensing - coastal area	16,000	0	0	0	16,000	16,800	0	0	16,800	0	0
Efate - ELMA ground truth remote sensing	24,999	0	0	0	24,999	26,249	0	0	26,249	0	0
Efate - ELMA marine coastal baseline	10,000	0	0	0	10,000	10,500	0	0	10,500	0	0
Efate - ELMA collate existing data	5,000	0	0	0	5,000	5,250	5,250	0	0	0	0
Efate - ELMA GIS data entry and maps	15,000	15,000	0	0	29,999	32,287	0	0	0	0	32,287
Efate - ELMA area council plans & consultation	0	15,000	0	0	15,000	16,537	0	8,269	8,269	0	0
Efate - ELMA provincial plan & consultation (incl Miradi)	0	14,000	0	0	14,000	15,435	0	7,718	7,718	0	0
Efate - ELMA site pilot sanitation	0	105,950	0	0	105,950	116,810	87,607	0	0	0	29,202
Efate - ELMA site pilot solid waste	0	105,950	0	0	105,950	116,810	87,607	0	0	0	29,202
Efate - ELMA site pilot forestry/farming	0	0	89,971	0	89,971	104,152	78,114	0	0	0	26,038
Efate - ELMA site pilot livelihood/tourism	0	0	89,971	0	89,971	104,152	78,114	0	0	0	26,038
Efate - ELMA training for park rangers	37,600	0	0	0	37,600	39,480	0	0	0	0	39,480
Efate - ELMA carbon forestry	0	56,000	0	0	56,000	61,740	0	0	61,740	0	0
Efate - learning materials and workshops for other provs	0	20,000	0	0	20,000	22,050	0	0	22,050	0	0
Santo - community plans (16 communities)	0	64,000	0	0	64,000	70,560	0	0	70,560	0	0
Santo - remote sensing - coastal area	16,000	0	0	0	16,000	16,800	0	0	16,800	0	0
Santo - ground truth remote sensing	18,000	0	0	0	18,000	18,900	0	0	18,900	0	0
Santo - marine coastal baseline	10,000	0	0	0	10,000	10,500	0	0	10,500	0	0
Santo - collate existing data	4,000	0	0	0	4,000	4,200	0	0	0	0	4,200
Santo - GIS data entry and maps	11,999	0	0	0	11,999	12,599	0	0	0	0	12,599
Santo - Miradi threat analysis	8,000	0	0	0	8,000	8,400	0	0	0	0	8,400
Santo - EAFM plan	8,000	0	0	0	8,000	8,400	0	0	8,400	0	0
Santo - integrate EAFM and community plans	4,000	0	0	0	4,000	4,200	0	0	4,200	0	0
Epi - community plans (2 communities)	0	8,000	0	0	8,000	8,820	0	0	8,820	0	0
Epi - remote sensing - coastal area	0	18,000	0	0	18,000	19,845	0	0	19,845	0	0
Epi - ground truth remote sensing	0	13,525	0	0	13,525	14,911	0	0	14,911	0	0
Epi - marine coastal baseline	0	5,000	0	0	5,000	5,512	0	0	5,512	0	0
Epi - collate existing data	0	5,000	0	0	5,000	5,512	0	0	0	0	5,512
Epi - GIS data entry and maps	0	7,500	0	0	7,500	8,269	0	0	0	0	8,269
Epi - Miradi threat analysis	0	5,000	0	0	5,000	5,512	0	0	0	0	5,512
Epi - EAFM plan	0	5,000	0	0	5,000	5,512	0	0	5,512	0	0
Epi - integrate EAFM and community plans	0	2,500	0	0	2,500	2,757	0	0	2,757	0	0
Remote sensing TA	61,200	41,800	0	0	103,000	110,344	0	0	110,344	0	0
Boat engine	4,275	0	0	0	4,275	4,489	0	0	0	4,489	0
GPS - DoE, Fisheries	4,499	0	0	0	4,499	4,724	0	0	0	4,724	0
Enabling conditions											
Sanma Prov - remote sensing	0	0	12,000	0	12,000	13,892	0	0	0	0	13,892
Sanma Prov - interpret image	0	0	1,000	0	1,000	1,158	0	0	0	0	1,158
Sanma Prov - ground truth remote sensing	0	0	18,000	0	18,000	20,837	0	0	20,837	0	0
Sanma Prov - habitat mapping	0	0	2,000	0	2,000	2,315	0	0	2,315	0	0
Sanma Prov - GIS	0	0	7,500	0	7,500	8,682	0	0	0	0	8,682
Penama Prov - remote sensing	0	0	12,000	0	12,000	13,892	0	0	13,892	0	0
Penama Prov - interpret image	0	0	1,000	0	1,000	1,158	0	0	1,158	0	0
Penama Prov - ground truth remote sensing	0	0	18,000	0	18,000	20,837	0	0	20,837	0	0
Penama Prov - habitat mapping	0	0	2,000	0	2,000	2,315	0	0	2,315	0	0
Penama Prov - GIS	0	0	7,500	0	7,500	8,682	0	0	0	0	8,682
Malampa Prov - remote sensing	0	0	12,000	0	12,000	13,892	0	0	13,892	0	0
Malampa Prov - interpret image	0	0	1,000	0	1,000	1,158	0	0	1,158	0	0
Malampa Prov - ground truth remote sensing	0	0	18,000	0	18,000	20,837	0	0	20,837	0	0
Malampa Prov - habitat mapping	0	0	2,000	0	2,000	2,315	0	0	2,315	0	0
Malampa Prov - GIS	0	0	7,500	0	7,500	8,682	0	0	0	0	8,682
Shefa Prov - remote sensing	0	0	8,000	0	8,000	9,261	0	0	0	0	9,261
Shefa Prov - interpret image	0	0	1,000	0	1,000	1,158	0	0	0	0	1,158
Shefa Prov - ground truth remote sensing	0	0	4,000	0	4,000	4,631	0	0	4,631	0	0
Shefa Prov - habitat mapping	0	0	2,000	0	2,000	2,315	0	0	2,315	0	0
Shefa Prov - GIS	0	0	7,500	0	7,500	8,682	0	0	0	0	8,682
Biodiversity planning - Marzan	0	0	29,050	0	29,050	33,629	0	0	33,629	0	0
Sustainable financing TA	0	21,280	0	0	21,280	23,461	0	0	23,461	0	0
Sustainable financing study	15,000	0	0	0	15,000	15,750	0	0	15,750	0	0
Strategy & Quality team	5,985	5,985	5,985	5,985	23,940	27,086	13,543	0	0	13,543	0
Evaluation forum	2,000	2,000	2,000	2,000	7,999	9,050	0	0	0	9,050	0
Roundtable - regional	13,060	13,060	13,060	13,060	52,239	59,103	0	0	0	59,103	0
Misc Studies	0	0	0	0	0	0	0	0	0	0	0
Legal support - IUCN regional	0	10,602	0	0	10,602	11,689	8,767	0	0	2,922	0
Officials travel to CTI meetings	10,640	10,640	10,640	10,640	42,560	48,153	36,115	0	0	0	12,038
Office - in kind from govt	21,375	21,375	21,375	21,375	85,500	96,735	0	0	0	0	96,735
Regional climate change											
TA	0	9,918	9,918	0	19,836	22,416	0	22,416	0	0	0
Studies	19,836	20,306	0	0	40,142	43,215	0	43,215	0	0	0
Pilot projects - civil works	0	27,968	13,751	13,751	55,471	63,468	0	63,468	0	0	0
Pilot projects - equipment	0		4,959	4,959	9,918	11,768	0	11,768	0	0	0
Pilot projects - operations	0	9,918	4,959	4,959	19,836	22,703	0	22,703	0	0	0
Overheads	9,918	9,918	9,918	9,918	39,672	44,885	0	44,885	0	0	0
	758,583	**991,846**	**688,242**	**263,901**	**2,702,570**	**3,007,520**	**583,393**	**364,153**	**1,364,387**	**205,178**	**490,410**

APPENDIX D SUSTAINABLE FINANCING

A. Overview

380. The Program design for Vanuatu includes a number of learning demonstrations. The intent of these is to develop skills and experience in public agency staff and stakeholders (including local communities and NGOs) that will improve their management of marine and coastal resources. Besides learning, each demonstration will allow progress to be made in addressing marine and coastal management issues associated with the demonstration area.

381. In many cases, demonstrations can be managed more effectively if they have funding from sources other than the Program or central government. Also, non-Program or government funding for a long period of time will allow the demonstrations to achieve longer-term goals. Non-Program or government funding also makes it easier for new demonstrations or programs to be funded.

382. In Vanuatu, sustainable financing for this Program and other on-going programs in marine and coastal resources can be arranged in the first instance from the tourism, fishing, and forestry industries. Sustainable financing from other sectors – such as agriculture, property development, and mining – could also be possible.

383. Successful implementation of sustainable financing depends on two key factors:

- *The operating characteristics of the sustainable finance program.* This includes identifying the type of activities - based on a particular use or benefit from one or more natural resources; the target segment of payers; the type of fee or levy to be charged; and the mechanism to collect the fee.
- *Use of funds from the sustainable finance program.* This includes the goals or purposes to which the collected funds are to be used; criteria to determine eligibility for who can apply to use the funds; review mechanisms to ensure the funds are actually used for the stated purpose; co-funding options; and requirements to repay all or part of the funds used.

B. Sustainable Financing Goals for Vanuatu

384. The Program will support the following goals or outputs on sustainable financing:

- Review of policy options for raising fees and revenues from natural resource use or beneficiaries for the financing of coastal management programs. This will include strengths, weaknesses, opportunities, and barriers to alternative approaches of raising fees and revenues.
- Completion of a design for the introduction of a fee/revenue program based on coastal resource use including
    - raising user fees for recreational fishing associated with areas adjacent to tabu areas, FADs, and open sea inshore fishing, and
    - a marine biodiversity fee levied on the tourism sector through either a bed or arrival tax to be used for local coastal management program implementation.

385. The Program will support the piloting of one or two particular fee/revenue programs.

- Completion of a design for a demonstration forest to enter an international carbon market to sell carbon credits to international buyers. This design will review and recommend a particular carbon forestry certification program and international carbon market that will suit the demonstration forest; specify the steps necessary to prepare the demonstration forest to enter the market; and establish mechanisms and/or institutions that will have accountability for entering the forest into the recommended carbon market.

C. Approach

386. *Review Policy Options.* For reviewing policy options, the Department of Environment's regulatory and policy group will conduct a policy analysis with support from a short term technical expert (2 person months) provided by the Program Management contractor. The DoE will form a sector working group and develop a work plan for the first year of the Program. This work plan will include the development of a policy options paper covering the raising of fees and revenues, options for fund ownership and management, and mechanisms for fund distribution.

387. *Feasibility Analysis.* In year two of the Program, a detailed feasibility analyses of introducing user pay systems linked to coastal resources will be contracted to local technical and policy experts. These feasibility studies will for specific cases estimate potential user fees/charges, specify procedures for their introduction, identify how to establish a fund or funds with the collected user fees, recommend rules for fund management, and define how the fund can be used to support coastal management. Contracts to the local policy experts will be awarded for a total of 3 person months of input.

388. For demonstrations where there are industries present - such as tourism, forestry, agriculture, mining, commercial fishing, the goal is to organize the fees and fund such that the users or beneficiaries of the marine assets pay for the services provided by the marine assets. For example, dive tourists who visit a coral reef could pay a fee to use the reef assets. Mining operations that deposit their tailings in a coastal environment could pay a fee for the use of the carrying capability of the marine environment.

389. A key to gaining stakeholder acceptance of paying for the use of marine assets is to ensure that the fund established to hold the collected fees – such as a Trust Fund – is dedicated to the management and enhancement of the marine assets from which users pay their fees. Trust Funds can be linked to specific marine protected areas or locally-managed areas, including any land-based area that that has ecological threats which connect to the marine area. Alternatively, a single Trust Fund can also be established for a number of marine assets or protected areas.

390. The governance of these Trust Funds needs to include representatives of all users or beneficiaries of the marine assets, including local communities, visitors to the assets, and businesses that use or rely on the assets. By including stakeholders as part of the governance of the Trust Funds, they can influence the amount of user fees and how the fees will be used to maintain, enhance, or rehabilitate marine assets.

391. In addition to user-pays, demonstrations in some cases may also obtain funding from non-users who value the existence of the marine assets. Payments for existence value may come from foundations, other non-profit organizations, or individuals. In some cases, non-users may seek partial "ownership" of the assets they are funding, or involvement in the governance of the asset.

392. As noted above, for the work on user fee payments, the aim of the Program is to achieve the establishment of one or more demonstrations if at all possible. For example, a user fee demonstration could be established to collect fees from visitors to a certain coral reef. Another demonstration could be established to collect fees from sport fishermen who use a certain part of a fishery.

393. *Carbon forestry.* Completion of a design for a demonstration forest to enter an international carbon market will require the assistance of a technical expert with experience in alternative carbon standards and markets, and the development of forestry processes, systems, and audits that are necessary for a forest to enter a carbon market.

394. The demonstration forest will be in Shefa Province, in the North Efate area. The technical expert will work with ELMA staff, who will manage several demonstrations of integrated coastal management in North Efate.

395. Key activities include an assessing the amount of carbon stored in the forest and how fast that carbon is increasing; identifying a particular carbons standard and associated international market that the forest owners can enter to sell the carbon; specifying a forest management program that will maximise the amount of carbon that will accumulate in the forest over time; specifying data on the

forest to be collected and then audited by an independent auditor who is certified to the particular carbon standard and market; preparing the documentation required for the forest to be certified to the standard; and advising the forest owners on the actual sale of carbon.

396. The aim of the Program is to achieve the entry of the North Efate forest into a carbon market and have an agreed strategy for selling the carbon.

D. Quality and Evaluation

397. The sustainable financing sub-component of the Program will be subject to review by the Quality and Strategy group established for the Program. This group will review progress annually and provide input to each year's work plan.

398. In addition, the sustainable financing sub-component will be a part of the learning framework developed by the Roundtable for the five countries in the RETA. This will provide opportunities for Vanuatu to learn how the other RETA countries have approached sustainable financing and also for Vanuatu to share its experience in sustainable financing with the other countries.

APPENDIX E DRAFT TERMS OF REFERENCE

A. Project Management Contract with the ADB

1. Background

399. The ADB will contract an international Project Management Contractor (PMC) to implement the ADB and Government of Vanuatu (GoV) components of the Project. The PMC will be based in the Department of Environment (DoE) and have three national full time staff and four technical advisers, who will be responsible to the executing agency (EA) which will be the Ministry of Lands and Natural Resources (MoLNR). The ADB and GEF funding for the project will be dispersed via the PMC to the respective implementing agencies (IA) and sub-contractors.

400. The duration of the contract will be four years, which is the expected life of the project.

2. Key Obligations of this Contract

401. The PMC will organize and complete the following activities and outputs:

1. Establish a Project Management Office (PMO) in the Department of Environment
2. Develop work plans for full time staff and technical experts
3. Recruit and manage the following full time national positions to work within the PMO:
    i. Project Director
    ii. Financial Accountant
    iii. Procurement and Contract Administrator
4. Recruit and manage the following technical experts:
    i. ICM Expert (7 person months over 3 years)
    ii. Remote Sensing Expert (5 person months over 2 years)
    iii. Carbon Measurement and Design Document Expert (3 person months)
    iv. Sustainable Financing Expert (2 person months)
5. Assist DoE to develop terms of reference, work plan, and recruit a project coordination officer
6. Assist ELMA to develop terms of reference, work plan, and recruit a project implementation officer.
7. Support the Program Coordination Officer and Project Implementation Support Officer in implementing the Efate ICM demonstration site activities
8. Develop terms of reference and sub-contracting agreements with the identified implementing agencies for the various project sub-components, particularly in the areas of:
    i. Field surveys
    ii. ICM demonstration area planning
    iii. Water resource quality assessments,
    iv. Sanitation and environmental health assessments,
    v. Socio-economic survey and coastal community management and development planning,
    vi. Education and awareness materials,
    vii. Feasibility assessments of revenue and sustainable financing
9. Support both the DoE and the FD to:
    i. Develop annual work plans,
    ii. Develop contracting of service provisions,
    iii. Coordinate contractors

iv. Coordinate a learning program for demonstration areas

10. Support DoE, ELAM and FD to manage the Efate ICM demonstration site.
11. Provide ongoing mentoring and professional development to DoE staff
12. Undertake project monitoring and evaluation on a quarterly and annual basis.
13. Assist in the development of relationship building and information and resource sharing among GoV Ministries and departments.
14. Provide the Monthly, Quarterly and Annual reports to the MoLNR (EA)
15. Provide administrative support for reporting to the MoLNR (EA) on a monthly basis and to wider Project stakeholders on a quarterly basis.

3. Coordination with other ADB Contractors on the Project

402. Coordinate regionally contracted services in the RETA including the regional learning program, the climate change adaptation program, and proposed capacity building programs that are agreed as part of the RETA wide activities.

4. Contract Activities with Milestones

403. In addition to the above key obligations, the contract also requires the PMC to facilitate the completion of the following deliverables:

Component 1

1.1 Contract DoE Program Coordinator role
1.2 DoE organization development training
1.3 Specialist mentoring program
1.4 Individual training and skill development

Component 2

2.1 Establish ELMA MOU and stakeholder forum on ICM and CTI-Pacific
2.2 Community level planning for 21 communities
2.3 Habitat mapping and EAFM for estimated 750 sqkm of coastal waters of Efate
2.4 ICM land based threat identification
2.5 Training Park Rangers
2.6 Area council and ELMA Provincial planning meeting and prioritization
2.7 Data collation and digitization and mapping
2.8 Site level pilot programs implemented
2.9 Climate change adaptation priorities confirmed
2.10 Climate change adaptation pilots implementation
2.11 Habitat mapping of East Santo and Epi island with resource assessments
2.12 EAFM and community planning involving up to 16 communities
2.13 Sustainable financing for ELMA policy report
2.14 REDD forest carbon PDD completed and supplied to market
2.15 Two user pay instruments designed and approved

Component 3

3.1 Quality and strategy team formed and evaluating work plans, and work progress
3.2 National and regional progress evaluations

3.3 Review of revised fisheries act and consistency reforms with EM&C
3.4 Establish law and regulations for EAFM and marine protected areas
3.5 Habitat mapping and resource assessment in 4 provinces for EAFM roll out
3.6 NAC Biodiversity established and operating
3.7 Marine protected area planning
3.8 Spatial data bases and mapping completed for all sites

Component 4
4.1 Project Management contractors contracted, PMO staff
4.2 Work planning with all stakeholders
4.3 Subcontracting completed
4.3 TA contracting and mobilization completed
4.4 Reporting and financial management

B. Project Management Contractor Staff

1. Project Director

404. The Project Director will be responsible for the overall management of the PMO activities and staff. This will involve:

- Develop annual work plans for PMO staff
- Supervise PMO staff
- Assisting in the development of relationship building and information and resource sharing among GoV Ministries and departments.
- Providing project implementing agencies advice and support in subcontract work planning
- Supporting the Program Coordination Officer and Project Implementation Support Officer in implementing the Efate ICM demonstration site activities
- Undertake quarterly project monitoring and evaluation
- Providing the Monthly, Quarterly and Annual reports to the MoLNR (EA)
- Managing technical expert inputs and work plans
- Ongoing mentoring and professional development to DoE staff

2. Financial Accountant.

405. The Financial Accountant will report to the Project Director, and be responsible for tracking and forecasting project expenditure. This will involve:

- Developing budgets and cost breakdowns for project subcontracts.
- Liaising with the project implementing agencies on the tracking and forecasting of sub-contract expenditure.
- Disbursement of funds to contractors and implementing agencies and maintaining a set of consolidated project accounts
- Tracking, forecasting and reporting project expenditure.
- Preparing quarterly financial reports for the Ministry of Lands and Natural Resources (EA) and ADB.

3. Procurement and Contract Administrator

406. The Procurement and Contract Administrator will report to the Project Director, and be responsible for project activities relating to subcontracts and procurement. This will involve:

- Preparing RFP's for subcontractors
- Drafting subcontract agreements for the procurement of project implementing agency services

- Drafting terms of reference for project subcontracts
- Liaising with project implementing agencies on subcontract progress
- Raising invoices to the ADB for project milestones and agreed upon out of pocket expenses
- Paying implementing agencies based on subcontract milestones
- Providing the project Financial Accountant with PMO cost and billing records
- Other tasks as required by the Project Director

APPENDIX F: POTENTIAL REVISIONS TO THE ENVIRONMENT AND CONSERVATION ACT

A. Background

407. Revisions have been proposed for the Environment Management and Conservation Act 2002 and the Fisheries Act No.55 of 2005. The proposed changes have come from separate working groups convened by the Department of Environment and the Department of Fisheries.

408. In both cases, the nature of the proposed changes is incremental and largely administrative in nature.

409. Unfortunately, both pieces of legislation do not adequately cover all the critical elements required for effective environmental management. Both acts are missing critical conceptual elements and require major revisions to some existing concepts.

1. Recommendations

- That revisions to the Environment Management and Conservation Act 2002 be delayed until agreement can be reached on major concepts to be revised or included.
- That revisions to the Environment Management and Conservation Act 2002 be coordinated with revisions to the Fisheries Act No. 55 of 2005.

B. Key Issues Related to Environment Management and Conservation Act 2002 (EMCA)

410. The EMCA purports to place responsibility for managing all of Vanuatu's natural resources and environment to the Department of Environment. Yet, the Act does not contain basic concepts essential to managing Vanuatu's environmental quality.

(i) The EMCA does not address the most basic issues around environmental pollution – water quality, air quality, land and soil quality.

- The Act should contain national standards of quality for water, air and land, including sanitation and solid waste. The Act should also contain regulations, or refer to a separate regulatory document, that specifies critical behaviors that are required to meet the standards. For example, no solid waste should be disposed on land, except in designated landfills. No untreated sewerage discharges should be allowed into the sea closer than a designated distance.
- The Act should specify an enforcement regime and penalties when individuals, communities, or businesses are caught violating the regulations.

(ii) Neither the EMCA nor the Fisheries Act addresses the management of coastal areas that include both land and marine natural resources. To effectively manage coastal resources, legislation must be clear and consistent. In the short-run, changes can be made to both Acts to allow effective coastal natural resources management. In the longer-term, a separate piece of legislation on Coastal Zone management may be required.

In particular,

- The Acts do not specify a unified process for approving and registering protected areas. Vanuatu will be more effective with its protected area program if there is a single unified system for designating, registering, and managing protected areas – whether these are land-based, marine-based, or a mixture of both.
  - At present, Vanuatu has a large number of types of protected areas. These could be streamlined.

- Approval and registration systems appear to lack definition and quality controls, with no meaningful progress made on maintaining a quality registry with consistent categories and supporting data. These could be streamlined.
- It is not clear that local communities understand the different types of protected areas or the procedures that should be followed to register them. Streamlined processes for protected areas will assist local communities to understand what is required and their roles in the process.

- In both Acts, accountabilities for managing, monitoring, and enforcement of protected areas are unclear. For coastal zone protected areas in particular, there should be a single department or agency accountable for managing, monitoring, and enforcing protected areas.
- For marine protected areas and terrestrial protected areas, it is possible for different departments to mange, monitor, and enforce these. But it is highly preferable that one department, or perhaps a National Advisory Council, to take the lead on coordinating these functions.
- Resources for managing, monitoring, and enforcing protected areas are not specified. These could come from a system of fees and user payments, in addition to core funding from central government.

(iii) The EMCA is very weak on the concept of Environmental Impact Assessments (EIAs). The current Act does not come close to meeting general practice, much less best practice, on EIAs in other small countries. Without a strong, consistent concept of EIA, future development in Vanuatu will make meeting national standards on water quality, air quality, and land/soil quality very difficult. Without a strong EIA concept, protected area designation and management will become extremely difficult.

- The Act does not specify a single department that is accountable for collecting all EIAs and conducting a screening on the degree of assessment that is necessary.
- The Act does not specify different types of EIAs and standards that different types of EIA must meet.
- The Act does not specify the processes that any EIA must follow and who is accountable for completing and coordinating those processes.
- The Act does not contain any enforcement provisions for failure to comply with EIA requirements or failure to meet the standards required of EIAs

(iv) The Act requires the creation of a National Advisory Council on Biodiversity (NACB), but does not specify the goals of this NACB, how the NACB should operate, and links the NACB should have with government departments, NGOs, and local communities.

- However the mandate of the NACB is written, the purview of the NACB will always be relatively narrow.
- An alternative would be to include in the Act a mandate to establish a National Sustainable Development Council (NSDC). This can be led by the Ministry of Lands and Natural Resources, include key government Ministries or departments (such as Ministry of Commerce, Trade, and Tourism; Department of Finance, Department of Prime Minister, Department of Forestry, and Department of Fisheries), business groups, community leaders, and NGOs.
    - The NACB can then operate as a sub-committee of the NSDC. This places biodiversity conservation in the broader context of sustainable development. Existing parts of the EMCA, such as biodiversity prospecting, will be implemented in a sustainable development context, as well as a biodiversity conservation context.

C. Key Issues Related to the Fisheries Act No. 55 of 2005 (FA)

411. A major part of the FA describes the mandate for the Department of Fisheries (DoF) to designate a fishery and then manage and develop it. In short, the legislation focuses on catch management and in turn the DoF has focused its activities mainly on catch management. An example is Vanuatu's tuna fishery and the regulations developed by the DoF to manage the catch in this fishery.

(i) A key weakness of the FA is its silence on the management of marine ecosystems. As a result, the DoF has had minimal activities on managing fish habitat and ecosystems.
- Given that these are essential ingredients for developing an effective Ridge-to-Reef program, the absence of biological/ecological data and goals for specific geographic ecosystems has hampered the development of effective Ridge-to-Reef programs.

(ii) As noted in the previous section, the FA is also weak on conservation and protected areas and more specifically on coastal natural resource management.
- In the case of conservation and protected areas, as outlined in the previous section, Vanuatu should have one streamlined system for designated, managing, monitoring, and enforcing protected areas.

(iii) Although the FA specifies that the DoF can set and collect fees of various types, the DoF has not yet implemented a full range of boat and catch license fees.
- The DoF has also not yet investigated the range of fees that could be used to charge users or other beneficiaries of marine ecosystems. An example would be to charge sport fishermen a fee for fishing near a FAD.

D. General Issues

412. The two pieces of legislation here do not interact well with one another. This will hamper development and management of terrestrial and marine ecosystems together as a Ridge-to-Reef program.

413. The two pieces of legislation are not supported by a set of regulations and policies to implement the legislation. Ideally, there should be one set of regulations that are mandated by either of the two Acts.

414. Neither of the two Acts is written in a sustainable development framework. Yet the majority of the Vanuatu economy depends on sustainable development. Both of these Acts could assist communities to transition from traditional subsistence economy to a cash economy – but by relying on natural resources that will not be severely degraded.

415. Neither of the Acts identifies sustainable fees, user charges, or taxes that can be used to support the implementation of the Acts, and thus to improve the environment or management of natural resources. In Vanuatu there is a good chance that clever user fees and charges would reduce or possibly eliminate the requirement for any general government funds to support implementation of the Acts.

416. The Government must decide whether it wants a strong, practical Environment Act that focuses on reducing or eliminating basic pollution of water, air, and land. The Government must decide whether it wishes to manage protected and conservation areas in a streamlined and consistent manner. The Government must decide whether it wishes to coordinate future development in Vanuatu consistently. And finally, the Government must decide whether it wants the funding for these sustainable development activities to b e self-financing, or mostly so.

Supplementary Appendix C
Timor-Leste Detailed Project Design
Country Program

Draft Final Technical Assistance Report

for

RETA 6741 Strengthening Coastal and Marine Resources in the Coral Triangle of the Pacific

ADB, GEF and AIMS Financed

Figure 4: Demonstration Program Areas of Work

VII. INTRODUCTION

417. The following Appendix presents the country level program for Timor Leste within the Regional Technical Assistance (RETA) program for the Coral Triangle Initiative – Pacific program. The RETA is operating within five countries including Timor Leste, Solomon Islands, Papua New Guinea, Fiji, and Vanuatu. The overall Program documentation will comprise a consolidated RETA technical assistance document and a GEF CEO endorsement template. These documents will by page limit necessity be highly aggregated data and descriptions that will not define detailed country level programs.

418. The RETA has decided to prepare individual country reports to present detailed country level programs to support review, ratification and most importantly implementation of the program.

VIII. ISSUES

A. Background

419. Inherent poverty and an ongoing history of civil unrest are significant issues being faced by the majority of Timor-Leste population. Given this situation, food security needs predominate over environmental concerns and will continue to do so for the for-seeable future. Coastal and marine resource management needs to ensure that existing productivity is not lost and where losses have previously occurred ensure that these wherever economically possible that these are recovered or minimized. The main challenge to management will be to ensure demand for fish and other marine resource use are managed within sustainable limits and that any use is undertaken in a sustainable manner with appropriate technology.

420. One outcome of civil unrest has been the displacement of large numbers of people to temporary and semi-permanent coastal locations. The negative impact of these communities to the coastal environment is locally significant and recent assessments of loss of mangroves totalling 40% from 2000 to 2008. Options for addressing the situation lie both across but also outside the jurisdiction of departments supporting agriculture, fisheries or environment.

421. In combination, negative demographic indicators such as rapid population growth, low levels of basic education, significant malnutrition among children, low access to safe drinking water and significant internal migration and urban drift are likely to reduce the importance of sustainable environmental management to affected communities. Political and policy priority reflect the needs of a community that already suffers food insecurity and significant economic hardship.

422. Timor-Leste's population is currently food insecure, with significant importation of rice still unable to fully meet the national calorific requirements. This situation is compounded by high population growth rates (3% to 4% per annum) and an extremely low median age of the population. Consequently, national priorities are more focused on improving the food security situation. Coastal resources are often identified as one means for addressing this shortfall despite the fact that little is known about their capacity to support either current or future expanded harvests. The risk is that coastal resource use may be promoted resulting in negative impacts that eventually further reduce the ability of coastal resources to support existing demand.

423. The risk of over-exploitation is compounded by Timor-Leste's population traditionally being mostly of interior origin and traditional systems of coastal zone management either do not exist or are unknown to the majority of the population. Customary law is primarily relevant to use of land-based, rather than marine resources. The extent to which traditional management systems and customary law can be built on need to be clearly defined.

424. Government capacity to implement development programs is constrained by capacity to disburse funds. This is particularly evident in the Ministry of Agriculture and Fisheries, where only 35% of budget was used in 2008. Given that CTI Pacific aims to utilize government systems for program implementation, this factor needs suggests significant strengthening is needed to increase the efficiency and effectiveness of the National Directorate of Fisheries and Aquaculture (NDFA). There is

also a need to re-orientate the NDFA to be more responsive to coastal fisheries and not the commercial pelagic sector, and to develop systems of management that build and protect the productivity and habitat of coastal ecosystems. If effective such management increases the options for coastal communities in diversification of livelihoods through tourism, recreation, and aquaculture.

425. Current drivers of the economy rely heavily on Government spending that continues to prioritize consumption growth over domestic production. The production sector capacity constraints continued to result in very low rates of public sector budget utilization.

426. Government revenue is tied to petroleum revenue. While currently this revenue base is growing rapidly due to high prices and increased volumes, this is forecast to stabilize with declining annual production after 2023. Government revenue and the ability to invest in development will be increasingly defined by available Government resources. Looking forward, donors have indicated reduced support falling from the current 39% of the total Government budget to an estimated 4% of the 2009 equivalent. Growth of public sector staffing and its expenses is unlikely for the majority of the CTI program window. CTI Programs need to work within the current government resource envelope and take into account declining future revenue from both petroleum and donors. More efficient and effective public sector institutions remains a major priority.

B. Coastal Environments

427. Sustainable management of the environment requires knowledge of the baseline receiving environment; being able to forecast impacts as a result of certain actions; and the implementation of mitigation measures to reduce both site and accumulated impacts. This will require an increased capacity within Government sectors e.g., environment, fisheries and tourism to develop and assess impacts and to have the resources to monitor the receiving environments. Without sufficient capacity to manage human impacts there will be a decline in ecosystems and the services they deliver.

428. With the lack of baseline information, many Government officers who are tasked to make decisions lack the skills to operate in ‘data-poor’ environments and thus do not take actions to benefit the environment.

429. As populations increase there will be more pressure to extend the use of renewable resources such as marine species. The limits to which these resources can be exploited have not been established for Timor-Leste. In order to manage these resources there needs to be in place a good monitoring and reporting system and the capacity to use these systems in an adaptive management cycle.

430. Sustainable management of the country’s marine resources will require the establishment of marine managed areas that are based on traditional ownership of the resources but supported by effective and enforced regulations and articulated through precise policy supported by well-resourced strategies. These marine managed areas need to be established in a systematic way that are comprehensive, adequate and representative of the major marine habitats and important species.

C. Threats

431. Across all CTI-Pacific countries the major underlying cause for increased risk to the sustainable management of coastal resources is domestic population growth. For Timor, population growth, and the young age of the population are a cause for concern. Increased demands will be significant with a 150% increase in demand for fish resources expected by 2030. The forecast growth in demand is such that many question the ability of natural resource endowments to sustain such levels of demand in the long run.

432. The major threats to coastal and marine resources in Timor-Leste include (i) the rapid increase in the population and the direct demands on the natural resources for nutrition and for cash, (ii) pressures that result in land use moving onto increasingly steep and marginal land creating downstream impacts to the marine environment, (iii) short supply of land suitable for agriculture and inadequate irrigation schemes, which may result in further deforestation, (iv) increasing coastal populations, resulting in higher demand on the marine resources, and (v) climate change.

1. Rural Land Use

a. Structure

433. The majority of rural land usage in Timor-Leste is for agricultural purposes within the following structure:

- Estate crops are prevalent in areas surrounding Dili between 500-1000 meters asl.
- Shifting cultivation areas surrounding Dili and Timor's northeast between 100-500 meters asl.
- Arable dry lands crops in Timor's south, with smaller areas in the east and west.

434. The principal staple crop is maize produced under shifting cultivation and interspersed with several other food crops. Use of fertilizer and improved seeds is very limited and yields are low. Rice, the next major food crop is grown on an area about half the size used for maize.

435. Coffee is the major non-food crop. It is harvested by some 45,000 smallholders in four districts around Dili with a developed export orientated value chain based on high-grade Arabica beans that are organically grown. Value constraints include local horticultural and harvesting practices.

b. Land Degradation

436. The main causes of land degradation in Timor-Leste are unsustainable agricultural practices (through traditional slash and burn agricultural methods and cultivation of steep upland hillsides), illegal logging of native wood species, fire, firewood extraction, and cultivation on marginal lands. The outcome is increased runoff and sediment movement into coastal environments. This is particularly during torrential rain events and flash floods in almost all districts in Timor-Leste, which cause severe soil erosion and landslides in the uplands and disastrous floods in the lowland areas.

c. Intensification and Agrichemical Use

437. A critical challenge for human welfare in Timor-Leste is increasing food production while managing the negative impacts of land conversion. Land use intensification will likely emerge as the major strategy for increasing food production as additional land becomes increasingly marginal for profitable food production. The risks of inappropriate land use intensification are significant with similar trends on the regional being accompanied by increased water, fertilizer and agrichemical use by producers without skills and knowledge in best or approaching best practice. Consequently, over use of water and chemicals is a reality with resultant impacts on ground and surface water quality.

438. Pollution related to the use of agrochemicals is not currently widespread due to the lack of rural communities access to finances from which to procure fertilizer and pesticides. Coffee production uses little agrochemicals as there is a market-push to promoted Timor-Leste coffee as ecologically or organically grown. Understanding the linkages of land based actions on coastal resources is poorly developed and understood in Timor Leste.

439. The use of "Agent Orange" and Napalm in Lequidoe (Sundlund (2001)) by the occupying Indonesians has added dioxin pollution of soil and water in specific locales creating possible future risks.

2. Urban Land Use

a. Urbanization

440. With increasing urbanization, particularly around Dili new challenges include (i) water and air pollution, (ii) intensified use of the natural resources in the surrounding areas, (iii) lack of solid waste disposal and land fill options, and (iv) loss of agricultural and vegetated land due to urban sprawl.

441. The effect of urbanization near coastal areas creates threats to coastal and marine habitats such as mangroves, reefs and beaches. To minimize the effect that Timor-Leste's urbanization has on coastal and marine habitats, issues such as solid waste management, water sanitation, over-fishing and land degradation due to urban sprawl need to be managed.

b. Waste Management

442. Population growth and inadequate infrastructure is unable to supply water and remove sewage. There is no treatment of waste water from in Dili leading to increased nutrients entering coastal environments local drainage systems.

443. Solid waste is a major concern in Dili where waste is collected by commercial operations and transported to landfill sites, however leachate management systems are basic. . There is no formal system of collecting and disposing of waste outside Dili.

444. Only 33 percent of the rural population and 70 percent of the urban population has access to sanitation. However, the waste in toilets is generally untreated creating both a health risk and environmental impacts to coral reefs. This is accentuated during the extreme flood events that are common in the country.

3. Tourism

445. There is a small tourism sector developing based on natural assets such as diving. The major attractions are diving and fishing linked to Nino Konis Santana National Park and Atauro island. Atauro has developed a reputation for ecotourism and is well supported by the local community. There is potential for increased tourism activities associated with whale watching and marine megafauna in the eastern coastal area and the proposed Nino Konis Santana National Park may create more demand.

446. Coastal and marine habitats face a number of environmental risks due to tourism infrastructure. These relate to site preparation and construction with risks of increased sedimentation and pollution. The main areas affected are likely to be estuaries, inshore coastal zones and mangroves.

447. Tourism offers potential solutions to food security and livelihood objectives however at the same time poorly managed tourism could equally lead to significant loss of food security from coastal environments. The scale of food insecurity highlights the necessity to develop tourism revenues and jobs for local coastal communities and as such it is imperative that the tourism sector adopt best management practices and guidelines for the sector development while in its formative stages.

4. Mining

448. Petroleum mining in the Timor Sea continues to be a major revenue source for the Timor-Leste Government. Unregulated offshore mining could have a substantial impact on Timor-Leste's marine and coastal habitats. Common mining activities such as offshore seismic operations, offshore platform installment and offshore drilling pose a number of threats to marine habitats, resulting in physical damage to the seabed and some marine species, disruptions to biodiversity, displacement of some marine species, and encouragement of invasive marine species.

5. Natural Disasters

449. Timor-Leste's geographic location and ongoing tectonic activity make it susceptible to volcanic eruptions, earthquakes, tsunamis and landslips. Within the region it has been estimated that 94% of the area could experience earthquakes of a least a magnitude of seven on the Richter scale.

D. Institutional Capability

450. The two main Agencies with jurisdiction and mandate for coastal environments are the National Directorate of Fisheries and Aquaculture (NDFA) and the National Department of Environmental Services (NDES). The allocation of responsibilities is mostly delineated between policy, national plans and resource allocation falling under the control of NDES with operational planning and implementation of National plans falling under the NDFA. For marine conservation the interaction of use and conservation objectives is recognized with legislation requiring both agencies to work together for planning (leadership of NDES) and implementation and monitoring (leadership of NDFA).

451. The mandate for land is more fragmented with interests held by Agriculture, Forests and local administration. The overarching mandate of NDES once a National Environment Policy is in place will provide a basis for introducing more sustainable management practices.

452. The legislation provides no detail on powers for enforcement or tools through which management objectives for spatially defined ecosystem management can be applied. The same deficiencies exist for all integrated spatial management systems including the environment sector legislation and its support for Integrated Coastal Management (ICM).

1. National Directorate of Fisheries and Aquaculture

453. The mandate of NDFA is specified in terms of development of the fishing industry, use of marine resources and aquaculture. The NDFA is responsible for the sustainable development of the fishing industry and to implement national plans linked to conservation of marine resources. While NDFA can not declare a protected area it can declare areas where fishing is managed to allow stock recovery. The main management tool is the use of species management plans based on specifying allowable catches, vessel and gear restrictions.

454. The NDFA has no mandate to manage fishery resources within a spatial ecosystem approach. For most inshore fisheries the ability to manage spatial areas within a ecosystem model is critical for the long run sustainability of in-shore reef based fisheries. The linking of habitats, fish feeding, nursery and spawning areas is critical to sustainable management outcomes.

455. Currently the NDFA has 103 staff within a total approved cadre of 111 positions however those with technical training are more closely aligned to building the fishing industry and not fisheries management.

2. National Department Environmental Services

456. NDES mandate is to prepare and maintain the National Environment Policy for Sustainable Development, designate areas of exceptional importance for national Parks and Protected Areas, to promote, study and monitor the State of the Environment, promote environmental education, implement Strategic Environmental Assessments, to coordinate and administer the EIA process, and to ensure the awarding of environmental licenses to manage pollution.

457. Most of the mandates including several pieces of essential legislation remain to be enacted and the organizational systems are still being developed and agreed. Total capability remains limited with staff totally 34 including focal point positions in each District office. Priorities are to get legislation enacted and supported with regulations and to develop a National Strategy for Sustainable Development as required under the Environment Act and to develop a Timor Leste Concept for developing ICM policy and regulations.

IX. PROPOSED TECHNICAL ASSISTANCE

A. Impact and Outcomes

458. The Program seeks to build capability for extending effective coastal and marine resource management in Timor Leste through the institutional strengthening of the National Directorate of Fisheries and Aquaculture, introducing of ecosystem approaches to coastal fisheries management (EAFM), planning and implementation of marine biodiversity conservation, demonstrating Integrated Coastal Management (ICM) incorporating climate change adaptation.

459. The NDFA will reorientate and up-skill to effectively manage coastal and artisan fisheries in addition to the existing commercial fisheries management.

460. The long-term impact of the Program is expected to be coastal habitats managed supporting increased biomass from ecosystem based management systems applied to increasing proportions of the coastal zone.

461. On completion of the RETA the outcomes of the Program will be improved livelihoods from increasingly resilient coastal ecosystems, increased management capability and increased management tools for applying integrated coastal management (ICM) to address coastal food security and coastal livelihood development and reducing vulnerability to natural disasters and climate change.

B. Detailed Description Component One: Building Organizational Capability and Management Competency

1. Output 1.1: NDFA Restructuring

462. On completion the NDFA shall have an agreed policy and strategy for sustainable coastal fisheries management, a medium term strategic plan and supporting structure to achieve the policy goals, organizational procedures and systems, and resources –information, skills and finances to enable the efficient implementation of the sector strategy.

463. As a consequence of institutional strengthening NDFA will in 2015 seek to achieve:

- Optimal allocation of rights and responsibilities for the management of coastal and marine resources
- A community that is aware of fisheries, their management roles and actively participating in the sustainable management of coastal fisheries
- Logistical support and trained personnel to ensure the efficient implementation of work and strategic plans.

a. Approach and Method

464. The RETA shall provide external technical support for supporting a change management and institutional strengthening program for a period of 12 person months starting in month 2 of PY 1. The change management expert shall work closely with the National Director NDFA to plan and implement a strategic planning program that seeks to align the structure of the NDFA to the strategic outcomes the NDFA seeks to achieve. Once a revised strategy is in place the change management adviser will work with each “team manager” to build job descriptions, key performance indicators, work plans and targets, implementation plans.

465. Concurrently, an organizational specialist will work with the NDFA and the MAP institutional development team to build the support systems that will enable team managers and the National Director to implement the strategy. The expert shall over a period of 16 person months develop operational policies and procedures linked to:

- Human resources development

- IT strategy and development
- Departmental planning, work planning and performance assessment
- Budgeting and financial management plans
- Procurement and purchasing guidelines
- Management information system

466. Both experts will support an in-house on the job training program for the modules that will be collated into a NDFA training program. Operational procedures will be described and compiled into a corporate services manual for all staff. .

467. Financial support is available to the National Director to successfully implement the restructure. This support can cover the costs of consultations with staff, and contractor assistance in human resource management, IT development and management (including purchase of relevant hardware and software, such as decision support tools for ecosystem management and coastal zone management), and systems and procedures.

468. Providing a training program to build individual skills and support the reorganization. The RETA can support the following training program:

(i) English language – written and verbal. Aimed at staff in both departments, this will enable staff to better understand and legislation and policy, and be able to better communicate with international providers of services to the departments.

(ii) Water safety skills including swimming lessons, snorkelling lessons, and boat management and maintenance skills.

(iii) Dive training in PADI, transect management, reef check techniques for up to 8 NDFA staff. PADI training for 20 community members to become part of reef check programs at Atauro Island and Batugade

(iv) Management and administration.

- Strategy - development and monitoring. Aimed at senior managers.
- Change management. Aimed at senior managers.
- Financial management and planning. Aimed at senior and middle managers.
- Management information, performance management, and monitoring. Aimed at senior managers
- Program management. Aimed at all staff.
- Human resource management. Aimed at all staff.
- Using IT tools. Aimed at staff who use computers for administrative functions

(v) Technical skill development. Aimed at relevant staff that work in marine resource or coastal zone management:

- Managing marine and fishery resources – an ecosystem approach.
- Managing coastal zones.
- Biodiversity management in the marine environment.
- Managing climate change in the coastal environment.
- Community management and participatory-based approaches.
- Data management and analysis.

2. Output 1.2: Information and Monitoring of Coastal Fisheries

469. By 2015 the National Directorate of Fisheries and Aquaculture (NDFA) will be able to report to its Minister on the current role of the fishery sector in achieving Timor Leste food security objectives and to identify progress in a timely manner.

470. The NDFA will analyze and apply findings of the information and monitoring program to the design of fishery sector support programs, rural livelihoods and for updating sector policy and regulations relating to the management of coastal fisheries.

471. The data arising from these programs will be used to inform the development of a coastal fisheries strategy by the Fisheries Management Division of NDFA, and assist senior NDFA management in the preparation of policy and annual work plans. Understanding of the role of fisheries in household livelihood programs will enable NDFA to target sector programs to beneficiaries with far greater accuracy and effect.

472. The NDFA information and monitoring program will include: (i) the fisheries sector disaggregated from agriculture in the Census, (ii) a detailed survey for understanding temporal and spatial dimensions of coastal fisheries possibly to be integrated with future Timor Leste Living Standards Surveys, and (iii) a field intelligence program implemented by each District Fisheries Officer that records fishing effort, catch per unit effort, fishing gear, fishery demographics and fish consumption and marketing data.

a. Methods and Approach

473. **Disaggregation of Fisheries for the Census.** The 2010 census questionnaire forms have been drafted by the National Statistics Bureau with Fisheries questions presented in a separate section. The Fisheries Management Division of the NDFA will review these questions and ensure that the data being collected is relevant to fisheries management.

474. **Detailed Survey of Coastal Community livelihoods.** A detailed survey of a sample of coastal households will be developed, tested and evaluated for it's possible inclusion within future Timor Leste Living Standards Surveys currently undertaken every 5 years. The RETA shall develop a questionnaire to be completed using personal interviews of head of households to understand the structure of the household and the structure of household livelihoods. The questionnaire will specifically detail the role of fishing within rural household livelihoods providing understanding of:

- Who in the household participates in fishing
- What roles do children and women play in fishing
- Fishing gear
- Fishing effort
- Catch per unit effort data
- Fishing areas
- Target species
- Catch composition and size
- Fish consumption
- Fish marketing and households revenues
- Fish market chain descriptions

475. The initial national survey shall be undertaken as a joint exercise by the Fisheries Management Division of NDFA under the supervision and technical support of the National Statistics Bureau. The sample size will be at approximately 10% of coastal community households that are stratified into those households that do and do not fish. The survey will be enumerated within the 11 coastal districts by teams comprising of 5 to 6 persons under the leadership of the District Fisheries

Officer. The enumeration teams will be supervised by senior staff of the Fisheries Management Division (NDFA) and National Statistics Bureau to ensure the agreed procedures are applied.

476. Training will be provided under contract by the staff of the National Statistics Bureau in the following areas:

- Sample size determinants
- Sample selection
- Questionaire development
- Survey planning
- Completing the Survey instrument – dealing with the unexpected
- Data management and entry
- Quality control and data screening
- Data Analysis
- Reporting

477. Training for the survey design and implementation will involve 70 persons - a minimum of 60 persons for implementation and an additional 10 for replacements if necessary. Data management and handling training will involve at least 20 persons while analysis and reporting training will involve 10 to 15 persons to ensure sufficient numbers are able to interpret data and findings.

478. The survey instrument will be piloted to test the survey instrument, enumerator skills, quality control systems and data management and analysis. Due to the size of the survey a minimum of two pilot exercises should be undertaken to ensure the questionnaire is efficient and that training of the enumerators and data management procedures are adequate.

479. The piloting exercises will involve the 60 enumerators completing 3 surveys each for both piloting rounds for a total input of 180 field days including travel time. Implementation of the main survey will involve each enumerator completing on average 3 households per day and it will be completed within a 3 month period. In total some 4,000 field days will be required, each district will need to hire a vehicle for 3 months.

480. Equipment needs for each survey brigade will include 2 handheld GPS units, fish identification cards, tape measures, a digital camera, binoculars, a mobile phone, a set of maps for the identification of fishing areas, waterproof folders and containers for storing completed survey forms. Equipment at the NDFA will include three additional computers with independent back up drives, a fire proof safe for storage of archive data, a scanner to create a digital records of survey forms.

481. Data entry will use casual staff supervised by the National Bureau Statistics. NDFA fisheries management division staff will provide a data audit input for quality control and shall form a working group with other senior staff from the NDFA to define the analysis to be completed by the National Bureau of Statistics, interpret initial findings and prepare the final report.

482. The preparation for the survey will be undertaken in the 3rd and 4th quarters of PY1 and implemented in the first quarter PY2. The reports will be used to brief the Minister and the media and provide stakeholder feedback.

483. **Annual Fishing Data Collection.** NDFA will establish a fisheries intelligence program based on each District Fisheries Officer spending approximately 1/3rd of their time on sector surveillance and intelligence. In total, 7 work days per month will be spent on surveillance, 5 of which will be spent on interviewing households (estimate of 4 hh per day). Each household will be interviewed monthly and will be asked to complete a fishing log book to record level of effort, catch records, and location of fishing on a daily basis. The remaining 2 days per month will be spent on consolidating the data from log books and interviews into a single data set for their district and for communication to Dili.

484. In addition, the DFOs will collect data on the fish caught and sold in local markets, market price by size and type of fish. The process is proposed to increase the DFO understanding of the value chain and to build strong linkages to sector stakeholders.

485. The program will operate from PY 2 and will involve the provision of support to train the DFO's, the preparation of fishing log books, and the use of maps for fishing effort.

486. Data collected will be sent to Dili for entry and analysis. Within two weeks all data will be reported back to the National level.

487. The Program will support a planning session of one week in Dili, a six monthly seminar in Dili or a district to benchmark results and findings and to prepare a 5 page report for briefing the Minister and the media.

3. Output 1.3 Building Science Capacity in an Ecosystems-Based Approach Supporting Fish Production

488. On completion there will be sufficient capacity in NDFA staff to make key measurements on pelagic and benthic processes that support fish productivity along the Timor Leste coastline. Such measurements provide essential data to assist management decisions for fisheries management and long term food security. Currently NDFA has no such capability yet these skills underpin the ability to implement ecosystems based approaches to fisheries management.

489. Previous work along the surf-zones of the north and south coasts identified a lack of understanding of ecosystem processes and the habitats that support inshore fisheries. The output will identify net ecosystem productivity, pelagic and benthic food webs, and the habitats that fuel finfish production. In addition the status of threats (e.g., coastal erosion, eutrophication) to coastal environments will be examined.

a. Outputs

490. By 2015 the program will train up to 5 NDFA staff to measure physicochemical parameters (eg, oxygen, salinity, nutrients) and some key ecosystem processes (primary production) that underpin surf-zone fisheries. This will be achieved through a series of pre- and post cruise sampling short courses and exercises to build capacity of key NDFA staff to conduct a fisheries science Program from beginning to end. The trainees will be able to initiate sampling programs of key ecosystems processes, analyze samples and data including essential statistics, to write reports to an acceptable level, and to learn how the data collected can be interpreted and potentially used by NDFA in management of these coastal habitats and identify current land and coastal use are negatively affecting the key coastal habitats.

491. Specifically the outputs will be:

- 3-5 MAFF staff appropriately trained to conduct targeted process-oriented research and monitoring;
- Data on ecological processes and fish stocks around Timor;
- Fish monitoring program based on monthly sampling and gut analysis that builds a spatial data layer to be integrated with habitat data sets
- Coastal sedimentation core samples analyzed to assess land based threats on ecological processes and coastal productivity and linked with the Catchment Assessment Program – see Output 3.6.

b. Approach and Method

492. The RETA shall contract the Australian Institute of Marine Science to undertake a two stage program. Stage one will be based on an initial planning and training program that results in local staff initiating a sampling program from priority ecosystem systems as part of the capacity development

program. The sampling program would be reviewed by the AIMS staff prior to a one-month cruise on the AIMS vessel R/V Solander in the wet season. The cruise will sample pelagic and benthic on two locations on or adjacent to the north coast of Timor Leste and on the southern coast, 5 inshore-offshore transects proximal and distal to the major rivers and river plumes.

493. Sampling will involve otter trawling for demersal epifauna (including fish) and trawling for pelagic fish species for gut contents and flesh samples for stable isotopes to identify fish and key invertebrate diets and the extent of a riverine signal relative to marine source for their nutrition (AIMS, ATRF). The program will involve the use of Hydrolabs, salinometers, etc to measure salinity, oxygen levels, temperature, chlorophyll a, turbidity, particulate and dissolve nutrients in the water-column. Key measurements will include the following:

- Measurements of pelagic and benthic primary production and respiration using micro-Winkler techniques (AIMS). Net ecosystem production will be estimated from these measurements to assess the upper limit of fisheries production.
- Measurements of pelagic and benthic nutrient recycling using 15N tracers to determine how much organic matter produced by primary producers is lost to microbial consumption; what's shunted to microbial food chains is essentially lost for sustaining fish production.
- Measurements of radiochemical markers to measure rates of sedimentation and changes in rates of sedimentation via erosion/runoff in collaboration with the Watershed catchment study work proposed under component 3.
- Measurements of zooplankton abundance and egg production using methods as outlined in recent AIMS publications (Journal of Plankton Research).

494. The contractor will establish a database for collation and storage of all data. Transfer of the cruise results and the science implications for habitat status and management to NDFA, including recommendations for management and further work for monitoring key areas.

495. The cruise using the AIMS ship will be completed in the wet season of Program Year Two. On completion of the cruise date will be analyzed and training provided to NDFA staff in data analysis and reporting. A cruise sampling research report will be completed before the end of Program Year 2.

496. In addition to the cruise sampling program the staff trained by AIMS will undertake a monthly sampling program using local boats and facilities. The sampling program will be initiated in PY 2 as a training program that is part of the AIMS mentoring system. After the Solander cruise sampling will be reviewed and a national work plan for sampling developed on a seasonal and annual basis. The sampling will proceed under the direction of NDFA staff with data collected and analyzed locally during the period of mentoring provided by AIMs in PY 3 and PY 4. A consolidation of the data analysis including a temporal and spatial analysis will be completed in year 4 and used as a resource document in the NDFA.

497. The sampling program will require access to boats, fuel, field equipment and field allowances. The RETA is purchasing 2 boats and motors for NDFA for transect and fish sampling purposes.

C. Detailed Description Component Two: Defining Best Management Practices through Experiential Learning

1. Subcomponent 2.1: Integrated Coastal Management and Ecosystems Approach Fisheries Management Demonstrations

a. Overview

498. **Integrated Coastal Management (ICM)** seeks to manage both land and sea based threats and opportunities to achieve sustainable coastal management. For Timor Leste the recognition of the importance of land based threats to coastal environments suggests that the management framework that will be most effective in protecting coastal habitats and resources will be an Integrated Coastal

Management (ICM) approach. The land based threats differ by site and include not only nutrient and sediment transfer but also the manner in which coastal infrastructure and development proceeds and how effective environmental protection mechanisms are in addressing both spatial and temporal externalities.

499. Threats originating on-shore may require management systems for sedimentation, nutrients and solid waste to be implemented. Other threats may derive from building and infrastructure development including the development of tourism infrastructure. The RETA demonstration program will require the inclusion and management of these threats requiring cross sector planning and implementation programs and will require participation of sector agency staff including Forest Department, Agriculture Department, Environmental Services focal points, and Health Departments as well as local administrative leadership. This participation needs to come from the District level for demonstration area participation and from the National level for overall planning and coordination. The NCC provides a platform for national coordination while local platforms will be provided through community management planning.

500. Climate Change is a group of probable threats that are external to local management decision-making but may influence and even define management options and outcomes. Climate change adaptation will be fully integrated with the ICM program for both demonstration sites through incorporation into the community management planning and threat assessment process. The planning process will be informed by scenario data, local community based vulnerability assessments as well as at Suko and island levels. The adaptation program will be designed within the community management planning process and will identify specific adaptation responses to be included in the pilot site intervention programs.

501. Implementation will require the involvement of the NDES that is responsible for Climate Change. NDES will be an important stakeholder in all ICM programs as it will be through their sustainable development mandate that ICM will operate. The demonstration area will focus on defining an ICM framework that can be tested in the planning and implementation of pilot studies and will build on the ecosystems approach to fisheries management (EAFM) being introduced by the NDFA.

502. **Ecosystems Approach to Fisheries Management** The RETA shall support NDFA to introduce EAFM into priority regions of both demonstration areas as the basis for coastal fisheries management. The program seeks to build experience and learning for the ongoing implementation of such approaches and management systems. The EAFM process shall integrate data sets that include socioeconomic, habitat information and fish resource data to identify management zones by objective including the location of reserves, fish refugia and protected areas. These data sets will be used within a miradi threat analysis framework that identifies causes of threats (both internal and external) and potential response scenarios. Where the plan identifies options for limiting catches or reserving areas the NDFA will work with the ICM community management planning process to identify options for minimizing the loss of fish catch or for building alternative livelihood sources. Ultimately, restrictions will need to be negotiated and compensated through a range of alternatives. The responses will range from simple livelihood programs or more complex responses such as enhancement, support for value adding technology and the provision of alternative livelihoods.

b. Demonstration Areas

503. The RETA will support field programs for the introduction of ICM, Climate Change adaptation, and EAFM in Atauro Island and Batugade. Within these demonstration areas several site level management systems will be implemented and monitored within a learning framework.

504. **Atauro Island** is situated 25km North of Dili and is part of the Wetar segment of the Inner Banda Volcanic Arc and geologically is aligned to Indonesian Islands. Administratively Atauro Island is part of the Dili District. Totaling slightly more than 100km^2 is supports a population of 7,863 (56 per km^2) living in 20 hamlets with an average household of 4.6 persons an estimated 1,470 households exist. The island comprises 5 Sukos each surrounding a village including Bikele and Beloi in the north. Macadade (formally Anartutu) in the Southwest, Makilil and Vila (formerly Maumeta) in the south east. Vila is also the largest of the 6 towns. Most settlement is coastal with resident relying on fisheries.

505. The island is very steep reaching 995m above sea level (asl) while the sea depth between Dili and Atauro reaches a depth of 3,500m and is susceptible to landslides and severe shortages of fresh water during the dry season. Vegetation is mostly open *Eucalyptus spp* woodlands with rainforest in valleys with most forest clearing occurring since the 16th Century. Marine biodiversity is high including high diversity and abundance of cetaceans through to reef fish (Samson identified over 400spp of reef fish), sharks, hard and soft corals, nudibranches, sea cucumber, worms and mollusks, eels and turtles.

506. The island is surrounded by coral reefs and sea grass beds with large areas relatively pristine although increasing damage is reported from boat anchors, walking on reefs and inappropriate fishing techniques. Reef damage has also occurred due to use of explosives and inappropriate fishing techniques. A community based marine management area was established at Bikele village in 2005. At Bikele village, a community based organization Roman Luan has established an eco-village accommodation business with the profits used to finance community environmental projects including a proposed marine protected area. Dive tourism has high potential despite limited infrastructure and ferry options. At Bikele, divers report some of the best wall diving in the Indo-Pacific realm and the Red Sea whilst also encountering large pods of dolphins, fin and pilot whales. To date dive tourism is limited by the lack of compressors and air bottles on the island. In 2010 Roman Luan plans to provide a commercial compressor on Atauro Island to enable longer dive stopovers. The longer term intention is to create a marine sanctuary, health and sanitation programs, regeneration of vegetation on hillsides, around the coast line and rehabilitation of mangroves.

507. A previous Program funded by the FAO, Strengthening Capacity in Fisheries Information Gathering for Management Planning ran for approximately 1 year in 2005 worked in two Atauro Communities at Bikele and Vila to provide environmental awareness and education about the importance of coastal management. As a result, communities were mobilized and community management committees formed with the intent of management planning and implementation. Funding shortages resulted in the Project stopping and there are reports of social conflicts undermining Project investment into mooring buoys etc.

508. In their proposed MPAs for the Nusa Tenggara Indonesia, The Nature Conservancy (TNC) identified Atauro Island as one of the 6 Timor Leste Sites with a proposal for 10,882 ha to be included. The MPA will effectively include the total inshore habitat of the Island as well as a corridor to the north. Major habitat features include significant sea grass beds and coral reefs along with deep sea straits and sea mounts and satellite islands.

509. **Batugade** the second demonstration area, is located 112km west of Dili on the north coast and some 2.5 km from the border with Timor Barat Indonesia and is part of the Baliboa District associated with the Loess River. Baliboa has a total population of 13,663 based on 2,590 households however the majority of these are not coastal.

510. Batugade was a FAO Project site with an existing community management committee, however there has been no local training, management planning or local implementation. A significant challenge for the local committee is the proximity of the area to West Timor. There is currently an ADB financed Project to build cross border roading and border services to the west of Batugade. This program is due to start implementation in 2010 and will provide a strong incentive for increased economic trade and development. These developments need to be scrutinized to ensure that subsequent negative impacts are minimized, avoided or mitigated. The demonstration area extends only to the border and includes the landward catchment and the coastal zone to the east towards Atabae. The region faces significant flooding risks and is considered at risk in terms of food security by Timor Leste standards.

511. Batugade is identified as a priority MPA site for Timor Leste by TNC totaling nearly 12,000ha. The local features that support its prioritization are listed as the presence of corals, sea grass, and mangrove habitat elements and associated islands. It is however unclear if this prioritization is correct as TNC lists the sites as part of Timor Barat, Indonesia where there are far more significant areas of coral and mangroves on the North Coast close to the border of Timor Leste.

c. Output 2.1

512. By 2015 an Integrated Coastal Management approach will be defined, implemented and adapted in two demonstration areas being Atauro Island and Batugade. The RETA Program will build ecological resilience to reduce the vulnerability of local communities. The program will be used to pilot and test the ICM, climate change, EAFM approaches that NDES and NDFA will progressively apply to other locations based on best management practices identified and the lessons learned from site level demonstrations.

513. Specific **ICM** outputs include:

- An ICM plan for both demonstration areas that is ratified by local communities, Sukos leadership, District line agency staff and the NDFA and the National Directorate for Environmental Services.
- ICM based development plans for a total of 7 Sukos with a area of 43,600ha and a total population (1999 census) of 21,500 and 4060 households based on community management planning.
- Ecosystem based coastal fisheries plans including livelihood improvement programs of Batugade, Beliku and Vila communities that detail priority implementation programs
- Improved livelihoods demonstrated for environmentally sustainable economic development in 20 Atauro hamlets and Batugade communities.
- Priority coastal habitats reserved under provisions of the Fisheries Act and where appropriate Locally Marine Protected Areas identified with supportive local by-laws for management purposes.
- Catchment assessments identifying volumes and sources of sediments, nutrient budgets, and pollutants and a 10 year plan for managing these threats
- Community education materials for supporting ICM, EAFM, Catchment Management and Fisheries law and regulations that targets community leaders, land users and community fishers.
- Models for sustainable fund flow into community management

514. Specific **Climate Change Adaptation** outputs include:

- Vulnerability assessments, climate change scenarios and adaptation strategies fully incorporated into community ICM management plans for each site with the demonstration areas
- Increased capacity to self organize and improved resilience of communities in demonstration communities
- Lessons learned and best management practices identified and used to define a climate change framework for Timor Leste
- A functional national level learning forum with greater regional awareness of climate change adaptation responses in near shore and coastal areas

d. Approach and Methods

i. ICM Demonstration Area

515. ICM involves the integration of all sectors that influence the coastal zone and its environments. ICM seeks to manage threats to both coastal lands and water building greater coastal resilience whereas Ecosystems Approach to Fisheries Management seeks to address threats to the coastal habitats that affect fisheries resource management.

516. The CTI-Pacific involvement in the two demonstration sites will be defined in functional ecosystem terms as opposed to specific sites or resources e.g., sea grass beds. Within the two

demonstration sites there are focal areas with pre-existing Community Management Committees formed which the RETA will work through. The committees were formed by individuals selected by Sukos leadership for their involvement in fishing and their traditional knowledge. For each demonstration area, a stakeholder forum will be formed to support the committees comprising of staff from NDFA (Fisheries Management Division), District Officers for Forestry, Agriculture, Tourism and Health care, appropriate national line agencies and Suko Leaderships. The stakeholder forum will be formed and hold a 3 days planning and awareness workshop within the demonstration area to introduce the Project, the proposed work plans and approaches.

517. It is proposed that the Atauro and Batugade demonstration program stakeholder forum will decide on the scope of the program of work. The RETA recommends adopting an Island wide to ICM and a regional approach to EAFM approach within which priority programs will be addressed.

518. Approach and Method Designing, implementing and monitoring the demonstration area is based on two concurrent process (i) ICM and (ii) EAFM planning. This will require (i) strengthening the existing management committee and (ii) providing a coordination and learning framework for other stakeholders to work collaboratively and contribute to the same overall goals – sustainable development and economic growth. For most aspects of the program best practice is unknown and models for community based management and planning will be introduced from outside of Timor Leste and then adapted, implemented and monitored.

519. The approach will include the following steps:

- ICM assessment will include:
  - Fully enumerated social surveys using the questionnaire developed for output 1.2 by the NDFA supported by contracted survey teams
  - Vulnerability assessments for climate change and natural disasters provided as part of the community level management planning process
  - Catchment assessments using remote sensing and aerial photography if available with sedimentation measurement and nutrient budgets by sub-catchment
  - Water quality testing at freshwater sites and coastal sites through a independent contract
  - Community infrastructure assessments and solid waste and sanitation assessment based on community maps
- EAFM assessments will include:
  - Detailed habitat information to build maps from field transects for each major habitat category and site completed by NDFA after training and mentoring by an independent contractor. The habitat mapping will require additional staff to be trained in diving (PADI), reef check methods, field monitoring, fish and habitat identification data analysis and reporting. This program will be linked to building capacity in NDFA and local Community for developing a Reef check volunteer program with up to 20 community volunteers provided PADI training.
  - Coastal resource assessment through fish identification, visual assessments of taxa, diversity and abundance – completed by the NDFA and Reef Check programs
  - EAFM planning process for identification of priority coastal habitat management zones, definition of management zone objectives, specification of required management changes and selected change management options. This will include proposals to establish gear limits, fishing seasons, forming MPAs, LMMA, Fish refugia, no take zones etc. and will be implemented by NDFA with technical support form the Program Management contractor see Output 4.

520. Both processes will use a form of threat analysis. Threat identification and causes, possible options and responses at both the community and demonstration area level. The RETA will provide access and training for the use of MIRADI software for threat management analysis. Success and sustainability of site management will need to build on identifying successful threat management responses linked to livelihood development programs.

- ICM / climate change adaptation community level planning that links the EAFM planning outputs with the needs of community livelihoods, and wider threat management. The community level planning process will be provided by the Climate Change Contractor and will integrate the Climate Change program within the community management planning program.
- A 3 day stakeholder forum to review the draft outputs and to agree on priorities for pilot demonstration site investments and consensus of implementation responsibilities. The Stakeholder forum workshops shall be jointly chaired by NDFA and the local management committee and will produce a broad 4 year plan for the demonstration area and a detailed annual work plan with responsibilities and timelines.
- Pilot site implementation program with investment into best management practice or technologies to address threats and livelihoods.
- A review of options for revenue capture for coastal management completed by the Program Management contractor including community based enterprises with agreed profit sharing agreements, dive and bed taxes, and recreational fishing licenses.

521. Quality Control The work plan will be reviewed by the quality and strategy group (see Output 3) and comments provided to the implementing Agency (IA). The comments and the IA responses, and the revised work plan will be presented by the IA back to the stakeholder forum. The Quality and strategy team will report independently to the NCC (CTI) and the NDES.

522. Data Collection The existing data and information for the demonstration areas will be collated, catalogued and stored in digital and hard copy by the NDFA. The data collation program will undertaken by Program Coordination staff with all sector providing data sets.

523. A coastal and marine habitat assessment program will be developed through training NDFA staff and community volunteers to snorkel and dive, implement Reef Check methodology, transect monitoring and visual assessment techniques. NDFA will be supplied dive gear for 8 additional staff and a further 8 sets for community volunteers that will be held and maintained by the NDFA.

524. At each site multiple transects will be used to interpret the habitat image. Data will be used to produce thematic maps that will then be used to produce coastal and reef fisheries management plans based on an EAFM approach. Transect surveying will be a NDFA implementation and will require additional staff to be trained in diving with access to dive gear.

525. Planning Process The planning process will operate at two levels; Community level and the Demonstration Area level. This will be achieved through community stakeholder groups being involved in the threat, vulnerability and adaptation analysis using PRA techniques. Training will be provided by the climate change contractor. The EAFM process will require participatory production of habitat maps, habitat management decisions and the negotiation of management rules for habitat and fisheries management. Similar involvement will be necessary to incorporate the trade-offs arising from land based threats.

526. The primary task will be the community level development and management plans. The Climate Change Contractor coastal livelihoods planning program will be applied along with a socio-economic assessment for baseline purposes. Each planning process will complete a threat, cause and response process using the Miradi threat based management planning and decision support tool. Miradi is increasingly considered best practice.

527. Once all plans are completed a demonstration area plan will be compiled. The workshop for all stakeholders will review the need for inter-community adjustments due to interactions across administration borders, and will undertake a prioritization program for identifying site level technology demonstrations that specifically address threats to the coastal and marine environment.

528. Site Level Demonstrations. Using the planning priorities from the stakeholder forum, planning workshop, action plans will be developed by the Program to support and implement the site

level pilot programs. Preparation of action plans will be a joint responsibility between the RETA program and recipient village/community.

529. For agreed priorities the RETA will finance the cost of materials and any expertise (if necessary) while labor will be provided by the community as their in-kind contribution. The RETA will provide an investment that can be applied to the site level demonstrations based on the outcomes of the planning processes and the priorities ratified by the various stakeholder fora.

530. Each pilot will be required to present an action plan comprising:

- Stated problem and its underlying causes
- Expected output
- Proposed program to deliver output based on best management practice
- Key indicators of success and base line data to enable the assessment of impacts
- Total cost
- Active participation in the learning process through exposure within the community about the program and what it has or is achieving, and cross visits between communities to expose others with similar problems as per their planning process.

531. For the demonstration area pilot sites will be developed for the differing threats. For example, there may be a sanitation threat and a threat solution based on septic tanks. In this case households would be supported with implementing the agreed solution to demonstrate the benefits and impacts of using in this example septic tanks and toilets. These would be located throughout priority management zones with the expectation that neighboring households may seek to start installing septic tanks using their own or other resources. Similar strategies can be designed and introduced to address solid waste management where containers are used for inorganic waste and its subsequent disposal. Given the low number of communities, options for piloting different threat responses in each village will be considered wherever possible.

532. Waste water and Perma-culture technology for Atauro is proven and will be supplied to additional households per Sukos. Given the focus of CTI-Pacific is food security a guideline of 20% to 25% of the investment funds would target social well being outcomes such as sanitation and 80% should target economic livelihood solutions where employment and/or incomes increase and the pressure on natural resource assets decreases.

533. The first priority for funding will be proposals that include solutions based around economic development management responses to priority threats. This could involve value additions to aquaculture programs, substitution of shifting agriculture with permanent crops, afforestation, agroforestry, building small enterprises linked to tourism.

534. All site demonstration programs will need to be achievable in a two year window and the latest disbursement for implementation would be last quarter Program year 3.

535. Each year NDFA and NDES will convene a stakeholder planning forum that evaluates all the work completed to date and outlines the work plan for the following year. This forum will be linked to the national quality and strategic reviews.

536. **Climate Change Adaptation.** The climate change adaptation program will be implemented by a regional contractor working in partnership with the NDES and NDFA. Currently NDES is preparing the National Adaptation Plan of Action (NAPA) with two priorities being (i) a focus on building broad vulnerability assessments and (ii) implementation of priority adaptation programs..

537. The climate change adaptation program will be planned and integrated with the NAPA work plan but will be limited to the two field demonstration sties and will provide a more detailed site level vulnerability assessment based on scenarios that will then be used to generate adaptation options. The program will be integrated with the community planning program and the contractor for climate change will be responsible for both programs of work.

538. Vulnerability analyses will be conducted using the conceptual framework of the IPCC that partitions vulnerability to climate change into three elements: the frequency and magnitude of exposure to external shocks (e.g., climate changes), the degree of sensitivity to those impacts, and the adaptive capacity of the community or society experiencing those impacts. The vulnerability of a fishery system (including the broader coastal and social dimensions) is composed of exposure to external threats, the effect of those threats and the ability of people to respond (sensitivity and adaptive capacity) (Smit and Wandel 2006; Füssel 2007).

539. The IPCC framework will be combined with an indicator based approach that includes not just climate change but other sources of vulnerability (see Allison et al. 2009 for a rare fisheries example) and a Sustainable Livelihoods Approach (Carney 1998) to ground the analyses in the lives of rural people. Analyses at regional, national and sub-national scales will be linked based on the work of Zurek and Herichs (2007) for the Millennium Ecosystem Assessment (MA). The ICM demonstration area contractor will integrate the vulnerability analysis with the threat analysis used for managing local threats.

540. Scenarios and Adaptive Responses. Fisheries are often over fished due to a range of causes. Fisheries will also face increased disruption and vulnerability as a result of climate change. Adaptation to climate change in small scale fisheries will require addressing both existing issues as well as new issues arising from climate change. Although aquaculture could defer the loss of stocks, biotechnical interventions such as inshore Fishing Aggregation Devices (FADs) only defer addressing the issue of declining fish stocks. There can be no solution to the looming biodiversity conservation, food security, and economic development crisis without a transformation in the management and governance of inshore fisheries as well as the management of land based threats to coastal ecosystems.

541. Effective responses to climate change will require actions at the three primary scales of governance: national, island and community. Further, it will require the integration of policy and action among sectors, such as health, environment and education to better mirror the factors that influence the lives of people. Climate change adaptation and marine resource management will succeed or fail at the community or village level and as such the Program will introduce vulnerability assessment outcomes and future scenarios into the community and village planning processes. Through these already proven planning systems the important interactions and feedback patterns between coastal and land-based livelihood activities, for example upstream farming practices, logging, etc., that have profound effects on the coastal zone. Climate change adaptation measures must be integrated into broader rural development initiatives.

542. Assessments of the potential impact of climate change on fisheries have tended to emphasize predicted changes in resource production and distribution and make only broad inferences about consequent socio-economic vulnerabilities. Assessments across the many domains of a fishery and through the multiple impacts on fishery systems are critical for adaptation policy and action. Assessing how vulnerability to climate change might itself change requires a dynamic assessment framework that accounts for changes in all elements of vulnerability over time (Füssel, 2007). Scenarios are useful tools to estimate future socio-economic conditions, accounting for alternative futures within the data-sparse context of Islands States. Scenarios will be developed using techniques developed by Brown et al. (2001), Chuenpagdee et al. (2001) and Tompkins et al. (2007).

543. In the absence of the foregoing analysis it is difficult to provide specific examples of adaptations as these will be specific to communities, countries and climate change threats. Broadly adaptations will occur through improved policies and development pathways at national levels, improved capacity to self-organize for collective action at community level, and diversified livelihood platforms at the household level that reduce vulnerability through greater livelihood mobility. Although infrastructure interventions are often identified priorities, local community level responses with support from local and national government will play an important and cost effective role in successful outcomes.

D. Detailed Description Component Three: Enabling Conditions

1. Output

a. Output 3.1 Learning Framework

544. The Program will build a multi-level ICM learning network that operates across levels ranging from demonstration area, District, National and Regional (CTI-Pacific).

545. The learning framework seeks to:

- strengthen understanding of ICM and EAFM concepts by identify best management practices for Marine Biodiversity Conservation, ICM, EAFM,
- build implementation capacity, and
- develop implementation approaches customized for Timor Leste.

i. Methods

546. At the national level the Program will support the formation of a quality and strategy review team. The IA/EA and GEF Focal Point shall form the team which will comprise three individuals being (i) a prominent private sector business person, (ii) a person representing community interests, (iii) a technical expert. The identification of the potential team candidates shall be through the Program Management contractor who will compile a long list of no less than 8 candidates that will be provided to the EA. The EA will confirm acceptability of proposed candidates in terms of institutional and political acceptability. The IA will select from the acceptable candidates to fill the business and community representatives.

547. The technical expert may change for each year according to the technical issues that are envisaged. The role may be a national role but equally should the need arise the role could be filled from the regional learning framework that will be managed by the Pacific Round Table and IUCN.

548. The quality and strategy review team will be convened by the EA with the Director of Environment and will include the Senior Officer of the DoE Conservation program and the Program Coordinator.

549. The role of the team is to review (i) annual work plans prepared by the IA, (ii) prepare forecast budgets, (iii) review the demonstration area work plan and approach, and (iv) provide independent review and audit of the progress reporting and evaluation in August/September each year. The team will review work plans before they are approved and will provide the EA and the Program Management Contractor with written comments as well as briefing the Secretaries of State for Fisheries and Environment.

550. The annual review and evaluation program is scheduled to fit into the national planning and budgeting time line. A contractual requirement of the EA will be to convene a participatory evaluation program at each of the Program sites where all subcontractors and the IA and stakeholder will present their work for the year, achievements, successes and failures. The evaluation will also reflect on processes and procedures and ascertain were improvements and efficiencies can be achieved. The evaluation process will provide the basis for the synthesis of lessons learned and best management practice that will be compiled into an annual report and electronically distributed throughout the wider learning network.

551. One role of the quality and strategy team will be to provide a mechanism for the program to access high level executive decisions for issues relating to coordination, sector roadblocks etc. This will be through informing the NCC (CTI) and the inter-ministerial committee for sustainable development and environment.

552. For at least one of the four program years the regional learning framework will add a person from one of the other participating countries into the evaluation team. Whenever possible the chair of the Round Table will also participate.

553. Following the national evaluation the IA and the EA from each country will participate in the annual regional evaluation that will involve all CTI Pacific countries. The meeting is convened and hosted by the Pacific Round Table each year. At the regional evaluation meeting each country EA and IA will present the findings of the national evaluation and identify key lessons learned. A score-card system for rating achievement and implementation performance will be tested as a means of creating increased incentives for quality strategic programs.

554. The regional session will address key themes such as legal and regulatory approaches, best management practices, policy frameworks, information systems, planning tools and legal and regulatory changes. The regional round table will require two Program participants, one stakeholder and one non-government institution.

555. In the final year the quality and strategy team will evaluate the total Program and use this with Government to scope the possible extension of the program.

b. Output 3.2 Legal and Policy Reform

556. By 2015 the following policies and legal outputs will be achieved:

- National Environmental Policy on Sustainable Development drafted and submitted to Government
- National Marine Biodiversity Conservation Policy submitted to by Government with provisions for the introduction of Integrated Coastal Management
- National Coastal Fisheries Policy passed by Government and being applied by NDFA
- Draft legal reforms to Fisheries Legislation and the Environment Act to enable marine biodiversity conservation and ecosystems based fisheries management to be ratified by Government
- A community education program on awareness of fisheries law and regulations designed and implemented within coastal communities

557. The RETA will support the NDES to facilitate a policy design process that will build understanding of ecologically sustainable development, identify key principles and strategies for its implementation in Timor Leste. Specifically the Program will provide resources for a total of 4 policy forums through which the private sector, public agencies, academia and the general public can participate in the definition of concepts, principles and the development of policy statements. The Program Management Contractor will on behalf of NDES award up to 4 policy research contracts to undertake research into key issues or knowledge gaps.

558. The RETA will provide support to NDES and NDFA to jointly prepare a National Marine Conservation Strategy. Given the uncertainty over the NBSAP the RETA shall seek to develop the marine conservation section for future inclusion in the NBSAP should it ever overcome the ongoing hurdles to its development. The joint development of the strategy reflects the joint mandates that exist for Marine Conservation and is proposed to build common understanding of terms, approaches and the respective needs of both sectors. The RETA will provide funding for stakeholder forums and seminars and will provide funding for research contracts.

559. The fisheries sector has had several attempts to develop a Coastal Fisheries Policy. These need to be reviewed, completed, prioritized and ratified by MAF. The RETA will provide funds for stakeholder forums and for the preparation of final documentation.

560. With the reorientation of the NDFA focus towards fisheries management and the use of ecosystem based approaches there is a need to ensure a supportive legal or regulatory basis for introducing EAFM. The current Fisheries Act does not provide sufficient management control for introducing spatial management within zones - the basis of ecosystems based management. This

needs to be extended further to ensure that management zones identified and agreed in community based management plans are also legally recognized and that the rules and requirements within these plans are enforceable.

561. Community consultation programs have identified that most communities remain unaware of fisheries rules and regulations. The RETA shall contract the development of a comprehensive set of community education and awareness materials and implementation programs for coastal communities. The program will target deliveries the programs coastal communities by 2015.

c. Output 3.3 Marine Biodiversity Network Planning

562. By 2015 a spatial plan for marine conservation comprising of a range of differing reserves and management zones will be completed mapped and proposed to the Government of Timor as the Timor Leste conservation plan. The plan will become part of the implementation of the Marine Conservation Strategy.

i. Method and approach

563. Conservation planning in easily visited visible terrestrial sites is often difficult while conservation planning in the complexity of coastal and marine resources, the high degree of connectivity, the mosaic of local community ownership and use rights makes marine conservation planning highly susceptible to being inefficient with often less than effective results. The RETA will develop additional data sets on habitats, socio-economic data sets, fish resources - benthic and trophic data, and ecological processes. Collectively this data along with the vulnerability and scenarios for climate change offer a far richer data base on which marine conservation planning can be based.

564. The further analysis and application of these data sets will be demonstrated in a planning exercise of marine conservation. Marxan software will be applied to the data sets in a participatory planning exercise that will seek to reflect different goals, differing tools and approaches to the art of conservation planning. The program will develop from the threat identification processes in the community based planning in component 2 as well as the costs and benefits of alternative options.

565. The RETA will apply the software at the level of the demonstration areas and then nationally. The application of the planning process will seek to identify the preferred scenarios of differing stakeholders both locally and between national and local public and private.

566. The planning process will be planned in late PY 2 to be implemented in PY 3 and PY 4. training in the use of Marxan will be provided to NDFA and NDES staff who will then jointly implement the planning process. The planning process will also be used to inform the marine conservation strategy process by identifying options and the tradeoff from applying differing goals and conservation tools such a locally managed areas, seasonal closures, no take zones etc.

567. Once preferred options are identified the NDES and NDFA will hold district level consultations regarding the options and seek to develop support and understanding for the proposed national plan. It is anticipated that late changes and fine tuning will occur as part of the consultation.

568. Funds are provided for training (2 weeks training from international expert) modeling and planning sessions at Atauro, Bategade and Dili and consultation costs including travel and allowances for district consultations amounting to 36 days for 3 persons and one vehicle.

d. Output 3.4 Understanding Land Based Threats to Coastal Ecosystems – sediments, nutrients and pollutants

569. In 2015 the NDES and NDFA will know if catchments linked to Atauro Island and Bategade are delivering nutrients and sediments that are damaging the Coastal Environment and the sources of these pollutants.

i. Method and Approach

570. A contract will be awarded for the identification of sediment and nutrients being delivered into coastal environments for both demonstration sites. The program will include water testing sediment traps and catchment level surveys of households and land users to build nutrient budgets. Based on the findings of the analytical stage, pilot demonstration sites will be proposed and if prioritized in the community planning process (see output 2.1) the RETA will support the implementation of best management practice for catchment management programs.

571. The RETA will support a joint venture approach between a local institution and an international institute or expert to complete the analysis and assessment phase of the program for two priority catchments on Atauro Island and one in Bategade. Total investment in the assessment phase will be USD 50,000 for fees, travel, and analysis. .

e. Output 3.5: Sustainable Financing –Pilot study

572. The Program will support the following outputs on sustainable financing:

- Review of policy options for raising fees and revenues from natural resource users or beneficiaries for the financing of coastal management programs. This will include strengths, weaknesses, opportunities, and barriers to alternative approaches of raising fees and revenues. For example, legislation will need to be reviewed as there is no specific authority that allows the levy of local fees.
- Completion of a design and feasibility analysis for the introduction of a fee/revenue program based on coastal resource use including:
  - Market size study to assess current and future visitation rates
  - Setting of a marine biodiversity fee levied on the tourism sector through either a bed or arrival tax
  - Introducing a user fee for recreational fishing around Atauro Island

i. Method and Approach

573. **Review Policy Options**. In Program year two a short-term international technical expert (1 person months), provided by the Program Management contractor, will review policy options. The expert will form a working group, who will review the work plan for the policy review and analysis.. The policy review will cover the raising of fees and revenues, options for fund ownership and management, and mechanisms for fund distribution.

574. Design and Feasibility Analysis of Fee/Revenue Programs. In year two of the Program, a detailed design and feasibility analyses of introducing user pay systems linked to coastal resources will be contracted to local technical and policy experts. This feasibility analysis will estimate potential user fees/charges, specify procedures for their introduction, identify how to establish a fund or funds with the collected user fees, recommend rules for fund management, and define how the fund can be used to support coastal management.

E. Detailed Description Component Four: Effective Program Management

575. The lack of human resource capacity with Program experience in the NDFA is a significant constraint for successful program implementation. The cross sector nature of the proposed ICM and EAFM demonstration program and the information and monitoring programs requires actors from a wide range of sectors and from across differing levels of government and the community. To be an effective demonstration program, a learning framework will be essential to inform stakeholders to enable adaptive management to emerge based on best management practice.

576. A critical element in the learning framework will be to access appropriate technical skills and leadership for implementation of the two demonstration sites, the building of enabling conditions, and institutional strengthening of the NDFA.

577. Program management will be contracted to a service provider with ADB contracting a consulting firm to provide Program Management functions. The Program management contractor will report to the Executing Agency – the Ministry of Agriculture and Fisheries but will be located in the NDFA as part of the capability building program. Office space will be provided by Government as part of their in-kind contribution.

578. The consulting firm will provide a full time Program Director, Accountant, Procurement - administrator. The firm will also be responsible for providing technical skills including:

- Change Management expert 12 person months
- Organizational support expert 16 person months
- Legal expertise (international 2 person months, national 8 person months)
- Sustainable financing expert for 1 person months
- MARXAN trainer (1 person month)

579. The Firm shall provide administrative support for reporting to the EA on a monthly basis and to wider Program stakeholders on a quarterly basis. The Firm will support the quality and strategy team in the annual program evaluation and planning process, and ensure that work plans are agreed and reported to the Executing Agency and ADB.

580. Overall program implementation will use local subcontractors for activities such as field surveys, community planning, water resource quality assessments, sanitation and environmental health assessments, socio-economic survey and coastal community management and development planning, education and awareness materials, feasibility assessments of revenue and sustainable financing. The firm will support both the NDFA and the NDES in preparing an annual work plan, contracting of service provision, coordination of contractors and a demonstration area learning program.

581. A further function of the firm will be to coordinate regionally contracted services in the RETA including the regional learning program, the climate change adaptation program, and proposed capacity building programs that are agreed as part of the RETA wide activities.

582. Demonstration areas will be a joint responsibility. For both sites this will include NDFA working with the Local Community Management Committee and the officials from the District office.

583. The major responsibilities of NDFA management team are:

- Overall Program Leadership and stakeholder involvement
- Institutional restructuring leadership and change management
- Training program implementation
- Working with AIMS and implementing monthly fish sampling program

- Implementing the Socio-economic surveys and preparing reports
- EAFM and transect monitoring and assessment program implementation in demonstration areas including coordination of planning processes
- Conservation planning and policy program leadership

584. NDES responsibilities will include:

- Planning the Environment strategy and ICM concept paper
- Leading the development of the national plan for Marine Conservation Areas
- Supervision and oversight of climate change adaptation program
- Lessons learned from climate change adaptation
- Future Climate Change work plans.

F. Program Costs

1. Summary Cost Estimate

585. The estimated total cost of the CTI-Pacific Program in Timor Leste is USD 3.56 million including price contingencies. Price contingencies are set to 5% per annum for the life of the Program and for the additional year between data collection and expected Program start up in October 2010. In total price contingencies account for 10% of the total cost.

(USD)

Item			Amount
A.	**Base Cost**		
	1	Component 1: Organizational Capacity	$1,717,800
	2	Component 2: Best Management Practices	$730,800
	3	Component 3: Enabling Conditions	$419,400
	4	Component 4: Project Management	$347,500
		Subtotal	**$3,215,500**
B.	**Contingencies**		**$340,438**
Total			**$3,555,938**

Table 11: Program Investment Plan

586. By component 48% of the total base cost expenditure is invested into organizational capacity building, which is a reflection of the focus on restructuring, training, building information systems, and supporting the fishery research for EAFM. Component Two aims to test and build best management practices while building experiential skills in stakeholders from the national to local level accounts for 22% of the total costs. Component Three: Enabling conditions through support for legal reforms, learning framework, information systems, catchment studies, sustainable financing including the evaluation and quality development program with the Round Table accounts for 11% whilst Program Management and technical support costs (see Table 4) 10% of the total costs. Total Program contingencies equate to 10% or USD 337,427.

2. Summary Costs by Expenditure Category

587. Table 2 provides the detailed costs by expenditure category. These are only indicative due to the site-based demonstration investment being defined by the ICM planning process. In total 18% of the total cost will go towards hard investment in the pilot site programs. The high cost of planning reflects the community based approaches being used in ICM and EAFM while the cost of studies and surveys is indicative of the data needs of ICM and EAFM approaches.

588. The studies cost category includes the major cost item of the AIMS fisheries resource study that has a cost of over USD 400,000 to Program funds and an additional USD 394,000 in cofinancing from the Australia Government and AIMS. A detailed breakout of itemized costs by cost expenditure category is provided in Appendix B.

Table 12: Summary Costs by Expenditure Category

(USD)

Item			Total Cost	% of Total Base Cost
A.	**Investment Costs**			
	1	Civil works	$240,000	7%
	2	Planting materials	$0	0%
	3	Field and Operations	$41,900	1%
	4	Enteprrise development	$251,600	8%
	5	Studies	$864,500	27%
	6	Planning processes	$265,000	8%
	7	Capacity building	$142,400	4%
	8	Training	$221,000	7%
	9	TA - local	$0	0%
	10	TA - int'l	$598,000	19%
	11	Project management	$262,500	8%
	12	Office equipment	$177,600	6%
	13	Local transport	$151,000	5%
		Subtotal (A)	**$3,215,500**	**100%**
B.	**Contingencies**			
	1	Physical	$0	0%
	2	Price	$340,438	11%
		Subtotal (B)	**$340,438**	**11%**
Total Project Cost (A+B)			**$3,555,938**	

3. Proposed Financing

589. Total Program financing totals USD 3.55 million of which Government is financing USD 407,586 approximately USD 100,000 per annum. ADB will contribute 6% or USD 210,737, AIMS will cofinance the fishing resource survey costs through the provision of research vessel RV Solander while GEF will finance the remaining 71%.

Table 13: Program Financing Plan

(USD)

Source	Total	%
Asian Development Bank	$210,737	6%
GEF - International Waters	$579,328	16%
GEF - Climate Change	$364,202	10%
GEF - Biodiversity	$1,600,021	45%
Government	$407,586	11%
AIMS	$394,063	11%
Total	**$3,555,938**	**100%**

4. Proposed Contract Packages

590. Indicative contract packages are presented in Table 5 below. It is proposed that a head contract be awarded between ADB and the selected Program Management Contractor and that the contract include the responsibility to subcontract or reimburse service providers and implementing agencies. And for procurement of equipment.

Table 14: Proposed Contract Packages

(USD)

Item	Issuer		Total Cost
1a	**ADB**	**Contract 1a - Program Mgmt Contractor - Program Office**	1,148,494
1b	**ADB**	**Contract 1b - Program Mgmt Contractor - Subcontracts**	1,341,017
2	**ADB**	**Contract 2 - Regional contract - IUCN roundtable**	62,227
3	**ADB**	**Contract 3 - Regional contract - Climate Change**	202,550
4	Project	Contract 4 - Subcontract office equipment	54,512
5	Project	Contract 5 - Subcontract field equipment	48,773
6	Project	Contract 6 - Subcontract boats	59,956
7	Project	Contract 7 - Subcontract water skils training	0
8	Project	Contract 8 - Subcontract English training	0
9	Project	Contract 9 - Subncontract technical training	0
10	Project	Contract 10 - Subcontract National Dept of Statistics	0
11	Project	Contract 11 - Subcontract NDFA	189,368
12	Project	Contract 12 - Subcontract AIMS	406,639
13	Project	Contract 13 - Subcontract water quality testing	11,025
14	Project	Contract 14 - Subcontract community dive training	0
15	Project	Contract 15 - Subcontract NDES	49,383
16	Project	Contract 16 - Subcontract community education materials	0
17	Project	Contract 17 - Subcontract catchment studies	56,503
18	Project	Contract 18 - Subcontract Atuoro Island pilots (5 packages)	315,745
19	Project	Contract 19 - Subcontract Batugade pilots (5 packages)	149,113
		AIMS in-kind	394,063
		Government contribution	407,586
		Total by ADB contract - 1a,1b,2,3 (includes contingencies)	**$2,754,289**
		Total by ADB contract (1a,1b,2,3) + government + AIMS in-ki	**$3,555,938**

Project = Project Management Contractor

5. Program Management Costs

591. A break out of core Program management costs reporting in Table 5 is provided in table 6 which highlights the cost of Program administration and coordination USD 410,000 and the costs of technical assistance that totals USD 706,000. Program coordination costs are based on a 3 person office staffed by Timor Leste Nationals.

Table 15: Breakout of Program Management Costs

Project coordination - staff (1 Dir, 1 Fin, 1 Admin)	$230,209
Project coordination - local transport	$58,833
Project coordination - office equipment	$36,604
Project coordination - meeting costs	$24,891
Project coordination - accounting and overhead	$43,156
NDFA corporate services TA	$323,138
NDFA organizational change TA	$245,385
Quality and strategy team	$39,599
Officials travel to CTI	$47,972
Marxan TA	$24,255
Legal international TA	$25,468
Legal local TA	$23,627
Sustainable finance TA	$25,358
Total	**$1,148,494**

G. Implementation Arrangements

1. Executing Agency

592. The Executing Agency will be the Ministry of Agriculture and Fisheries MAF. MAF will be responsible for convening the NCC CTI to review work plans, to approve work plans and to ensure cross sector coordination does not become an implementation constraint. MAF will also ensure that the Government budget contribution is available and disbursed according to prior agreements.

593. MAF will also provide the platform on which organizational systems and strengthening is based and will ensure that Ministry level services and requirements are well known and integrated into any new system development.

594. **Program Management Contractor** The Program will support a program management office (PMO) that will be located in the NDFA but report to the Ministry of Agriculture and Fisheries. The Program Management office will be the office space for a Program Management Contractor recruited by ADB and through which funds will be dispersed to the respective implementing agencies or subcontractors. The Contractor will provide a full time Program Director, Financial Accountant and a contracting and administrative support person all positions are to be filled by Timorese locals.

595. In addition the contractor will mobilize technical experts relating to (i) Change management (ii) organizational systems, (iii) Marxan software, and a (iv) sustainable financing expert. While these experts will work with implementing agencies they will be administered by the PMO who will ensure Terms of Reference are agreed and delivered on departure.

596. Locating the PMO within the NDFA offers the additional benefit of providing mentoring and professional development as the Department establishes its operational capability.

597. The contractor will be responsible for developing a consolidated work plan, coordinating demonstration implementation, contract service providers, and provide administrative support for the ADB and GEF funds with quarterly and six monthly reports, and financial management and reporting according to the terms of contract.

598. The contractor will provide Program Management functions including:

- Engaging with the Implementing Agencies
- Annual work plan coordination and preparation
- Implementation oversight
- Procurement and contracting
- Financial Management and reporting
- Coordination with the regional Climate Change Program and training provider contractors
- Six Monthly Program Progress reports

599. Monitoring and evaluation has been designed into the program through the quality and strategy review process and the associated learning framework. The contractor will ensure that these processes are timely and reported to NDES and the executing agency Ministry of Agriculture and Fisheries.

Figure 5: Proposed Implementation Schedule

	Activity	Year One				Year two				Year Three				Year Four			
1.1	NDFA Restructuring																
	a. Medium term straetgic plan																
	b. Revised Structure																
	c. Organisational Procedures																
	- HRD																
	- IT																
	- Finance and Budgeting																
	- Management information system																
	- Corporate planning																
	- delegated authority																
	- KPI's																
	d. Divisional operations																
	- work plans																
	- job descriptions																
	- budgeting																
	- implementation plans																
	- key Performance indicators																
	- reporting																
	e.Individual skills																
	- English language																
	- Water safety skills																
	- Dive training																
	- Management and Administration																
	- Technical skill development																
	- Legislative and policy development																
1.2	Information and monitoring																
	a. Census review																
	b. Training survey design and implementation																
	c. Detailed survey																
	d, DFO data systems																
1.3	Training and development program																
	a. AIMS Fisheries science project																
	- measure ecosystem processes																
	- report writing																
	b. Fish monitoring program																
	- Fish sampling and gut analysis																
2	BMP demonstrations																
2.1	Atauro																
	Assessments																
	Planning process																
	Demonstration pilots																
2.2	Batugade																
	Assessments																
	Planning process																
	Demonstration pilots																
3	Enabling conditions																
3.1	Learning framework																
	ICM and EAFM concepts																
	Implementation capacity																
	Implementation approaches																
3.2	Legal and regualtory development																
3.3	Marine Conservation strategy																
3.4	MPA planning																
3.5	Fisheres Policy update																
3.6	Land based threats																
3.7	Sustainable Financing																
4	Program Management																

2. Implementing Arrangements

600. The implementation of the Program components will be undertaken by different agencies with responsibility for implementing demonstration and support programs.

601. The implementing agencies will be the National Directorate of Fisheries and Aquaculture (NDFA) and the National Department for Environmental Services (NDES). As the NDES is aligned to a different Ministry the Ministry of Agriculture and Fisheries will enter into a Memorandum of Understanding with the Ministry of Economy and Development outlining the participation in the Project.

602. **The National Directorate of Fisheries and Aquaculture** will implement the majority of the Program including the institutional strengthening program based on strategic planning, restructuring and alignment of people, processes and resources. The key output for the NDFA is its ability to transform itself into a fisheries management agency that actively pursues and implements field management programs. The program design seeks to add new skills and structures and then provide direct learning and experience building opportunities through field programs linked to socio-economic surveying, fish sampling and resource assessments, EAFM demonstrations, climate change adaptation programs and ICM planning systems.

603. The NDFA will form and manage the quality and strategy team that will undertake participatory evaluations each year and will provide input to the annual work planning processes. This will require the involvement of district agency staff from all sectors in the ICM planning programs and for supporting the pilot site programs. A critical aspect of the NDFA will be to confirm the roles of the DFO and the community management committees previously formed to ascertain if they are still viable and legitimate.

604. For the Atauro site an assessment will nee to be made regarding the potential partnering of the Program with the Roman Laun NGO program of work as a means of institutionalising demonstrations and building greater sustainability into programs.

605. NDFA will also need to commit to working with AIMS to capture the benefits that it offers in the medium term. This will require staff that will stay with this program so they benefit from the skills and experience. Most importantly the NDFA will need to build budget support to maintain the program of fish sampling and gut analysis.

606. Similarly, the training of staff and community members to build reef check capacity and skills is critical to both NDFA and the community resource managers. The Program will invest heavily in resources for NDFA staff to be active participants in management programs which will require support for diving and snorkelling training.

607. The development of policy and regulation are critical roles for NDFA who will take the lead in the developing an agreed Fisheries Policy that includes the coastal fisheries and management of fishery resources. Other key policy issues relating to marine conservation planning, implementation of protected areas all need to be progressed through NDFA or with NDFA working in close collaboration with NDES.

608. The NDFA will work with local and international contractors and technical experts provided by the Program Management Contractor to review policy options and seek broad consensus within Government on these issues before proposing specific policies for their use. The role of NDFA will be to coordinate and advocate for more sustainable financing solutions for conservation and integrated coastal management.

609. In summary key functions and roles of NDFA include:

- Planning and implementing the Socioeconomic survey, its analysis and reporting
- Planning the demonstration areas and developing the ICM strategy and process
- Integration of the ICM strategy into the EAFM approach to fisheries management

- Implementing EAFM over approximately 20,000 ha of coastal habitats
- Supply of Miradi threat analysis skills
- Supply of training programs on a timely basis
- Management of the quality and strategy team and evaluation program
- Leadership and management of the learning program
- Approval of work plans and contracting of services for the ICM program
- Management of subcontractor inputs
- Implementation of community marine conservation plans

610. **National Department of Environmental Services** will act as the implementing agency for (i) the National Environment Strategy, and (ii) the National Marine Conservation Strategy, (iii) the National Marine Protected Area network plan, and climate change adaptation programs.

611. Within NDES the Director of Climate Change will work closely with the Climate Change contractor to ensure that the climate change approach and work plan are adding to the capability of the NDES and other National organizations. The Director will be an active participant in the preparation of a work plan and will ensure that other stakeholders are aware of the program including the National Coordinating Committee for CTI.

612. The development of national strategies will be based on NDES led program rather than external consultants. The process will support several stakeholder gatherings and provide resources for policy research contracts to fill specific information gaps.

3. Regional Contractors

613. **Climate Change Adaptation Contractor** The RETA will provide a single regional contractor for the implementation of the climate change adaptation program.

614. The contractor will be required to develop a work plan that is fully integrated with the wider work plan, especially for the Demonstration Area planning and implementation programs. The contractor will undertake a combined climate change adaptation and community development planning that will underpin the ICM programs in the demonstration areas. The climate change work will address vulnerability at far greater detail than is currently being undertaken as part of the NAPA program. This will provide a useful comparative analysis between vulnerability assessment approaches and enable NDES ascertain if greater detail is cost effective.

615. **Regional Evaluation** IUCN will be contracted for providing round table support for supporting and hosting the annual regional evaluation program that will build on the national level quality and strategy programs. Each year the environment round table meeting will provide a session to CTI countries to have a joint evaluation and for identification of best management practices and lessons learned.

616. The proposed implementation arrangement for the demonstration area program is presented in Figure 2 below.

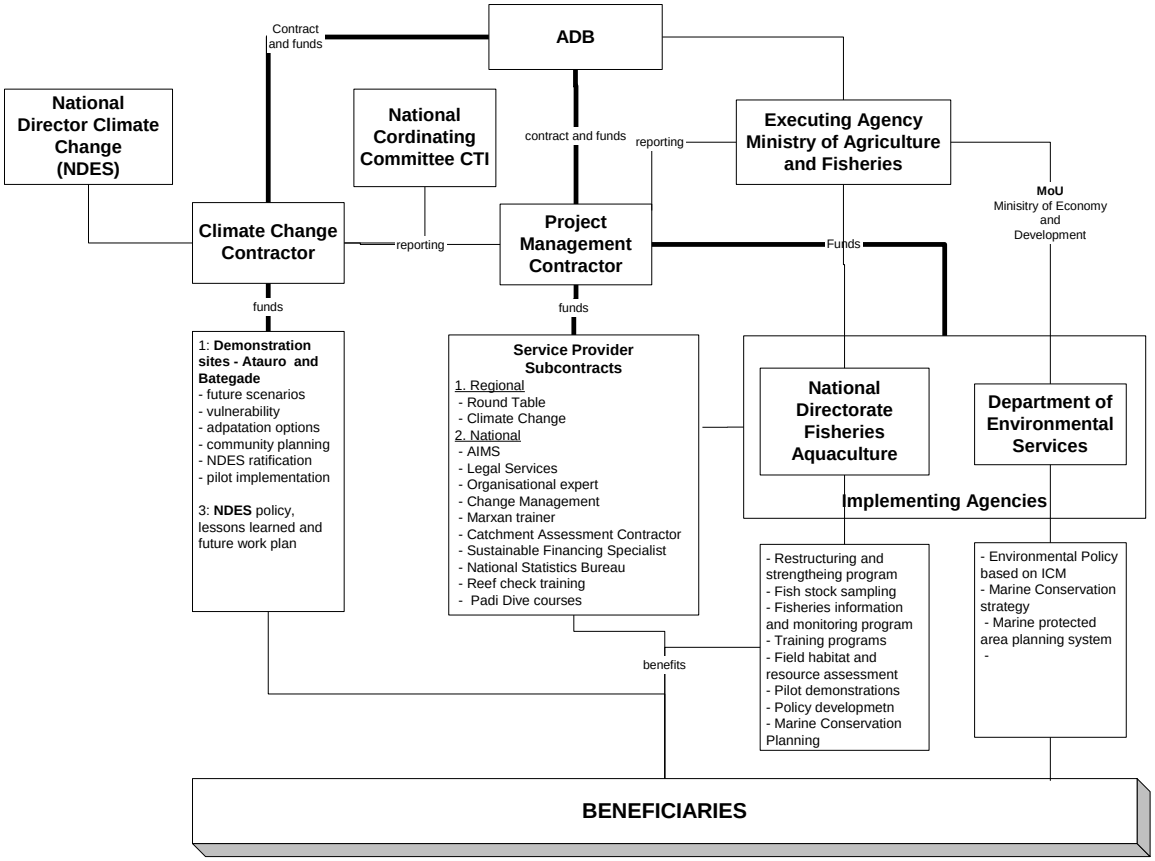


Figure 6: Proposed Implementation Arrangements

Appendices

APPENDIX A DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
Impact Increased resilience in the capacity of coastal and marine ecosystems to contribute to food security	Productivity of marine ecosystems under management supporting a 10% increase in catch levels Coastal ecosystems assessments reporting increased diversity, and biomass relative to baseline in 2011-2012 Increased diversification in coastal community household income sources compared to surveys undertaken for management planning	Fisheries coastal assessment and monitoring surveys Government Statistics Monitoring surveys and TLLSS and Census data	**Assumptions** **-** ICM is effective in managing current and future threats - plans are fully implemented **Risks** - no compliance due to social and traditional land use disputes - failure to adapt to changing threats - external threats from climate change dominate local management
Outcome An effective coastal and marine resources management program based on up to date socio-economic, biological and ecological data using EAFM	National Environmental Policy and Fisheries Policies enacted 10% (approx 70km) of coast line under EAFM by 2016 Coastal habitat transects established and monitored with supporting resource assessment for Atauro Island and Bategade ICM site demonstrating threat management and local livelihoods increased by 20% relative to households not participating by 2020 National Marine Protected Areas plan with 5 areas identified and 3 ratified ratified with management plans by 2020	Fisheries data base Coastal maps Fisheries and TLLSS surveys National Census data Marine conservation plan MPA management plans	**Assumptions** **-** that implementing agencies treat it as a Program and do not build ICM and EAFM into their work plans **-** adequate funds for continued implementation - adequate support provided to community resource management **-** priority biodiversity areas can be reserved or protected **Risks** - EAFM becomes a top down technically dominated program - EAFM can not be legally enforced - civil unrest disrupts programs
Output 1. Building organizational capability and management competency. **1.1: NDFA restructuring**	Fisheries Management Policy consistent with Sustainable development enacted by 2015 Coastal fisheries management strategy by 2014 NDFA Strategic Plan by 2012 Work plan and	Policy documents Coastal fishery management strategy NDFA reports and strategic plan NDFA work plans and annual evaluation records of quality and strategy team NDFA MIS monthly	**Assumptions** **-** Staff appointed and available for training **-** Director provides leadership and controls based on agreed procedures and work-plans - trainees will be in roles to apply skills **Risks** - Staff appointed on time

	Management information systems indicating performance for all division of the NDFA by 2012 Staff trained in management and EAFM/technical subjects by 2015	achievement data and reviews	- Correct staff trained - NDFA does not involve other stakeholders in training
1.2:Information and monitoring of Coastal Fisheries	Socio-economic survey report Assessment of fisheries role in rural food security Assessment of fishing patterns and use of fisheries by local communities Coastal Fisheries strategy with a rural livelihoods and EAFM component	Program records Reports and policy submissions Coastal Fisheries Management strategy	**Assumptions;** - community dependence on fisheries is significant - information collected will adequately answer questions **Risks:** - Data indicates very low use of fishery 1. 2.
1.3: Building resource information capability in a EAFM	Aims training program implemented AIMS ship trawl completed with Timorese participation, data analysis and reporting completed by end of 2012 Monthly fish sampling and gut analysis reported along with recommendations for policy and fisheries management responses by 2013	Program reports AIMS research report AIMS Training Program and training evaluation NDFA data records NDFA annual staff reviews NDFA work programs and annual work plans	**Assumptions** **-** knowledge of fish resources and ecological processes can be applied **Risks** Survey boat is available on time and suffers no breakdowns

	Recommendations increasingly captured in annual work plans and programs by 2015		
Output 2 Defining best management practice through experiential learning **2.1 ICM and EAFM demonstrations**	ICM ratified Plan for Atauro Island and Batugade covering 22,000ha by Mid Py 3 Habitat transects and descriptions for ecosystem approach to fisheries for 75km of coastline with defined including management zones and rules by end of PY 4 20 community management plans with fisheries management, sanitation and livelihood program that integrate climate change by end PY 3 EAFM plan based on habitat and coastal assessment, and management zones integrated with 20 community management plans by PY 3 Pilot site best management practice for ICM threat management in at least 10 locations by the end of PY 3 15 livelihood improvement demonstrations implemented and contributing at least 5% of 2010 livelihoods	Planning documents Socioeconomic surveys TLLSS reports Reef Check data Training records Community Management Plans NDFA database	**Assumptions** **-** integration of fisheries, land management, tourism planning systems within community management plans and their implementation **-** EAFM management zones can be maintained in Community management plans **-** Stakeholder cohesiveness and support for ICM - climate change adaptation is feasible **Risks** - ICM plans are not implemented - learning framework not implemented
Output 3. Enabling conditions for ICM and EAFM established **Output 3.1 Learning Framework**	Quality and strategy team formed by mid PY 1 Annual evaluations involving the quality and strategy team identifying lessons learned and preparing annual work plans.	Quality and strategy team minutes and recommendations Program records and work plans Demonstration area records	**Assumptions** **-** lessons identified will be incorporated into future decisions **-** **Risks**
Output 3.2: Legal and Policy Reform	National Environment Policy Enacted by 2012 National Marine Biodiversity Conservation	Policy documents Strategy documents	**Assumptions** **-** that EAFM will be able to demonstrate sufficient benefits to create an incentive for

	Policy passed by 2014 National Coastal Fisheries Policy enacted by end of 2014 Fisheries and Environment Act reforms supporting EAFM Community awareness program for coastal communities of Fisheries Act and Regulations by end of 2014	Legislation Community awareness program materials	adoption - Legal reviews achieve coherent and consistent interpretations of marine protection systems **Risks** **-** legal framework unchanged
Output 3.3 Marine Biodiversity Network Planning	National Marine conservation Plan finalized and endorsed by the Minister of NDES and NDFA	Copy of Endorsed Pan	**Assumptions** **- -** Adequate data to enable network planning **Risks** **-** community resource owners not engaged in protected area system
Output 3.4 Understanding Land Based Threats	Water quality tests for three catchments at three seasonal intervals measuring N, P, BOD, E Coli. Catchment land use maps and nutrient budgets Catchment nutrient and sediment management plans	Program reports Test results Catchment plans	**Assumptions** **-** testing identifies nutrient loadings. **Risks** **-** results not correlated to known activities -
Output 3.5: Sustainable Financing	Policy review on the capturing of revenues from commercial resource users developed and agreed by end of PY 2 Detailed feasibility studies for the design of user pays management systems linked to coastal fisheries, and coastal tourism completed and implemented by mid PY 3.	Draft policy statements and NDFA and NDES records	**Assumptions** **-** digital sets sufficient and accessible to create maps **-** data provided to Department of Lands **Risks** **-** data not shared or maintained
Output 4. Program management support Output 4.1: Effective Program management	PMO contract awarded by month 2 PY 1 PMO staffed and annual work plan by month 4 PY 1 Technical consultants mobilized and inputs	Program records Client evaluations	**Assumptions** **-** PMO contracted on time - Government agencies will work collaboratively **Risks** Sectors work independently

	integrated with training and planning program Program performance reports completed on time for at least 95% of requirements		
Activities 1.0 Contracting Program Management contractor month 2 PY 1 1.1 Mobilization of technical assistance organizational strengthening and change management 1.2 NDFA Strategic plan and restructuring by 2012 1.3 Organizational systems and procedures defined and implemented by 2012 1.4 Work planned and key performance indicators agreed by division 2012 1.5 Management training and technical training implemented by end of 2012 1.6 Socio economic survey implemented by mid 2012 1.7 Fishing monitoring system implemented by mid 2012 1.8 Aim research and fish resource assessment completed by mid 2012 1.9 Fish sampling program implemented by end of PY 2 2.0 Form stakeholder forums and plan each demonstration area plan 2.1 Prepare and implement ICM assessments and planning process by 2012 2.2 Plan and implement EAFM design and assessment programs 2.3 Complete threat analysis and identify priorities for community development, ICM and Climate Change by beginning PY3 2.4 Pilot technology and threat management interventions implemented. 3.0 Quality and strategy team formed annual evaluations completed and integrated into future work plans. 3.1 Develop policies and national strategies by end of PY 4 3.2 Complete legal and regulatory reforms for EFAM and ICM by end of PY 4 3.3 Design and implement a community awareness and education program targeting fisheries law and regulations for coastal communities 3.4 National marine biodiversity conservation strategy and network plan by end of PY 4 3.5 Catchment nutrient and sedimentation study completed with proposed catchment management plans by end PY 4 3.6 Feasibility of sustainable financing reviewed and recommendations provided to the NCC CTI 4.0 Program Management office formed and equipped by month 3 PY 1 4.1 Equipment procurement completed, subcontracts awarded and reporting and financial accounting maintained and reported annually			Inputs ***Finance (USD)*** ADB 199,161 Government 406,208 GEF - Biodiversity 1,599,000 - Int Waters 579,328 - Clim Chge 364,202 Total 3.54 million ***Inputs (USD)*** Civil Works 240,000 P Materials Field ops 41,900 Ent Devel 294,000 Surveys 864,500 Planning 265,000 Cap Blding 100,000 Training 221000 Consultants 598,000 Program Mngte 262,500 Equipment 167,600 Transport 151,000 Total 3,205,500 Contingency 337,427 Total 3,542,927

APPENDIX B: SUSTAINABLE FINANCING

A. Overview

617. The Program design for Timor Leste includes two learning demonstration areas – Atauro Island and Batugade. The intent of these is to develop skills and experience in public agency staff and stakeholders (including local communities and NGOs) that will improve their management of marine and coastal resources. Besides learning, each demonstration area will allow progress to be made in addressing marine and coastal management issues associated with the demonstration area.

618. Funding from sources other than the Program or central government will allow the demonstration area to achieve longer-term goals beyond the life of this Program. Non-Program or government funding could also be used to start new demonstration areas.

619. In Timor Leste, this non-Program or sustainable financing could be trialed in the Atauro Island demonstration area. Funding streams in the first instance could come from the tourism, fishing, and aquaculture industries.

620. Successful implementation of sustainable financing depends on two key factors:

- The operating characteristics of the sustainable finance program. This includes identifying the type of activities - based on a particular use or benefit from one or more natural resources; the target segment of payers; the type of fee or levy to be charged; and the mechanism to collect the fee.
- Use of funds from the sustainable finance program. This includes the goals or purposes to which the collected funds are to be used; criteria to determine eligibility for who can apply to use the funds; review mechanisms to ensure the funds are actually used for the stated purpose; co-funding options; and requirements to repay all or part of the funds used.

B. Sustainable Financing Goals for Timor Leste

621. The Program will support the following goals or outputs on sustainable financing:

- Review of policy options for raising fees and revenues from natural resource users or beneficiaries for the financing of coastal management programs. This will include strengths, weaknesses, opportunities, and barriers to alternative approaches of raising fees and revenues.
    - Legislation will need to be reviewed as there is no specific authority that allows the levy of local fees.
- Completion of a design and feasibility analysis for the introduction of a fee/revenue program based on coastal resource use including
    - a marine biodiversity fee levied on the tourism sector through either a bed or arrival tax to be used for local coastal management program implementation.
    - a user fees for recreational fishing that takes place in Atauro Island inshore fisheries

1. Approach

622. **Review Policy Options**. In Program year two a short-term technical expert (1 person months), provided by the Program Management contractor, will review policy options. The expert will form an Atauro Island working group, who will review the work plan for the policy review, the design of the trials, and the piloting of the fee/revenue programs. The policy review will cover the raising of fees and revenues, options for fund ownership and management, and mechanisms for fund distribution.

623. Design and Feasibility Analysis of Fee/Revenue Programs. In year two of the Program, a detailed design and feasibility analyses of introducing user pay systems linked to coastal resources will be contracted to local technical and policy experts. This feasibility analysis will estimate potential user fees/charges, specify procedures for their introduction, identify how to establish a fund or funds

with the collected user fees, recommend rules for fund management, and define how the fund can be used to support coastal management. Contracts to the local policy experts will be awarded for a total of 2 person months of input.

624. For the tourism fee, the goal is to organize the fee such that the users or beneficiaries of the marine assets pay for the services provided by the marine assets. For example, all tourists who visit Atauro Island could pay a "use fee". Divers who visit a coral reef could pay an additional fee to use the reef assets. Fee rates could be different for international tourists who stay overnight on the island and domestic tourists who visit the island for a short period of time.

625. A key to gaining tourist acceptance of paying for the use of marine assets is to ensure that the fund established to hold the collected fees – such as a Trust Fund – is dedicated to the management and enhancement of the marine assets from which users pay their fees. An Atauro Island Trust Fund would be linked to the use of inshore marine assets and also include any land-based area that that has ecological threats which connect to the marine assets. For example, a camping ground or lodge for tourists that discharges sewage into the sea would be included in the fee collected by the Trust.

626. The governance of this Trust Fund needs to include representatives of all users or beneficiaries of the marine assets, including local communities, visitors to the assets, and businesses that use or rely on the assets. By including stakeholders as part of the governance of the Trust Funds, they can influence the amount of user fees and how the fees will be used to maintain, enhance, or rehabilitate marine assets.

627. In addition to user-pays, the Trust may also obtain funding from non-users who value the existence of the marine assets. Payments for existence value may come from foundations, other non-profit organizations, or individuals. In some cases, non-users may seek partial "ownership" of the assets they are funding, or involvement in the governance of the asset.

628. The Trust would be responsible for collecting the fees and putting these into some type of fund management. Periodically, the Trust would call for applications from interested parties for grants from the Trust. The Trust grants would support proposed activities that would enhance the marine assets for which the Trust collects the fees. Applications could come from groups based on Atauro Island or from elsewhere in Timor-Leste.

629. The Trust would define criteria for awarding grants. In addition to the major criteria that Trust grants must be used to enhance the Atauro Island marine assets and be compatible with the community and marine management plans that will be developed through the large CTI Program, other criteria might include a requirement for the applicant to provide matching funds or in-kind donations, such as labor; that the proposed activity contribute to the economic or social well-being of local communities; and that the applicant demonstrate that they have the support of affected community groups.

630. If 500 international visitors per year visit Atauro Island, and each visitor pays a fee of US$30, annual collections would total US$15,000. Fees from domestic visitors would be considerably smaller as would fees from recreational fishermen. For these small revenues the trust would have to operate largely with volunteers and probably should be linked to existing to NGO or community organizations.

C. Quality and Evaluation

631. The sustainable financing sub-component of the Program will be subject to review by the Quality and Strategy group established for the CTI Program. This group will review progress annually and provide input to each year's work plan.

632. In addition, the sustainable financing sub-component will be a part of the learning framework developed by the Roundtable for the five countries in the RETA. This will provide opportunities for Timor to learn how the other RETA countries have approached sustainable financing and also for Vanuatu to share its experience in sustainable financing with the other countries.

APPENDIX C: DETAILED COSTS BY FINANCIER

Table 16: Detailed Costs By Financier

	Base (USD)						Financing with Contingencies (USD)					
.	Year 1	Year 2	Year 3	Year 4	Total	Total USD w/ Contgies	IW	CC	BD	ADB	Govt	AIMS
Project management												
Project coordination - staff (1 Dir, 1 Fin, 1 Admin)	40,500	54,000	54,000	54,000	202,500	230,209	92,084	46,042	92,084	0	0	0
Project coordination - local transport	13,000	13,000	13,000	13,000	52,000	58,833	11,767	0	47,067	0	0	0
Project coordination - office equipment	15,000	6,000	6,000	6,000	33,000	36,604	0	0	0	36,604	0	0
Project coordination - meeting costs	5,500	5,500	5,500	5,500	22,000	24,891	12,445	0	12,445	0	0	0
Project coordination - accounting and overhead	8,000	10,000	10,000	10,000	38,000	43,156	25,894	0	17,263	0	0	0
Government in-kind contribution	0	0	0	0	0	0	0	0	0	0	0	0
												0
1.1 Institution Building												0
NDFA - corp services coordinator int'l TA	208,000	95,000	0	0	303,000	323,138	161,569	32,314	129,255	0	0	0
NDFA - change management coordinator - int'l TA	114,000	114,000	0	0	228,000	245,385	73,616	49,077	122,693	0	0	0
NDFA - IT development	40,000	3,600	3,600	3,600	50,800	54,512	0	0	0	54,512	0	0
NDFA - field kits and dive gear	24,800	0	0	0	24,800	26,040	0	0	0	0	26,040	0
NDFA training - English	9,000	5,000	0	0	14,000	14,963	0	0	0	0	14,963	0
NDFA training - swim,snorkel, dive	13,000	10,000	0	0	23,000	24,675	0	0	0	0	24,675	0
NDFA training - management and admin	22,000	22,000	0	0	66,000	70,455	0	0	0	0	70,455	0
												0
1.2 Info and Monitoring of Coastal Fisheries												0
Training for survey design and implementation - 70 people	22,000	0	0	0	22,000	23,100	0	0	0	0	23,100	0
Survey staff costs	30,000	30,000	0	0	60,000	64,575	0	12,915	51,660	0	0	0
Survey travel costs	50,000	49,000	0	0	99,000	106,523	0	21,305	85,218	0	0	0
Survey equipment	30,700	0	0	0	30,700	32,235	0	0	32,235	0	0	0
Survey data entry	29,000	25,000	0	0	54,000	58,013	0	0	0	0	58,013	0
Annual survey - training	0	8,000	0	0	8,000	8,820	0	0	8,820	0	0	0
Annual survey - meetings, reports	0	10,000	0	0	10,000	11,025	0	0	0	0	11,025	0
												0
1.3 Building Science Capacity												0
AIMS contract - marine sampling and training	52,000	275,000	17,000	24,000	368,000	406,639	0	0	406,639	0	0	0
AIMS in-kind contribution	27,000	301,000	13,500	15,000	356,500	394,063	0	0	0	0	0	394,063
												0

	Base (USD)						Financing with Contingencies (USD)					
.	Year 1	Year 2	Year 3	Year 4	Total	Total USD w/ Contgies	IW	CC	BD	ADB	Govt	AIMS
2.0 Demonstrations												0
Demonstration areas - stakeholder forums	9,000	0	0	0	9,000	9,450	7,088	0	2,363	0	0	0
Habitat mapping/transects	11,200	0	0	0	11,200	11,760	0	0	0	0	11,760	0
Boats for transects	24,000	0	0	0	24,000	25,200	0	0	0	25,200	0	0
Fuel for boat	0	10,000	10,000	10,000	30,000	34,756	0	0	0	34,756	0	0
Dive gear	0	15,000	0	0	15,000	16,538	0	0	0	16,538	0	0
Water quality assessments	0	10,000	0	0	10,000	11,025	0	0	11,025	0	0	0
AI pilot on sanitation	0	64,000	50,000	0	100,000	113,006	113,006	0	0	0	0	0
AI pilot on tourism livelihoods	0	40,800	40,800	0	81,600	92,213	0	0	92,213	0	0	0
AI pilot on alternate livelihoods	0	25,000	25,000	0	50,000	56,503	0	0	56,503	0	0	0
AI investment in seaweed production	0	20,000	20,000	0	40,000	45,203	0	0	45,203	0	0	0
AI investment in wastewater and permaculture	0	8,000	0	0	8,000	8,820	0	0	8,820	0	0	0
Batugade pilot on sanitation	0	25,000	25,000	0	50,000	56,503	56,503	0	0	0	0	0
Batugade pilot on tourism livelihoods	0	10,000	10,000	0	20,000	22,601	0	0	22,601	0	0	0
Batugade pilot on alternate livelihoods	0	25,000	25,000	0	50,000	56,503	0	0	56,503	0	0	0
Batugade investment in aquaculture	0	5,000	5,000	0	10,000	11,301	0	0	11,301	0	0	0
Batugade investment in wastewater and permaculutre	0	2,000	0	0	2,000	2,205	0	0	2,205	0	0	0
Community training on dive and reef check	0	20,000	20,000	0	40,000	45,203	0	0	0	0	45,203	0
Climate change - community planning	20,000	20,000	0	0	40,000	43,050	0	43,050	0	0	0	0
Climate change - vulnerability assessment	10,000	10,000	20,000	20,000	60,000	68,988	0	68,988	0	0	0	0
Climate change - adaptation pilot projects	20,000	20,000	20,000	20,000	80,000	90,513	0	90,513	0	0	0	0
												0
3.0 Enabling conditions												0
Quality and strategy review team	8,750	8,750	8,750	8,750	35,000	39,599	0	0	39,599	0	0	0
Regional Roundtable learning workshops	13,750	13,750	13,750	13,750	55,000	62,227	0	0	62,227	0	0	0
Travel for Officials to CTI meetings	10,600	10,600	10,600	10,600	42,400	47,972	0	0	47,972	0	0	0
Policy design workshops	0	8,000	8,000	8,000	24,000	27,805	0	0	0	0	27,805	0
National marine conservation strategy forums	0	9,000	9,000	9,000	27,000	31,281	0	0	6,256	25,025	0	0
Fisheries sector forums	4,000	4,000	4,000	4,000	16,000	18,103	0	0	0	18,103	0	0
Community education materials	12,000	12,000	12,000	12,000	48,000	54,308	0	0	0	0	54,308	0
Marine biodiversity planning - Marxan software	0	5,000	0	0	5,000	5,513	0	0	0	0	5,513	0
Marine biodiversity planning - international TA	0	22,000	0	0	22,000	24,255	0	0	24,255	0	0	0
Marine biodiversity planning - sessions at Atuoro, Batugade, Dili	0	0	30,000	0	30,000	34,729	0	0	0	0	34,729	0
Land-based threats - catchment assessments in Atuoro and Batuga	0	25,000	25,000	0	50,000	56,503	0	0	56,503	0	0	0
Legal and policy review - international TA	0	0	22,000	0	22,000	25,468	0	0	25,468	0	0	0
Legal and policy review - local lawyers	0	4,000	4,000	12,000	20,000	23,627	0	0	23,627	0	0	0
Sustainable Finance TA	0	23,000	0	0	23,000	25,358	25,358	0	0	0	0	0
	896,800	**1,511,000**	**540,500**	**259,200**	**3,215,500**	**3,555,938**	**579,328**	**364,202**	**1,600,021**	**210,737**	**407,586**	**394,063**

APPENDIX E: DRAFT TERMS OF REFERENCE # 1

A. Program Management Contractor

1. Background

633. The ADB will contract a Program Management Contractor (PMC) to implement the ADB and Government of Timor Leste (GoTL) components of the Project. The PMC will be based in the NDFA and will comprise three national full time staff , who will be responsible for supporting the Program implementation while reporting to the executing agency (EA) which will be the Ministry of Agriculture and Fisheries (MAF). The ADB and GEF funding for the Program will be disbursed via the PMC to the respective implementing agencies (IA) and sub-contractors.

634. The duration of the contract will be up to four years depending on the elapsed time for contracting.

2. Key Obligations of this Contract

635. The PMC will organize and complete the following activities and outputs:

(i) Establish a Program Management Office (PMO) in the NDFA

(ii) Develop work plans for full time staff and technical experts

(iii) Recruit and manage the following full time national positions to work within the PMO:

(a) Program Director
(b) Financial Accountant
(c) Procurement and Contract Administrator

(iv) Recruit and mobilize the following technical experts:
(a) Change Management Expert (12 person months)
(b) Organizational Expert (18 person months)
(c) Legal experts – International 2 person months and National 6person months)
(d) Sustainable Financing Expert (2 person months)
(e) Marxan expert (1 person month)

16. Assist NDFA to develop work plans,
17. Develop terms of reference and sub-contracting agreements with the identified implementing agencies for the various Program sub-components, particularly in the areas of:
    viii. Dive and water safety skill training
    ix. Catchment study
    x. AIMS contract
    xi. Water quality testing,
    xii. Reef check training
    xiii. Socioeconomic survey teams and training by National Bureau Statistics
18. Support both the NDFA and NDES to:
    v. Develop annual work plans,
    vi. Coordinate contractors
    vii. Coordinate a learning program for demonstration areas
19. Support NDFA, NDES to manage demonstration sites.
20. Provide ongoing mentoring and professional development to NDFA staff
21. Undertake Program monitoring and evaluation on a quarterly and annual basis.

22. Assist in the development of relationship building and information and resource sharing among GoV Ministries and departments.
23. Provide the Monthly, Quarterly and Annual reports to the MAF, NCC-CTI and ADB
24. Provide administrative support for reporting to the MAF on a monthly basis and to wider Program stakeholders on a quarterly basis.

3. Coordination with other ADB Contractors on the Project

636. Coordinate regionally contracted services in the RETA including the regional learning program, the climate change adaptation program

B. Program Management Contractor Staff Job Descriptions

1. Program Director

637. The Program Director will have a masters in a natural resource subject, shall have worked in multiple sectors within Timor Leste, must have close knowledge of both the Fisheries sector, and the environment sector and strong networking skills. The candidate must be acceptable to the National Director NDFA and the Director General Ministry of Agriculture and Fisheries. They will be responsible for the overall management of the PMO activities and staff. This will involve:

- Develop annual work plans for PMO staff
- Supervise PMO staff
- Assisting in the development of relationship building and information and resource sharing among GoTL Ministries and departments.
- Providing Program implementing agencies advice and support in subcontract work planning
- Supporting the Implementing Agencies to coordinate ICM demonstration site activities
- Undertake quarterly Program monitoring and evaluation
- Providing the Monthly, Quarterly and Annual reports to the MAF (EA)
- Managing technical expert inputs and work plans
- Ongoing mentoring and professional development to NDFA staff

2. Financial Accountant.

638. The Financial Accountant will have knowledge of donor programs and procedures including ADB and GEF financial management standards, reimbursement and disbursement procedures. They will report to the Program Director, and be responsible for tracking and forecasting Program expenditure. This will involve:

- Developing budgets and cost breakdowns for Program subcontracts.
- Liaising with the Program implementing agencies on the tracking and forecasting of sub-contract expenditure.
- Disbursement of funds to contractors and implementing agencies and maintaining a set of consolidated Program accounts
- Tracking, forecasting and reporting Program expenditure .
- Preparing quarterly financial reports for the MAF (EA) and ADB.

3. Procurement and Contract Administrator

639. The Procurement and Contract Administrator will have knowledge of both donor and government procurement systems, experience in Program Administration. The candidate will report to the Program Director, and be responsible for Program activities relating to subcontracts and procurement. This will involve:

- Preparing RFP's for subcontractors
- Drafting subcontract agreements for the procurement of Program implementing agency services
- Drafting terms of reference for Program subcontracts
- Liaising with Program implementing agencies on subcontract progress
- Raising invoices to the ADB for Program milestones and agreed upon out of pocket expenses
- Paying implementing agencies based on subcontract milestones
- Providing the Program Financial Accountant with PMO cost and billing records
- Other tasks as required by the Program Director

TERMS OF REFERENCE #2: AUSTRALIAN INSTITUTE MARINE SCIENCE

A. Background

640. The ADB will contract the Australian Institute of Marine Science to assist with building a science capacity in Timor Leste in an ecosystems-based approach supporting fish production.

641. The duration of the contract is for four years

B. Key Obligations of this Contract

642. The Australian Institute of Marine Science (AIMS) will organize and complete the following activities and outputs:

1. Year 1

- Conduct a planning meeting with the National Fisheries and Aquaculture Directorate (NFAD) on the scope of the project, goals, expected outcomes, what's expected of AIMS and NFAD staff and an agree on the course of work for the project.
- Deliver a short course in "Tropical Coastal Ecology" for NFAD staff
- Deliver a short course on "Trophic Ecology and Elementary Statistics" followed by practical exercises.

2. Year 2

- Deliver local training on net sampling monitoring and gut analysis
- Carry out a one month research cruise, using AIMS research vessel the "R/V Solander", to conduct targeted ecosystem process-oriented research and monitoring while training up to 5 MAFF.

643. In particular the cruise will

- undertake a series of inshore-offshore transects proximal and distal to the major rivers and river plumes and sample pelagic and benthic processes
- Sample demersal epifauna (including fish) and pelagic fish species for gut contents and flesh samples for stable isotopes to identify fish and key invertebrate diets and the extent of a riverine signal relative to marine source for their nutrition
- Use hydrolabs, salinometers, etc to measure salinity, oxygen levels, temperature, chlorophyll a, turbidity, particulate and dissolve nutrients in the water-column.
- Measure pelagic and benthic primary production and respiration using micro-Winkler techniques. Net ecosystem production will be estimated from these measurements to assess the upper limit of fisheries production.
- Measure pelagic and benthic nutrient recycling using ^{15}N tracers to determine how much organic matter produced by primary producers is lost to microbial consumption; what's shunted to microbial food chains is essentially lost for sustaining fish production.
- Measure radiochemical markers to measure rates of sedimentation and changes in rates of sedimentation via erosion/runoff
- Measure zooplankton abundance and egg production using methods as outlined in recent AIMS publications (Journal of Plankton Research).
- Establish a database for collation and storage of all data. Transfer the cruise results and the science implications for habitat status and management to NFAD, including recommendations for management and further work for monitoring key areas.

3. Year 3

- Fish sampling mentoring - annual data analysis and discussion and report writing

4. Year 4

- Fish sampling mentoring - final data analysis and discussion and report writing
- Complete draft report and present to stakeholders

C. Contract Deliverables

- Produce a post cruise report
- Hold a post cruise Program meeting to check progress of fish sample processing by NDFA trainees including analysis, data collection and storage
- 3-5 NFAD staff trained to a level that enables a critical mass of people to measure physicochemical parameters and some key ecosystem processes that underpin coastal fisheries.
- A series of pre- and post cruise short courses and exercises to build capacity of key NFAD staff to learn to conduct a proper science Program from beginning to end. The trainees will be able to initiate sampling programs of key ecosystems processes, analyze samples and data including essential statistics, to write reports to an acceptable level, and to learn how the data collected can be interpreted and potentially used by NFAD in the management of these coastal habitats
- To have identified whether or not current levels of land and coastal use are negatively affecting the key coastal habitats.

D. Contract Inputs

1. AIMS

- Research vessel R/V Solander
- AIMS scientific and research staff

2. GOTL

- Facilitate boat entry and exempt any charges
- Financial Remuneration as agreed

E. Milestones

Year 1.

- Two short courses delivered
- Progress report on work program

Year 2

- Research cruise completed

- Cruise report delivered to NFAD
- Progress report on training and mentoring NFAD staff

Year 3

- Progress report -data analysis and write up, training and mentoring NFAD staff

Year 4

- Final Report

TERMS OF REFERENCE # 3: CATCHMENT STUDY

A. Overview

644. The contractor will have experience in field level catchment studies including assessments of nutrient and sediment delivery from subcatchments into river systems and to the coastal environment. The contractor will have proven ability in dry monsoonal hill country and have demonstrated experience in working in land use systems linked to household gardens, tree crops and food crops.

645. The contractor shall produce a review of two catchments – one in Atauro Island and Batugade that have direct linkages to river systems or the movement of sediments to the coastal environment. The contractor shall:

- Map current catchment soils, rainfall, land use and vegetative cover using imagery or aerial photography
- Develop case studies of representative land uses in terms of annual cropping patterns and land uses
- Develop nutrient balance models for representative land uses
- Coordinate with water quality testing contractor to validate nutrient balance estimates
- Develop estimates of soil loss using predictive universal soil loss equations
- Work with local agencies to establish a sediment monitoring program that targets suspected sources of sediment
- Design a catchment management plan for sediment reduction based on a ten year investment program

TERMS OF REFERENCE # 4: TECHNICAL ASSISTANTS

A. Organizational Systems Expert (16 months)

1. Experience

646. The candidate shall have a minimum of 10 years of international experience in the development, implementation and support of organizational procedures and systems as part of institutional strengthening programs.

2. Outputs

647. The candidate shall work closely with the Director of NDFA and the Corporate services team in MAF be responsible for:

- Developing a plan of organizational strengthening based on MAF corporate service plan and its implementation and on the needs identified for NDFA
- Review current systems and identify areas for strengthening
- Work with managers of NDFA to identify needs and approaches
- Develop modules for organizational procedures relating to:
  - Corporate strategic planning
  - NDFA work planning and budgeting
  - Human resource development policy
  - IT policy
  - Financial Management and reporting
  - Management information systems
  - Reporting systems
  - Performance assessment
- For each module prepare an implementation program and mentoring senior staff in the introduction of organizational systems
- Prepare a Corporate Services Manual for NDFA

B. Change Management Specialist

1. Experience

648. The candidate shall have a minimum of 10 years of international experience in the development, implementation and support of change management programs for institutional restructuring. The candidate shall have proven experience at successful development of strategic planning and structural reforms and the application of key performance indicators to institutional reform programs.

2. Outputs

649. The candidate shall be responsible for the following:

- Developing a NDFA strategic planning work plan with the Director NDFA and the Corporate Services group of MAF
- Facilitating the implementation of the Strategic Planning Process including a sector wide SWOT analysis and an internal process of developing a vision for the future of NDFA that is linked to mandates and management needs
- Developing an internal communication program to ensure NDFA staff are fully informed of the institutional strengthening program and ensure that all staff have opportunity to participate
- Establish a senior staff working group to:
  - identify strategies
  - define a revised strategy that aligns with the strategy
  - allocates staff to the new structure
  - prepares job descriptions for all staff
  - within each division prepares a medium term work plan including key performance indicator
  - train staff in work planning and budgeting
  - negotiate with MAF to link budgeting and work planning to the Government annual planning system and assist the Director NDFA develop budget lines that are aligned to the NDFA strategy and work plans.
  - Implement management information system and how to use it in an operational context for managing resources and reporting
  - Prepare NDFA work plans for implementation of CTI-Pacific field activities including setting performance indicators and budgets for submission to the Director NDFA and PMC
- Work with the Program Management Contractor and the Director NDFA to specify training needs and training provision to the NDFA
- Contribute to the completion of the Corporate Services Manual

C. Sustainable Finance Expert (2 months)

1. Candidate

650. The candidate shall have regional and international experience in revenue capture and generation programs linked to natural resources and especially marine resource conservation and management. There shall be demonstrated success at (i) defining payment and financing systems at both a national and site level, (ii) establishing sustainable financing mechanism in a policy and operational sense, (iii) work on fund management and disbursement mechanisms.

2. Tasks

651. The candidate shall report to the Director General (Fisheries) the Program Director PMC and shall be responsible for:

- A review of policy options for raising fees and revenues from natural resource users or beneficiaries for the financing of coastal management programs.
- Identification of strengths, weaknesses, opportunities, and barriers to alternative approaches of raising fees and revenues.
- A review of legislation to ascertain existing or required authority for levying of local fees.
- Complete a design and feasibility analysis for the introduction of a fee/revenue program based on coastal resource use at Atauro Island or Nino Konis Santana National Park including:
    - a marine biodiversity fee levied on the tourism sector through either a bed or arrival tax to be used for local coastal management program implementation.
    - a user fees for recreational fishing that takes place inshore fisheries
- Prepare a policy report and recommendations to the D_G MAF

TERMS OF REFERENCE #5: WATER SKILLS PROGRAM

A. Background

652. The Program Manager Coordinator will contract a PADI Dive Master to train government and community people to be competent swimmers, snorkellers and SCUBA divers

B. Experience

653. A Professional Association of Diving Instructor (PADI) who holds a PADI Dive Master Certificate

C. Outputs

(i) Thirty Timor Leste government staff and 50 community people trained to be able to swim at least 200m and float and tread water for 10 minutes
(ii) Thirty Timor Leste government staff and 50 community people trained to be confident snorkel divers
(iii) Up to 10 Timor Leste NDFA staff and 20 community staff trained and qualified in basic Scuba holding a PADI Open Water SCUBA certificate with capacity

D. Tasks

1. Swimming and Snorkelling

654. Run a series of classes for government (30) and community (50) to train participants in

- Basic water confidence
- Water safety skills
- Floating and treading water
- Swimming at least 200m
- Learning how to use basic snorkelling equipment, mask snorkel and fins
- Basic information on dive science and the environment

2. SCUBA

655. Run a series of theoretical and practical classes for government (16) and community (20) to train them in SCUBA diving and ensure participants achieve the level of competence so that participants:

- Qualify as a PADI Open Water Diver
- Know how to plan dives
- Understand and practice safe diving procedures including coping with emergencies
- Understand all the basic principles of SCUBA diving
- Gear maintenance

TERMS OF REFERENCE # 6: MARXAN TRAINING EXPERT (1 MONTH)

A. Candidate

656. The candidate shall have direct experience in the application of MARXAN software to Marine Protected Area Network Design including the training of counterpart staff in the application of

MARXAN to assess options, trade-offs and build resilience, connectivity and representation into MPA network planning. The candidate should have experience in the Western Pacific, South-east Asia and the Indian Ocean will close knowledge of data sets, biodiversity programs and neighboring country networks.

B. Tasks

657. The candidate shall work with and report to the NDES and NDFA. The candidate will be responsible for the following tasks:

- Working with a national task force for the design of Marine Protected Area Network
- Provide training in the operation of MARXAN software using an existing case study
- Provide training in the application of MARXAN to Timor – Leste data sets
- Provide support for the initial formation of the Timor Leste models
- Advise the national task force on the range of “scenarios” that could be included and how these can be sequenced
- Train the taskforce members on reporting from MARXAN.

Supplementary Appendix D
PNG Detailed Project Design
Country Program

Draft Final Technical Assistance Report

for

RETA 6741 Strengthening Coastal and Marine Resources in the Coral Triangle of the Pacific

ADB, GEF and AIMS Financed

No Official Comments have been received on this document. Once received they will be incorporated into the final document

Figure 7: Demonstration Program Areas of Work

X. INTRODUCTION

658. The following Appendix presents the country level program for Papua New Guinea (PNG) within the Regional Technical Assistance (RETA) program for the Coral Triangle Initiative – Pacific program. The RETA is operating within five countries including Timor Leste, Solomon Islands, Papua New Guinea, Fiji, and Vanuatu. The overall Program documentation will comprise a consolidated RETA technical assistance document and a GEF CEO endorsement template. These documents will, due to page limits, be highly aggregated data and descriptions that will not define detailed country level programs.

659. The RETA has decided to prepare individual country reports to present detailed country level programs to support review, ratification and most importantly implementation of the program. The following is the detailed design document for Papua New Guinea.

XI. ISSUES

A. Background

660. The PNG economy is currently experiencing a period of prolonged growth largely driven by more stable macro-economic policy and the global commodity price boom. Growth will accelerate in the short to medium term as large extractive resource utilization projects move into the construction phase and on into the production or operational phase. The economy will increasingly be driven by the four to five large projects currently in planning and development. The largest of these being the LNG gasfield development with Exxon-Mobil and other investments will provide the PNG Government annual revenue streams in excess of USD 1 billion.

661. The economic windfall of these projects creates two significant challenges for the economy. First how to use the windfall in manner that will support PNGs economy past the current 30 year window when non-renewable resource production is expected to decline. The second challenge is how to distribute benefits in a manner that addresses society as a whole.

662. The GoPNG seeks to use the current window to ensure that economic growth diversification is achieved in the renewable resource sectors in a manner that will support the economic needs of PNG beyond the commodity cycle. The move towards sustainable development policy dialogue has started to deepen and the environment sector seeking to operate within a ecologically sustainable economic growth paradigm as opposed to conservation and environmental protection per se.

663. As such the long term impact of the CTI Program is expected to contribute to increasing the adoption of sustainable economic development based upon ecologically sustainable economic growth in the management of coastal and marine resources where economic opportunities are linked to the conservation of ecological services and functions. Through these new development pathways the demand for coastal resources will more closely aligned to sustainable utilization and the role of coastal resources in food security maintained and enhanced.

664. Within the wider government there continues to be little support for sustainable development and the current oil and gas sector and mining sector projects provide strong incentives to accelerate economic development even at the cost of ecological integrity. PNG is faced with a 30 to 40 year windfall in terms of public sector revenues from massive non-renewable projects based on the oil and gas sector and mining sector.

665. The Government will be strong fiscally however the use of increased revenues to secure local development benefits has a poor level of achievement in recent PNG history. During the life of the CTI-Pacific phase two program the Government while faced with increasing revenues will not experience the major benefits of the large non-renewable energy projects currently under development which will flow from the operational phase.

666. The current priorities for generating improved and far broader economic growth is to reduce the costs of doing business, increase competition, and generate livelihoods based on renewable resources to ensure the post oil and gas period can support the expected population. The nature of support needs to ensure that donors, NGO's and Government do not crowd out private sector investment that will lead to increased employment and access to essential services.

667. Currently there is no governance framework for integrated marine and coastal management that can in any way be strengthened in a manner that will provide outcomes. The pursuit of national sector goals such as conservation and biodiversity has been acknowledged by the Secretary DEC as failing on delivery, however the lessons learned from these failures urgently need to be applied.. There are common lessons from these failures.

668. Local marine management areas (effectively community based resource rights) have struggled to manage across larger scales and also to address threats from outside their immediate jurisdictions. LMMA is acknowledged as a contributing form of management but it is also considered to be a weak form of governance for coastal and marine resources at an ecosystem level. Further there is evidence that LMMA programs struggle to address the pressures from the incentives for excessive use as the cash economy or the demand for cash increases.

669. At a community level, objectives are not defined only in terms of fish or marine resources. Villages are, at any one time, fishers, laborers, business men, home gardeners, agriculturalists. To achieve success, programs over time need to adopt a multi-sector household livelihood approach simply to be relevant.

670. Terrestrial conservation has mostly failed due to the inability to address economic pressures. Conservation increasingly became integrated conservation and development by trying to pull economic development under the conservation umbrella. This has failed internationally.

671. More recent approaches have sought to mainstream conservation into sector planning. While this may eventually impact we see a low probability as Government is no longer the major economic driver – the commercial private sector is and will therefore be creating most demands and as such will provide the greatest opportunity to address these demands. Management models that engage the private sector at differing levels are essential if effective coastal and marine management is to be established.

672. The PNG government objective views coastal marine resource management as being achieved within the wider economic development of resources. The organizing principle "that management of marine resources must be for creation of jobs, economic growth" leading to the provision of poverty reduction and food security outcomes is critical for Government support and community relevance.

673. The CTI program will focus on the lack of a governance and management framework through a multi-stakeholder economic development framework. Under the proposed approach the economic actors and drivers associated with coastal and marine resources and the links to land based resources will be used to define opportunities for employment, economic growth and social wellbeing in a wider region of interest. The approach will need to include land and water based interests from the public sector, private sector, and the community.

674. Social diversity and strong social organizations including community based ownership of resources suggest that the management of PNG natural resources should ideally, be devolved to communities. Coastal and marine resources play widely different roles in differing communities even those within close proximity of each other. The main differentiation on the use of resources is strongly linked to accessibility of a community to local markets and services. The more accessible communities tend to have far less coastal resource use with an increased reliance on terrestrial based livelihoods mostly linked to commercial crops such as cocoa, coffee and oil palm.

675. Communities that are less accessible tend to have far greater reliance on coastal resources both for subsistence and for deriving cash from which services – health and education and transport are accessed. The rapid growth in cash economies throughout local communities has continued to

erode the underlying community management and provision models that traditional communities developed. As such there is increasing levels of social hardship and increasingly poverty.

676. Therefore, CTI Pacific programs will need to ensure that these basic needs are considered as an integral part of the program with livelihoods and economically driven sustainable growth underpins all programs. Without an economic program focus CTI will struggle to generate improved management outcomes through the community and decentralized management regimes that are envisaged.

677. Reliance upon community based management is increasingly seen as a risk as communities are faced with rapidly growing populations, significant in-migration, and increasing access to commercial benefits through market linkages. All community based natural resource management regimes struggle to address such challenges and success will require well defined support roles for Province and local government that are implemented through building decentralized capability in coastal and natural resource management.

678. The social structure and organization and the structure of local livelihoods involves the active diversification of incomes and livelihoods through linking land, marine and employment opportunities for each household. As such CTI – pacific will need to ensure that integrated land, water and community perspectives of local livelihoods are adopted to ensure relevance and that any subsequent intervention does not adopt a simplistic conservation, or narrow coastal resource management worldview. Land and water (fresh and marine) need to be viewed and managed in an integrated manner even if management responsibility falls on differing social or economic groupings.

679. In combination, negative demographic indicators such as rapid population growth, low levels of education, significant child mortality, low access to safe drinking water and significant internal migration and urban drift are likely to reduce the importance of sustainable environmental management to affected communities. Political and policy priority will reflect the needs of a community that already suffers food insecurity and significant economic hardship. It may be more appropriate for the CTI Pacific project to provide support for programs that build capacity to deliver programs with a greater emphasis on wider scale management influence on coastal management.

B. Coastal Environments

680. Sustainable management of the environment requires knowledge of the baseline receiving environment; being able to forecast impacts as a result of certain actions; and the implementation of mitigation measures to reduce both site and accumulated impacts. This will require an increased capacity within Government sectors e.g., environment, fisheries and tourism to develop and assess impacts and to have the resources to monitor the receiving environments. Without sufficient capacity to manage human impacts there will be a decline in ecosystems and the services they deliver.

681. With the lack of baseline information, many Government officers who are tasked to make decisions lack the skills to operate in ‘data-poor’ environments and thus do not take actions to benefit the environment.

682. As populations increase there will be more pressure to extend the use of renewable resources such as marine species. The limits to which these resources can be exploited have not been established for Timor-Leste. In order to manage these resources there needs to be in place a good monitoring and reporting system and the capacity to use these systems in an adaptive management cycle.

683. Sustainable management of the country’s marine resources will require the establishment of marine managed areas that are based on traditional ownership of the resources but supported by effective and enforced regulations and articulated through precise policy supported by well-resourced strategies. These marine managed areas need to be established in a systematic way that are comprehensive, adequate and representative of the major marine habitats and important species.

C. Institutional Capacity

1. Department of Environment and Conservation

684. The Department of Environment and Conservation (DEC) mandate is to develop and implement policies and strategies which sustain PNG's environmental quality, human well being and support improved standards of living. DEC is currently in the process of reform, with a relatively new structure being formed in 2008 with a Regulatory wing, Environmental Programs wing and a Policy Coordination team. While a structure has been put in place the allocation of staff to positions is ongoing and the organizational systems and processes that combine with staff resources to define the operational culture are still largely missing. Capacity is weak at most levels and motivation remains a significant constraint.

685. Under the DEC structure as approved by the Department of Personal, 148 positions have been created with an annual budget of 4.5 Million Kina. Of the 148 positions, 62 officers are appointed, 50 positions are vacant and the rest on acting appointments and /or probation. The Environment Protection Wing is tasked with the responsibility for implementing Corporate Objective 4, which aims to improve the regulation and management of major development projects to reduce the risk of environmental damage. The Sustainable Environment Wing area is responsible for implementing Corporate Objective 5 and demonstrating how government policies to deliver environmentally sustainable development can be achieved on the ground working in partnership with key stakeholders.

686. Planning, monitoring and reporting takes place at various levels in the Department both as statutory requirements and within corporate planning processes. A corporate plan is prepared every three years, it includes the mission, the way DEC approach work and the main objectives of the Departments activities. It outlines responsibilities and significant activities for each division and branch to ensure commitments made through the Annual Plan are implemented and monitored.

687. DEC's approach and role in PNG's natural resource management is evolving with a new strategy being implemented based on the principles of ecologically sustainable economic growth (ESEG) where natural resource management is based on the notion of resources and the environment as an asset that is best managed in a sustainable economic development model that provides sufficient incentives and controls to ensure the assets are sustained in the long run. The movement away from a prescriptive management philosophy to a market and development philosophy has significant relevance to PNG and the current set of large scale economic opportunities that are being assessed. The major constraint being the lack of appropriate skills and experience in DEC to implement such a program. The above situation is made worse due to the ongoing political mileage in promoting the essentiality of resource use to address poverty and hardship in rural communities.

688. PNG is currently moving toward the establishment of an Environmental Protection Authority. While still in its infancy the move signals the DEC will become a policy and reporting unit that will rely upon policy instruments and regulations to define appropriate behaviors of those that use resources. Again current staff resources lack the skills necessary for an effective policy framework to emerge and the wider legal framework remains under- defined which limits its effectiveness as a safeguard measure.

689. To highlight the current capacity constraints the Sustainable Marine Program has only three staff, only one of which has strong education and experience in coastal and marine resource management policy development, implementation and regulation. A further two recent graduates are assigned to the unit.

2. National Fisheries Authority

690. The National Fisheries Authority (NFA) is a non-commercial statutory authority owned by the government, and is self-funding through generation of its own revenue from access agreements (primarily Tuna). As a statutory authority NFA is required to implement government policy for managing and developing fisheries as a national asset. Under the Fisheries Management Act 1998, NFA's main responsibilities include administering fishing licenses, promoting marketing of

commercially viable fisheries, regulating the fishery supply chain standards, and undertaking fishery sector research to inform policy direction.

691. Since its restructure in 2000, the NFA has continued to grow as an organization to achieve success in consolidating a leadership role in national, regional and international matters in relation to management of fisheries, in particular tuna.

692. There are a number of sections within the NFA including:

- The Fisheries Management Group are primarily concerned with ensuring that fisheries of national significance are managed to obtain maximum benefit on a sustainable basis. This must take into account balanced views of fisheries science, environmental impact, social factors and economic development.
- The Provincial and Industry Liaison Group is responsible for developing and facilitating strong links and regular consultation between NFA and both the commercial fishing industry and provincial and community fishery stakeholders. In particular the group has primary responsibility for promoting and facilitating the development of commercial and community fisheries by providing information, contacts and advice in areas such as business management, markets and fisheries resources, and access to donor or other development funding. It leads access negotiations with foreign deepwater fishing nations and coordinates participation and policy issues for bilateral and multilateral fisheries arrangements. The group undertakes public relations and information dissemination activities that ensure effective communication between NFA and its stakeholders and promotion of NFA activities.
- The Licensing and Information Group is responsible for processing license applications and renewals, receiving and entering catch and export data into relevant databases, providing information to stakeholders and regional organizations and maintaining the NFA central filing system and the library.

693. There are a total of 92 positions under the NFA structure under the Corporate Plan 2008-2012. Most of these positions have been filled. Those that have not been filled will be advertised soon for possible candidates to fill.

694. While the NFA continues to strive for sustainable fisheries, it does not have experience in establishing or managing a resource sustainable supply chain for a fishery under high international demand such as Beche-de-mer. As demand for some fisheries increases (as is the case with beche-de-mer), NFA will need increased capacity and experience in sustainable development of fisheries that include far more than fisheries expertise including expertise in value chain analysis, economic analysis, market structure etc.

695. The NFA has representation in the Provinces that work alongside Provincial Governments. NFA involvement in community level or near shore fisheries has been a recent development since the ADB financed community fisheries project. While only partially successful the Project has stimulated increased focus on near-shore fisheries and their movement into a managed fishery the responsibility for which can then be increasingly handed over to communities. Working from the Beche de mer resource closure the NFA will support the development of community based fisheries during the CTI program with USAID funding.

3. National Office of Climate Change Services

696. The GoPNG recently formed a National office of Climate Change services (NOCCS). The NOCCS is responsible for establishing PNG's national priorities for climate change adaptation, climate change mitigation, and for building a platform on which emissions can be managed and the carbon value of PNG forest resources can be captured on the emerging REDD++ initiatives.

697. The adaptation branch is currently developing a vulnerability assessment framework that is being implemented at the Provincial level within a sector defined prioritization process. NOCCS priority sectors for climate change assessments are agriculture, forestry, fisheries, ecosystems, human health and water resources.

698. The main constraint facing the NOCCS is the ongoing financial review and budget shortfalls. Further institutional constraints include the lack of policy development, inadequate organizational resources such as information management systems and research databases as well as inexperienced staff. As a new entity NOCCS lacks sufficient links to the private sector and other public institutions, and has still to develop inter-agency data and resource sharing protocols.

699. The future status of NOCCS remains uncertain. Currently it reports to the Prime Ministers Office however given the financial difficulties experienced recently the option of the NOCCS moving within the DEC management structure is being assessed.

D. Threats

73. Papua New Guinea is surrounded by three major water masses - the Bismarck Sea the Solomon Sea and the Coral Sea. The total sea area is 1.7 million km^2 with over 5,000km of coastline. The principal environments include coral reefs, mangroves, seagrass beds, sandy beaches, river deltas, rocky shorelines inter tidal flats with gradual mud or sand accumulation, estuaries, lagoons' and reef walls that drop off the continental slope. The marine environments of PNG are still relatively close to pristine but are poorly studied and there is a general lack of information on the resources This makes it increasingly difficult to determine the rate of exploitation and may lead to resources being degraded to dangerously low levels before their loss is realized.

74. There are no specific environmental indicators in use in PNG. The current state of the monitoring regime in PNG does not allow even island wide indications of the state of the environment.

75. The literature indicates the key impacts to the marine environment are a result of pollution from of mining operations, loss of habitat due to urbanization and over exploitation of resources such as mangroves, over fishing and exploitation due to commercial fishing operations including destructive fishing and climate change.

1. Rural Land Use

76. Pollution from nutrients from the application of fertilizers is not wide spread in PNG as most of the agricultural practices are community based and do not require additional nutrients to prompt crop growth. The largest user of fertilizer is commercial crops and especially Oil Palm.

77. There is potential for soil erosion in localised parts of the country with as a result significant impacts on biodiversity, soil retention techniques and planting of mixed crops in traditional gardens limits the impacts of surface runoff and soil erosion.

78. Intensive agricultural practices such as plantation crops including oil palm production are increasing the level of nutrients entering the marine environment. Extensive clearing of land for cash-crop agriculture results in excessive erosion of top-soils that can enter river systems and eventually enter the coastal waters.

79. Much of the richest and most accessible tropical forest areas have already been harvested and the plantation established remains small in size (currently 60,000 hectares). The logging operations have increased sediments into rives and streams in some areas. There is agreement that the most significant threat posed to PNG biodiversity values stems from the degradation of terrestrial habitats by the total or partial removal of natural forest cover.

2. Pollution

80. Chemical accumulation through the food chain or polluted sediments affects all functional parts of the marine ecosystem but many of the impacts of chemical pollution on the marine ecosystem and humans are unknown.

81. Solid waste problems in PNG have escalated over the past decades as a result of population growth, the growing consumption of purchased and packaged goods, and rural populations shifting to urban centres seeking improved lifestyle. The type and volume of wastes generated in the country is increasingly more complex as demand for imported canned, plastic wrapped or bottled goods has increased.

82. The dumping of wastes from mining activities into the rivers and the ocean has also increased substantially. There is an increasing trend to use mangrove and ocean-rivers and beaches as landfills by default. The extent of habitat destruction directly attributed to pollution is not accurately known as no monitoring process is in place for the country.

83. There is a lack of sufficient available data to assess typical characteristics of wastewater produced in the country.

84. Major industries in the country include edible oils, oil export and production, oil palm production, agriculture and livestock processing, sugar refining, fish canning and beer brewing. Most industrial provide for some form of treatment and disposal systems. Hence there is a need for government to exercise control of discharges to minimise adverse effects to the environment.

85. Oil spills and antifouling chemical have been identified as a moderate impact in Melanesia. There is a risk that these impacts will increase as shipping traffic is set to increase as a result of gas export set to expand.

3. Habitat Destruction

86. Elevated sedimentation combined with nutrient inputs have long been thought to be the major water quality that can inhibit growth of shallow seagrass bed and inshore reefs in deposition areas and increase eutrophication. Deforestation has promoted heavy sediment runoff during major rain events, which in turn increase turbidity of the coastal waters.

87. Destructive fishing through dynamiting and poisons can lead to habitat loss in localised areas.

4. Over fishing

88. Severe over fishing can cause ecological shifts, reduce fish stocks and to these islands that depend on marine resources for food and livelihood, endangering the islands human existence.

89. In general fisheries in PNG are unexploited in comparison to similar countries in Asia and Pacific although localised species depletions have been recorded. In particular sea cucumber is being depleted to the extent that a three year ban is being proposed for island and mainland communities in the north eastern part of the country.

90. Fisheries catches from coral reefs are rarely recorded in official statistics so catch estimates with limited hard dates requires assumptions and results in some uncertainties for PNG.

91. In areas of PNG such as Lihir, deepwater fish stock over fishing occurs at relatively moderate levels of fishing pressures so accurate long-term monitoring of catches should be undertaken if stocks are to be commercially exploited.

5. Climate Change

92. A large proportion of PNG's shoreline is protected by both barrier and fringing coral reefs. Coral reefs are known to be sensitive to increases in sea temperature resulting in die back and bleaching. Bleaching is a result of the loss of zooxanthellae (the algae that sustains them). Bleaching events have been observed in PNG in the past.

93. Bleaching combined with sedimentation and increased turbidity from shore from shoreline erosion could contribute to reef decline in some areas. This would lead to a loss of natural sea wall barriers

700. As shoreline salinity level alter due to sea level rises and inundation so will the status of mangroves, The loss of mangroves will in impacts villages as they act as a storm buffer but also provide welfare for the villages.

E. Underlying Causes

701. The key impacts to the marine environment are a result of pollution from mining, climate change, loss of habitats due to urbanization, agriculture and the overexploitation of resources such as mangroves, overfishing and destructive fishing.

702. Many of the rural communities rely on natural resources for subsistence, trade and in some cases, direct income generation to meet individual and community financial commitments. Although there are strong traditional management regimes associated with the use of natural resources these traditional systems are sometimes unable to manage for events such as the overexploitation of some species.

703. Over-fishing can be a result of an increase in demand as a consequence of increasing human populations along the coast. Over-fishing is often not detectable until the fishery collapses, however, increased monitoring and early intervention can in some cases prevent this from occurring. In some cases, the socioeconomic situations of many families means that extreme measures for fisheries management such as the designation of no-take areas are difficult to establish or enforce without long term awareness programs and strategies. The NGOs that are active in PNG have commenced awareness programs and these can be used to the benefit of Government.

704. With large industrial operations such as mining, oil and gas development and fish factories there is a strong reliance on self-regulation in PNG in relation to determining levels of discharge. Historically this has created long-term environmental damage as companies are not willing to apply measures to reduce the environmental risk due to the lack of information or there is a lack of willingness of Government to impede profits by enforcing mitigation actions.

705. There appears to be little widespread application of fertilizers in PNG but as communities move into a cash society and more plantation agriculture is adopted, there is a precautionary approach to be taken to limiting the overuse of fertilizers especially in areas with catchments adjacent to coral reefs.

706. As land clearing proceeds, there will be a high risk of downstream impacts to the marine environment as more sediments move off the land and into the waterways. Although there are no precise estimates of erosion in PNG, studies from other parts of the Pacific suggest the reduction of runoff is best managed at the source through environmental management plans.

707. Lastly, solid waste has increased to levels in urban areas whereby impacts are unavoidable. As the volume of waste increases there is a trend to use the low cost option of using mangroves, ocean-rivers and beaches as landfill.

1. Priority Issues

708. PNG has diverse ecosystems and a high biodiversity with many environmental issues. The extent of the environmental condition of PNG is not monitored or well understood until the impacts are realized usually as a result of a decline in income or food security at a local level. In order to address these issues the environmental sector needs to take an ecosystem-based approach to management.

709. Adoption of an ecosystem based approach needs to be supported by legislation and integration within sectors. There is also a high priority to integrate policies and management interventions between sectors for effective overall management of the environment. Although the biodiversity of PNG is outstanding, much of the land areas have been highly modified as a result of agriculture and mining. The impacts arising from land conversion or modification is often simply cases transferred downstream and can impact on the coastal areas.

710. Coordinating the management of these impacts across Government sectors is a high priority. This can be achieved by having robust policies in place that not only deal with singular agency responsibilities, but also set in place strategies that have a cross-sectoral approach.

711. The above strategies and policies should balance economic, social and environmental outcomes in a way that is supported at the Provincial and Village level within the complex land and sea tenure system.

712. The priorities for the environmental and fisheries sector is to facilitate actions that will deliver 'best practices' on the ground in response to environmental and fishing pressure impacts. Best practices are required to be developed for situations that can be implemented at a low cost, technically simple and are sustainable through local monitoring and are able to be demonstrated to be effective.

XII. PROPOSED TECHNICAL ASSISTANCE

A. Impact and Outcomes

713. The Program seeks to build an effective institutional platform for the management of PNG coastal and marine resources that can be extended and adapted through establishing an informed and capable policy and legal framework, demonstrating integrated coastal management (ridge to reef) within a sub-national governance structure and incorporating EBFM and climate change adaptation.

714. The long term impact of the Program is expected to be the increasing adoption of sustainable economic development based upon ecologically sustainable economic growth in the management of coastal and marine resources where economic opportunities are linked to the conservation of ecological services and functions. Through these new development pathways the demand for coastal resources will more closely aligned to sustainable utilization and the role of coastal resources in food security maintained and enhanced.

715. On completion of the Program the outcomes of the Project will be improved livelihoods linked to coastal resilience, increased capability of management systems to govern and generate improved outcomes through a far wider range of tools and input from government, the private sector and the NGO community.

B. Detailed Description Component One: Building Organizational Capability and Management Competency

1. Output 1.1: Marine Unit of the Environment Program Wing (DEC) and the Policy Coordination Unit with capability and leadership in the implementation of DEC mandate

716. By 2015 the RETA will produce the following outputs:

- An effective marine unit with capacity to ensure that ESEG principles and environmental safe guards are applied
- An Environment Programs Wing (DEC) with the organizational systems to enable efficient operational capacity
- A marine unit that is implementing a coastal and marine policy framework for PNG

a. Approach and Method

717. The Environment Wing of DEC will be reviewed by an organisational assessment expert who will assess functionality, efficiency and effectiveness. The RETA will provide a 2 person month contract for the organisational assessment that will be completed and reported to DEC Management by end of Year Program Year one. Based on the findings and recommendations an organizational systems and processes expert will be contracted to mentor and build capacity in the Marine unit. This will include building the essential systems and processes for the completion of their mandate and it is envisaged this will include operational procedures and systems development with supporting training in contracting, program management, conflict resolution, negotiation, work planning, budgeting and financial management, contract supervision, synthesis of outputs, reporting etc. Specific training

opportunities will be provided to staff of the Marine unit in organisational management and contract management.

718. The RETA shall also support a senior national expert who will mentor Marine Unit staff entering as new graduates. The role shall be a part time role totalling 6 person months per year for the first year and 3 person months in the second and third year.

719. DEC staff and other sector agencies will be trained in marine resource management, CBNRM, sustainable development in the regional training contract training program provided by University of South Pacific. The training will be delivered in PNG during the first two years of the Program.

2. Output 1.2: Local stakeholders with capability for planning and implementing integrated natural resource management and sustainable development of land and Coastal Resources

720. By 2015 the RETA will produce the following outputs:

- 80 individuals trained in CBNRM, nature resource planning, sustainable development from demonstration area stakeholders, provincial and national agencies, local NGOs and indigenous organizations
- 300 individuals per demonstration site trained in EBFM
- 50 village court officials receive training in Marine Resource management, compliance, enforcement rights and responsibility, local justice systems
- A total of 1000 community members exposed to para legal awareness and training on their legal rights
- 100 LMMA members trained in data collection and analysis for monitoring the LMMA

a. Methods and Approach

721. USP is being contracted to provide the training programs across the region within country. A total of 2 courses would be offered in each demonstration site. The course would be available to all agencies, Private Sector Agencies, NGO and community leaders. The program would be implemented in Program Year 1 and 2.

722. EBFM training program would be designed by NFA with support from a service provider and a training of trainers program undertaken. Courses would be offered within each demonstration site including positions for agencies, fishers and community members. For each Demonstration site a total of 3 courses will be offered in the first two years.

723. CELCOR in conjunction with the Attorney General office and the IUCN regional support program shall provide training to local court officials and justice representatives. The training contract will include:

- Course design
- Training of trainers
- Course delivery and evaluation based on a minimum of 2 courses per demonstration area

724. CELCOR will be contracted to deliver their para-legal training program to a total of 10 communities in each demonstration site during Program year 2 and Program year 3. These courses have been developed and applied previously and as such the contract is for delivery only.

725. The Program Administration Contractor (see Component 4 below) shall provide technical expertise for the development of training programs that address community based management

planning, community based monitoring, data collection and analysis to train trainers within the PNG CLMMA. CLMMA will be contracted to deliver these courses to the communities (LMMA and non-LMMA) within the Demonstration Areas to provide a paired control versus intervention framework against which impacts can be better understood.

3. Output 1.3: Domestic capability to complete legal reviews and legal reform road maps for the environment sector within DEC and the Private Sector.

726. By 2015 the RETA will have:

- DEC's legal team linked and working with CELCOR to build capability in para legal and legal reform in the environment sector and to institutionalize this within DEC.
- Develop a legal reform road map for the coastal and marine policy implementation
- Legally define coastal and marine governance by drafting priority legal and regulatory reforms.

727. The RETA will provide institutional linkages between CELCOR, DEC and the IUCN legal unit in SUVA and the Fiji Environmental Law Association to enable participation in training of lawyers and to review how different legal systems have dealt with similar issues. The RETA will provide a total of 15 return tickets and per diems for 10 days per visit to CELCOR and DEC lawyers.

728. A total of 6 return tickets and per diems will be provided to the regional law team from IUCN to visit PNG and undertake training of DEC and CELCOR staff.

729. As part of the Marine policy development program a legal reform program will be undertaken by DEC with assistance from CELCOR. The program will include an issues identification process outside of the demonstration learning areas and then a legal reform workshop on development of a legal reform road map for implementing the Marine and Coastal Policy once drafted.

C. Detailed Description Component Two: Defining Best Management Practices through Experiential Learning

1. Overview

730. **Integrated Coastal Management (ICM)** seeks to manage both land and sea based threats and opportunities to achieve sustainable coastal management. For Papua New Guinea the recognition of the increasing importance of land based threats to coastal environments requires an Integrated Coastal Management framework.

731. The land based threats differ by site and include nutrient, pollutant, and sediment transfer from rapid growth in commercial agriculture and oil palm, rapid population growth and increasingly from the manner in which coastal infrastructure development is undertaken. For many of these impacts there is clear evidence that effective environmental protection mechanisms are not able to prevent spatial and temporal externalities.

732. Threats originating on-shore may require management systems for sedimentation, agrichemical pollution, nutrients and solid waste to be implemented. Other threats may derive from building and infrastructure development including the development of social, economic and tourism infrastructure. The RETA demonstration program will require the inclusion and management of these threats requiring cross-sector planning and implementation designed within emerging governance programs. These require participation of provincial government, sector advisor, Local Level Government, Communities, and the private sector. This participation needs to come from the Provincial and local levels for demonstration area participation and from the National level for oversight of safeguard precautions and synergy with national planning and reporting goals..

733. Climate Change is a group of probable threats that are external to local management decision-making but may influence and even define management options and outcomes. Climate change adaptation will be fully integrated with the ICM program for both demonstration sites through incorporation into the community management planning and threat assessment process. The planning process will be informed by scenario data, local community based vulnerability assessments as well as at local demonstration and island levels. The adaptation program will be designed within the community management planning process and will identify specific adaptation responses to be included in the pilot site intervention programs.

734. Implementation will require the involvement of the Adaptation Branch of the National Climate Change Office (NCCO) responsible for Climate Change adaptation. The demonstration areas will focus on testing governance options for a ICM framework including an ecosystems based fisheries management (EBFM) being introduced by the NFA.

735. **Ecosystems Based Fisheries Management** The RETA shall support NFA to introduce EBFM into priority regions of both demonstration areas as the basis for coastal fisheries management. The program seeks to build experience and learning for the ongoing implementation of such approaches and management systems. The EBFM process shall integrate data sets that include socioeconomic, habitat information and fish resource data to identify management zones by objective including the location of reserves, fish refugia and protected areas. These data sets will be used within a planning framework that identifies causes of threats (both internal and external) and potential response scenarios. Where the plan identifies options for limiting catches or reserving areas the NFA will work with the demonstration areas management planning and governance program to identify options for minimizing the loss of fish catch or for building alternative livelihood sources. Ultimately, restrictions will need to be negotiated and compensated through a range of alternatives. The responses will range from simple livelihood programs or more complex responses such as enhancement, support for value adding technology and the provision of alternative livelihoods.

2. Subcomponent 2.1: Integrated Coastal Management and Ecosystems Approach Fisheries Management Demonstrations

736. The RETA will support demonstration policy learning sites for the introduction of ICM, Climate Change adaptation through the application of DEC's Ecologically Sustainable Economic Growth principles.

a. Overview

737. Currently there is no governance framework for integrated marine and coastal management that can be strengthened in PNG that will provide outcomes.

738. The pursuit of national sector goals such as conservation and biodiversity has been acknowledged by the Secretary DEC as failing on delivery, however the lessons learned need to be used. There are common lessons from these failures.

739. Local marine management areas (effectively community based resource rights) have struggled to manage across larger scales and also to address threats from outside their immediate jurisdictions. LMMA is acknowledged as a contributing form of management but it is also considered to be a weak form of governance for coastal and marine resources at an ecosystem level. Further there is evidence that LMMA programs struggle to address the pressures from the incentives for excessive use as the cash economy or the demand for cash increases.

740. At a community level objectives are not defined only in terms of fish or marine resources. Villages are, at any one time, fishers, laborers, business men, home gardeners, agriculturalists. To achieve success programs over-time must adopt a multi-objective household livelihood approach simply to be relevant. One notable finding that has been repeated at different site is that communities with access to land based economic opportunities significantly reduce their use of coastal and marine resources. As such the location and linkage of terrestrial economic development may provide an important tool in achieving coastal resource sustainability.

741. Terrestrial conservation has in many places failed due to the inability to address economic pressures. Conservation increasingly became integrated conservation and development by trying to pull economic development under the conservation umbrella. This has failed internationally.

742. More recent approaches have sought to mainstream conservation into sector planning. While this may eventually impact we see a low probability as Government is no longer the major economic driver – the commercial private sector is and will therefore be creating the most demands or offer the greatest opportunity to address these demands.

743. The PNG CTI program proposes to adopt as its major organizing principle "**that management of coastal marine resources must be for creation of jobs, economic growth and community wellbeing"** leading to the provision of poverty reduction and food security outcomes whilst safeguarding the essential services and functions of ecosystems.

744. The demonstration programs will pilot the introduction of Ecologically Sustainable Economic Development Growth (ESEG) principles currently being espoused by DEC senior management. It is unlikely that it is possible to achieve this solely within a government lens only irrespective of the focus being national or sub-national. The demonstration program will use area-based forums for local economic development through applying ESEG principles. Under the proposed approach the economic actors and drivers associated with coastal and marine resources and the links to land based resources will be used to define opportunities for employment, economic growth and social wellbeing in a wider region of interest and at scales that includes both land and water. The approach will need to include land and water based interests from the public sector, private sector, and the local communities.

745. The demonstration will implement the above approach at two locations in the eastern Bismarck Sea to take advantage of the Local Level Government, Provincial and National Government and community engagement that already exists through ongoing programs in West New Britain and Manus Province. A major outcome will be the identification of best management practices in existing resource use systems and also to build an stakeholder driven shared development program.

746. In addition there is significant data from within the sea as a whole and for specific sites within the Bismarck Sea.

747. The proposed approach will add to past and ongoing approaches is to bring the commercial private sector interests in Tuna, Mining –land and marine, tourism. Oil Palm and Forestry, Live fish trade, and Fishing into the management framework alongside community resource owners and the Government. The demonstration program will be implemented in a policy learning format that will inform local stakeholders on governance frameworks that are effective and for national policy agents in terms of the benefits of integration. It is envisaged that the program would contribute heavily to the emergence of a national coastal and marine resource policy framework.

b. Kimbe Bay Demonstration Site

748. Kimbe Bay is located on the north Coast of New Britain Island in West New Britain Province (see fig1). It is a large bay bounded by the Willaumez Peninsular to the west and Cape Torkoro to the east. The bay covers 1,336,000 ha's (13,000 km^2) and is a spectacular landscape with many outstanding natural features including numerous active volcanoes which reach heights of over 2000 meters close to shore. The waters of the bay are deep with a narrow coastal shelf which drops off steeply in eastern parts of the Bay to depths in excess of 2000m.

749. Kimbe Bay is one of the world's most diverse and significant tropical marine environments and a keystone site within the Coral Triangle. It comprises a wide variety of shallow (coral reefs, mangroves and seagrasses) and deepwater marine habitats (oceanic waters, seamounts, deep sea canyons and hydrothermal vents) all in close proximity. These habitats harbour 12 species of marine mammals and other rare and threatened species including sea turtles and sea birds. It is an integral part of the Bismarck Sea and supports some of the world's highest marine biodiversity including nearly 500 species of hard corals and over 800 species of fish. Major threats to the coastal and marine ecosystem are:

- Clearance of coastal forests and mangroves
- Changing land use
- Destructive fishing practice
- Population growth and in-migration
- Elevated sedimentation into inshore reefs (TNC, 2006)

750. Approximately 100,000 people live in the Kimbe Bay watershed of which 38% have migrated from elsewhere in the Province and PNG to take advantage of employment and small holder opportunities generated by the extensive oil palm plantations which dominate the coastal plains and inland landscape surrounding the Bay. As a result coastal communities and their constituent traditional resource owners are facing multiple management challenges including changing socio-political systems, high population growth rates, poaching of marine resources, the use of destructive fishing methods and increasing needs for cash. Population density is one of the highest in the Province at 130 persons per km^2 as is the population growth rate of 3.7% per annum. Increased in-migration has developed a significant land sales market where traditional lands have been sold to migrants.

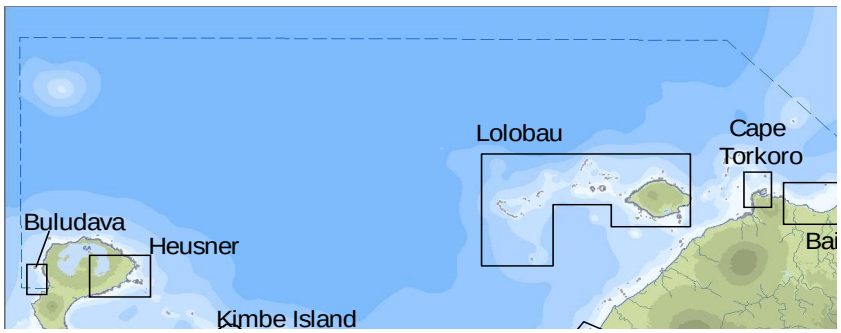
751. In addition the coastal ecosystems of the Bay are facing threats, principally elevated sedimentation rates and nutrient levels generated by changing land use practices, forestry operations and oil palm plantation establishment.

752. This combination of unique marine habitats and outstanding biodiversity values coupled with high population density and a range of threats including over fishing, destructive fishing, coastal habitat modification and land use changes make this an outstanding demonstration area. It captures the full range of socio-economic and environmental issues facing coastal communities, governments and private industry throughout PNG. Adding to the significance of Kimbe Bay as a Demonstration site is the commitment of the West New Britain Provincial Government to the sustainable management of the Bay and the strong presence of The Nature Conservancy which has been engaged in the protection of Kimbe Bay with partners for a number of years. This has resulted in a sound basis for

conservation. Good relationships with local and provincial government, communities, scientists and industry have been established, there is a strong desire by communities to engage in marine resource management and support for MPAs and a strong project infrastructure exists**.**

753. Rapid Ecological Assessments of the Bay and a wide range of coral reef research and monitoring activities have been undertaken by TNC which has a highly developed scientific data base. TNC's program in the Bay is based on implementing a scientifically designed resilient network of marine protected areas (see fig 2). This blueprint represents one of the world's first MPA network designed to specifically address the threat of climate change and comprises 14 critical priority areas for protection which TNC and its partners are implementing through the establishment of community based LMMA's supported by the three Local Level Governments (Bialla, Hoskins and Talasea) in the area and the Provincial Government. However, while LMMA's recognise the authority of local resource owners and the customary marine tenure system, and are an important mechanism to support sustainable marine resource management, they do not influence the sources of the broader land based threats (sedimentation, nutrient inputs) affecting the Bay's marine ecosystems.

Fig. 2 Kimbe Bay: *Resilient MPA Network Design-Areas for Protection*



754. Logging in Kimbe bay has mostly ceased with the logging company limiting its activities to a plantation resource of around 10,000ha. Oil palm is the major economic driver while Beche der Mmere is the most significant marine resource for commercial purposes.

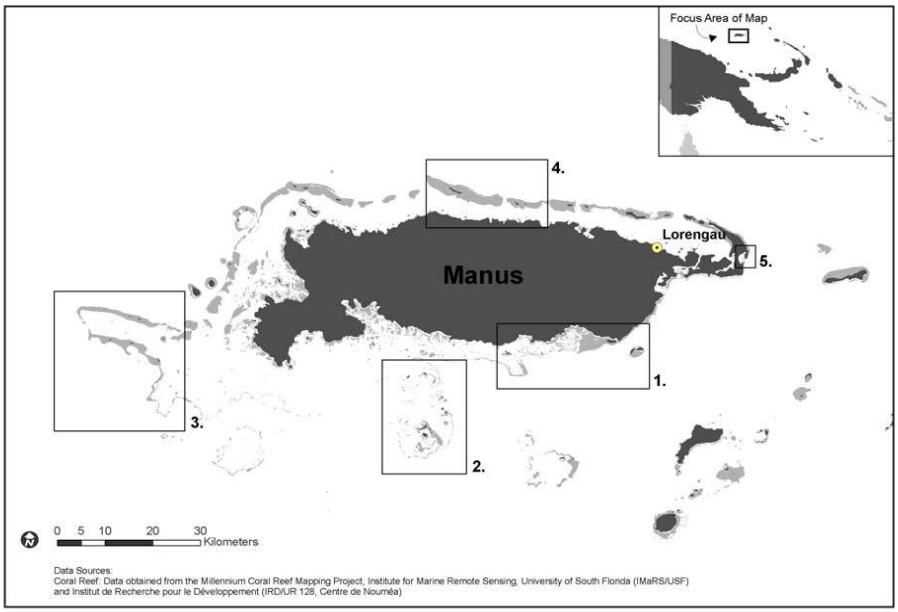
755. Runoff of sediment and other pollutants from poor land use practices associated with large scale agriculture and forestry is of great concern. Runoff from these activities and others (steep slope gardening and Kimbe urban area) appear to be causing significant impacts on the near shore ecosystems in some parts of the bay, particularly the inshore reefs in the south western corner. To address these threats a broader approach which engages the oil palm and forestry industries, government agencies, local communities and NGO's, while strengthening the governance of the Kimbe Bay is required.

c. Manus Province

756. Manus Island is the largest of the 18 Admiralty Islands group which make up Manus Province. Lying 2 degrees south of the equator and 147 degrees east, this continental island is 80 km wide and 27km deep of comprising 2,200km^2 of hilly, deeply dissected terrain surrounded by extensive and varied coastal habitats including mangroves, lagoons, seagrass beds, fringing and near shore patch reefs, and reef passes. While the land area is small, Manus island commands more than 220,000 km^2 of oceanic waters. A growing population of around 45,000 people rely are largely coastal dwelling and rely heavily on access to marine resources to meet subsistence and cash needs. Because of the extensive lagoons and reef flats which provide ideal habitat for sea cucumbers (beche de mer) that is an important source of income for many communities.

757. In late 2006, The Nature Conservancy undertook a Rapid Ecological Survey of the North Bismarck Sea focusing on New Ireland's Tigak Islands and Manus Province. The survey showed that the North Bismarck Sea hosts very high hard coral species richness. A total of 452 species belonging to 70 genera in 15 families were recorded on this survey. The reefs that the team visited around Manus Island were all in good to excellent condition and tended to have higher hard coral diversity than reefs around New Ireland. The survey also confirmed that the Northern Bismarck Sea has a high biodiversity of reef fish. A combination of historical data and 577 new records from the current survey yields a total of 801 species belonging to 76 families and 274 genera for the Northern Bismarck Archipelago. In Manus, fish populations were very healthy in most locations with spectacular fish communities with big fish observed at several sites. In both provinces, the scientific team assessing reef health rarely sighted high value macro invertebrates such as sea cucumbers, trochus and giant clams, indicating that these resources have already been over fished.

Figure 8: Manus Island, Papua New Guinea with High Value Reef Areas Delineated



758. The marine ecosystems and resources of Manus are under increasing threat from a range of human activities including over fishing especially of beche de mer, sediment runoff and loss of mangroves that provide critical nursery areas for many species of reef fish. Upland soil disturbance from poorly managed logging activities, increasing land clearing for gardens in face of declining fertility and harvesting of mangroves for fuelwood and building materials are stressing near shore habitats. However, it is the depletion of sedentary, commercially valuable marine resources and particularly beche de mer, which is of great concern to the Provincial Government and communities alike.

759. Economic options for Manus are limited. Coconut production is a traditional earner but is waning in the face of weak prices, and the sale of marine products (beche de mer, trochus, shells and coral for lime) is a regular source of income. Fishing for local consumption and sale is important locally but the distance between Manus and the large urban markets of PNG inhibits a regular export trade. There is limited tourism based on the outstanding marine environment with small scale diving and sea kayaking ventures struggling to survive. Some Live Reef Food Fish Trade activities have been licensed in the past but these are often unsustainable due to over fishing of spawning aggregation sites has occurred. Some communities as a result have implemented LMMA's as a means of either avoiding this situation or replenishing their stocks. The most successful of these has been in the Pere community area where 5 LMMA's have been established to manage local marine resources including the protection of two critical spawning aggregation sites. The results from these areas have persuaded the Pere community to consider expanding the original LMMA area to embrace nearshore mangrove, lagoon and reef flat habitats.

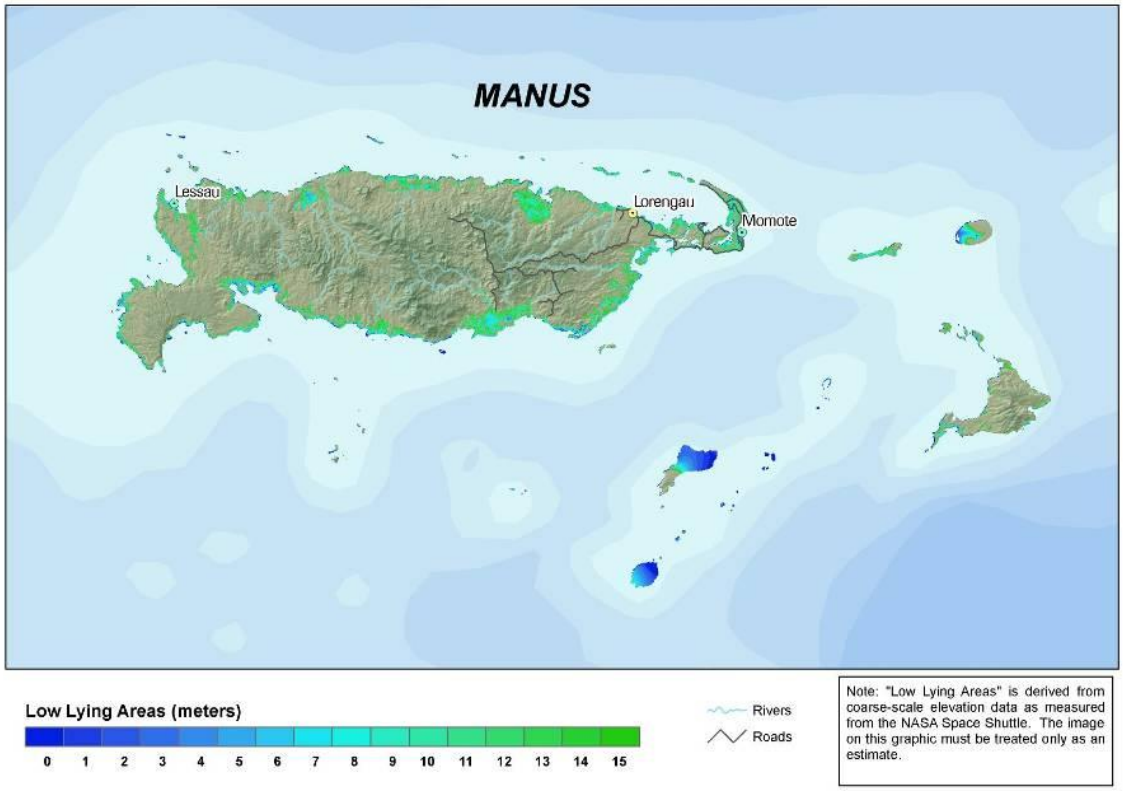
760. Manus Province has made a strong commitment to sustainable development with a 10 year (2006 – 2015) Sustainable Development Plan. The risk of Climate Change has encouraged an early revision of that plan. Manus Island has many low lying coastal areas that are susceptible to sea level rise and tidal surge events which place important coastal habitats at risk. See fig 3.

761. On 7 December 2008, a La Nina King Tide and large swell (2.5m) event inundated the North Coast of Manus from Aua Wuvulu Islands in the West to Nauna Island in the East. 15,000 people were impacted by the event. More than 6,000 people were rendered homeless and 400 permanent dwellings were destroyed. The environmental damage included:

- extensive damage to reefs including destruction of spawning grounds for fish and marine invertebrates,
- extensive damage to fresh water supplies including sea water incursion into fresh water wells and the water table,
- uprooting of mangroves, trees, coconut trees, fruit trees,
- severe erosion for various sections of coastline,
- extensive sea water incursion and damage to sago swamps (sago is the staple diet for the people of the Province), and damage to roads and infrastructure.

762. The disaster was further exacerbated by 2 weeks without rain, which imposed great challenges on those communities with no fresh water. While there is no evidence this disaster is related to predicted climate change, it and anecdotal evidence of climate related impacts including extended dry periods, loss of fresh water sources, drying wetlands, reduced soil fertility, increased coral bleaching events and in the low lying outer islands, rising sea levels have seen the Province develop climate change plans.

Figure 9: Manus Province, Papua New Guinea showing coastal areas susceptible to sea level rise.



763. One reason for selection of Manus Province as a Demonstration site is the leadership in coastal and climate change issues. The Provincial Government has adopted an enlightened, responsible and collegial approach to working to respond to the sustainability and climate change issues facing the Province. This is most obvious through the establishment of a Environment and Climate Change Committee charged with revising the Sustainable Development Plan to address these issues. The Committee has been recently broadened to include the Civil Society Partnership of international and local NGO's (The Nature Conservancy, World Wide Fund for Nature, Wildlife Conservation Society, Centre for Locally Managed Area, and The Manus Civil Society Forum) formed to assist Manus in this process.

d. Approach and Methods

764. The support for implementing the two demonstration area programs will be contracted to a single service provider – the Nature Conservancy that has strong existing relationships, maintains the historical data base, presence at both sites, and a financial and administration system that is able to provide high standards of accountability, transparency and reporting. The TNC shall at each site form a secretariat that will in turn work with the Provincial Government to form stakeholder management forums. The Forums and the secretariat will prepare annual work plans that TNC will submit to DEC, NCC and ADB for approval. Once the work plan approvals is provided to the Provincial Councils TNC will be responsible for the effective implementation of the approved work plans, including contracting work, studies, technical assistance and disbursement of funds to local projects.

765. **Governance:** The RETA at the Kimbe Bay demonstration site would support the formation of a sustainable development multi-stakeholder management forum (SDMF) with representation from each LLG, Provincial Government, private sector land uses including New Britain Oil Palm, Stettin Bay Forestry, Tourism operators, Nautilus Deep Sea Mining, NGO's and Community representatives. National Agencies including DEC and National Planning will be represented.

766. The objective of the forum would be to have a stakeholder driven planning program for the Kimbe Bay area that includes private sector, community and local representatives. The planning process would seek to identify preferred resource allocation, manage intra and intersector externalities, and provide a basis for far greater coordination and resource mobilization.

767. The forum will be supported by a two person secretariat that will be formed and funded through the TNC contract until the end of Program Year 3 at which point the individuals will transfer to become environmental staff of the respective Provincial Governments. The Forum will operate under the leadership of the Provincial Council and will meet every quarter. The formation of the forum will follow a consultative process and a 3 day sustainable development workshop held by the Secretariat on behalf of the Provincial Council.

768. The Forum inaugural meeting will develop its operating rules and charter and will set out broad work plan that includes the completion of:

- Data collation program by the secretariat
- A strategic planning process for ESEG
- Medium term and short run plans and associated resources
- Supporting studies for:
    - Marine management
    - Land based impact management
    - Landscape planning
    - Economic development planning based on ESEG principles
    - Options for institutionalizing and sustaining oversight governance of economic development and natural resource management

769. At the **Manus Province** demonstration site governance and management inputs will adopt a slightly different approach whilst following a similar pathway. Currently in Manus Province the Provincial Council revising its 10 year (2006 -2015) Provincial Sustainable Development Plan. The council has formed an Environment and Climate Change Committee in partnership with of local stakeholders and NGO's to ensure that the plan is developed and implemented as intended. The RETA will seek to build on the existing framework and move planning into a stakeholder and Government partnership model that seeks to capture the skills, knowledge and breadth of knowledge from stakeholders. The far small private sector may require a far greater role of government representatives

770. The governance program will follow a similar approach to Kimbe Bay outlined above.

771. The RETA will support the two SDMF meeting costs and provide opportunity for them to share experiences through a one day workshop which DEC will use to capture the lessons and issues and share these with all stakeholders and incorporate into the policy process.

772. **Legal Framework for ESEG Development:** The RETA will support a legal review of LLG and Provincial Government legal frameworks and prepare a legal reform road map to be presented to the SDMF by mid Program Year 2. The review would be completed under a contract to CELCOR and with the participation of DEC lawyers alongside the IUCN regional legal support program.

773. The SDMF will prioritize and finalize the reform program before the end of Program year 2 and then provide legal support contractors to the Provincial Council and LLG. Legal drafting will be supported for each demonstration site.

774. An important aspect of any legal framework is for civil society to have a clear understanding of rights and responsibilities under the various laws. The RETA will contract a legal service provider to undertake para-legal awareness raising and training for local community groups and members. A total of 10 communities will receive training for each site over a three year period.

775. **Coastal and Marine Management:** The RETA will support the ongoing development of the LMMA and their management and a review of options for the formation of a Kimbe Bay Marine Management Area. The program will provide support for training of community and LMMA committees in CBNRM, group management, leadership, conflict resolution, and will also provide support for the process costs of forming and management of LMMA's.

776. At Manus Province the RETA will support a habitat mapping program based on existing imagery and ground truthing transects around Manus Island. The program will complete an estimated 130 transects before the end of Program Year 2. The resulting maps and data sets will be used as input into the implementation of the EBFM that NFA and CTSP contractors will undertake as part of the wider Beche de mer program. It will also support and help prioritize LMMA establishment and associated community resource management plans. Is it expected that the transects will require input from the NGO consortium working with Manus Provincial Government.

777. At both sites a fish market chain study will be completed by local NGOs and contracted local fishers. The Secretariat will provide technical support for the design of the survey and the training for implementation of the study including fish identification, fish weight for size, measuring length, recording catch and prices by different grades and species on a quarterly basis. Local NGOs will track market channels throughout both areas every quarter and will be responsible for reporting the survey and study findings back to the SDFM and each community group.

778. **Land Based Impacts Management:** The assessment of land based threats and the development of appropriate best management practices is essential for coastal resource sustainability and the return from land based activities such as oil palm, livestock, and community gardens. Past studies will be reviewed and assessed for the SDMF to decide how best management practices and environmental goals can be achieved with respect to:

- Sedimentation
- Agrichemicals

- Other chemicals
- Nutrients.

779. The RETA will provide support to both demonstration sites for the completion of field research studies that identify the source of each impact, and the development of best management practice for each of the major impact by source. The program will include: Land use mapping and soil erosion estimates using both remote images and field assessments, production system surveys of community gardens, small holder and commercial scale agriculture for the use of fertilizer and agrichemicals, and the use of the data to develop nutrient budgets for each source. A total of 4 studies are provided for each site.

780. Water quality testing will also be undertaken from fresh water discharge into the sea and adjacent to human settlements. For settlement areas contributing significantly to nutrient loads a sanitation and water drainage inventory will be completed.

781. All studies will require recommended response options and strategies that could involve further field work or moving to providing best management through pilot site programs.

782. In addition to the above studies, a further 3 studies per site are provided for follow-up programs and funds are also allocated for implementing priority pilot demonstration sites. Demonstration site funding will be on a material only basis for community programs such as sanitation or solid waste and on a cost sharing basis with commercial operators.

783. All funds will be allocated by the SMDF and disbursed through the Secretariat contractor.

784. **Sustainable development strategies:** The project will support each SDMF to understand the trade offs between sectors and the relative benefit to the local economy from alternative development strategies. The primary modality for the development of strategies will be to understand the direct costs and benefits and the indirect costs and benefits of alternative development pathways. The planning process will be supported by the National Planning office and a supporting contract for a resource economist. The economist will be contracted for 6 months who will develop a detailed description of sector interactions and their costs and benefits. This information will be provided to the SDMF for Program Year Two planning program.

785. A coastal community livelihoods study will be completed as a means of identifying alternative resource uses or economic development options. The program will be undertaken by the CLMMA in conjunction with local NGO's and will apply an extended DFID Livelihood framework model that is integrated with other development plans for economic sectors – such as oil palm and livestock. A total of 4 communities in each site will be involved in the livelihood program.

786. **Reporting on the Sustainability of Kimbe Bay and Manus Province:** As part of the DEC oversight and environmental safeguard function, DEC will be supported to (i) define a set of indicators for assessing the status of ESEG principles and sustainability in each demonstration site, (ii) complete a baseline assessment in Program Year 1 and an update in Program Year 4. The RETA will support the policy coordination group and the Marine Unit along with other expertise related to social, economic, and ecological parameters to develop a range of indicators on which ESEG and Sustainable Development can be assessed. The process will be a series of three working meeting using a Delphi style process for identification, screening and ratifying relevant indicators. These indicators will be presented and agreed with each Demonstration Area SDMF prior to the field work and awareness and training in the indicators provided to Demonstration Area stakeholders.

787. DEC will outsource an assessment of each demonstration area for the agreed indicators including any additional indicators requested by the two SDMFs. A subcontract of 6 person months will be contracted to a single contractor for both Demonstration areas who will report to the SDMF and DEC before the end of year meetings in Program Year 2. An update of the indicators will be undertaken in Program Year 4 to inform the quality and strategy review and evaluation of the Project – see component 3 below.

788. The Marine Unit DEC will develop a reporting framework based on the indicator program by developing data storage, analysis and reporting framework that supplies data to the MDG reporting responsibility of DEC – see component 3.

3. Climate Change Adaptation

a. Background

789. Key priorities for the National Office of Climate Change - Adaptation section were identified as being:

- Development of a climate change adaptation policy framework
- Capability building within the adaptation branch of the National Climate Change Office
    - Policy research and development skills
    - Planning systems for vulnerability responses
    - Design of efficient adaptation programs

790. Vulnerability assessment (VA) is currently being completed at the Provincial Level within the context of major sectors – forestry, agriculture, fisheries, ecosystem, Health, Water resources, human settlement and infrastructure. The current VA will inform the completion of the NAPA program but does not address site level response or adaptation needs.

791. Other needs and priorities include:

- Database development for PNG based research – mostly held by the NGO community or University based research community. Data on adaptation case studies, vulnerability assessments, and specialized sector responses, climate scenarios and raw data for future evaluation
- How to structure and apply risk-offset mechanisms including insurance, social safety nets, and compensation mechanisms reviewed and prioritized

b. CTI –NPOA climate change activities

792. The CTI NPOA identifies the priority areas for climate change program to be linked to the design and implementation of an adaptation plan by:

- Assessing and mapping vulnerability nationally
- Preparing and implementing adaptation plans for priority sites
- Developing adaptation and insurance mechanisms
- Establishing early warning systems
- Delivering education and awareness programs.

793. In addition, the NPOA identifies the need to build and broaden the understanding of climate change in PNG through developing a national network of climate change adaptation that links across sectors and with Provincial and local administration. The purpose of the network would be to:

- Develop policy and legislation on climate mitigation and reduced emissions
- Establish a climate change research center

c. RETA Climate Change Outputs

794. The Climate Change funding available to the RETA is limited (USD 356,000) and is allocated for the purpose of developing adaptation programs that can be piloted and evaluated. The RETA program could support the following outputs:

- Development of capability to prepare climate change scenarios as the basis for provincial and community vulnerability assessments
- Agreed processes and framework for the completion of site level vulnerability assessments based on climate change scenarios
- Provincial Level Adaptation plan for one province/demonstration area
- Pilot adaptation programs being implemented as demonstrations
- Network learning and policy intelligence for NOCCS and Other Provinces to identify best management practices in climate change adaptation implementation

i. Approach and Methods

795. The climate change program will be implemented as an action learning framework where climate change scenario expertise will be contracted to work with the Climate Change Office – Adaptation Branch. The contractor will be responsible of supporting the adaptation office in the design, testing and implementation of Provincial level scenarios. The Provincial SDMF will work with local development partner to use the scenarios to complete vulnerability and adaptation planning at the community and Provincial levels. NCOSS will provide a coordination role and make sure other agencies such as Disaster Mitigation are involved in the program

796. The RETA program has selected Manus Province to complete its pilot adaptation plan at the Provincial level. Manus province was selected based on (i) political leadership in climate change initiatives, (ii) extensive set of field work on climate change and wide data set that already exists, (iii) pre-existing community engagement and awareness programs, (iv) priority needs for adaptation and (v) involvement in the CTI-Pacific Demonstration area program.

797. The RETA will support the following activities:

- NOCCS will undertake a data collation and storage program. CTI will provide funding for a research assistant for up to 9 months to complete this task. Data will be collected, collated, organized and indexed before being stored. A desk-top based server will be purchased for the Adaptation Branch for local data storage. The NOCCS will be contract with the Central Project Management Contractor
- Contracting of an international service provider to work with NOCCS to develop Provincially defined climate change scenarios using SIMCLIM simulation software and to train NOCCS staff in the use of the software. The contract will include opportunity for the NOCCS to build an institutional twinning or linkage program with an international center of excellence for climate change adaptation. Scenarios will be developed for Manus province and presented in terms of magnitude of changes and probable timing of changes. Contracting will be through the Central Project Management Contractor.
- Vulnerability analysis at the community level with the lowest level of analysis being at the ward level (Manus has 7 wards), that in aggregate become a district and provincial assessment. Implementation of the vulnerability assessment will by necessity be through partners and NGOs that have existing relationships with the Province and the coastal communities. The vulnerability assessment and adaptation planning will be integrated into the Provincial Demonstration site program and as such will be contracted through the Secretariat service provider. The vulnerability assessment will be integrated into community empowerment and planning processes already being implemented and will include:

- Presentation of a awareness of climate change concepts
- Presentation of probable scenarios and their likely timing
- Community elicitation process that lets communities identify major issues and options that they fore see to address issues
- Self ratings of vulnerabilities by cause of vulnerability – similar to SPC model
- Spatial representation of vulnerability and an inventory of assets at risk
- A prioritization of issues by communities
- A strategy and action plan for proposed responses with a timeline and required resources.

- Adaptation planning will be undertaken at the Ward and the Provincial Level. The process will involve aggregation of needs and then the assessment of options using a range of criteria including ecological, social, and economic/financial. The adaptation planning will need to adopt strong spatial and temporal parameters. The RETA will support process costs and the provision of technical support by a local service provider selected by the NOCCS and Provincial Council.
- Pilot demonstration programs for implementing the adaptation plans that will be implemented through the local partners in the respective communities or wards. The RETA will provide resources on the same basis as the Demonstration program i.e., expertise and materials only.
- Networked learning and policy inputs. The Manus Province will be used as a pilot adaptation site with the process evaluated and monitored by the NOCCS who will prepare guidelines for other Provinces on best practice and processes. For the Province bordering the Bismarck Sea a forum will be held where leaders visit Manus and discuss the program of work and experiences along with the findings. Work planning and disbursement for this activity will be linked to the Central Program Management Coordinator contract.

D. Detailed Description Component Three: Enabling Conditions

1. Output

a. Output 3.1 Learning Framework

798. The Program will build a multi-level ICM learning network that operates across levels ranging from demonstration area, District, National and Regional (CTI-Pacific).

799. The learning framework seeks to:

- Strengthen understanding of ICM and EAFM concepts by identify best management practices for Marine Biodiversity Conservation, ICM, EAFM,
- Build implementation capacity, and
- Develop implementation approaches customized for Papua New Guinea.

i. Method and Approach

800. At the national level the Program will support the formation of a quality and strategy review team. The IA/EA and GEF Focal Point shall form the team which will comprise three individuals being (i) a prominent private sector business person, (ii) a person representing community interests, (iii) a technical expert. The identification of the potential team candidates shall be through the Program Management contractor who will compile a long list of no less than 8 candidates that will be provided to the EA. The EA will confirm acceptability of proposed candidates in terms of institutional and

political acceptability. The IA will select from the acceptable candidates to fill the business and community representatives.

801. The technical expert may change each year according to the technical issues that are envisaged. The role may be a national role but equally should the need arise the role could be filled from the regional learning framework that will be managed by the Pacific Round Table and IUCN.

802. The quality and strategy review team will be convened by the EA with the Acting Director Environment Wing DEC and will include the Director Marine Unit and the Program Administration Coordinator.

803. The role of the team is to review (i) annual work plans prepared by the IAs, (ii) review forecast budgets, (iii) review the demonstration area work plan and approach, and (iv) provide independent review and audit of the progress reporting and evaluation in August/September each year. The team will review work plans before they are approved and will provide the EA and the Program Management Contractor with written comments as well as briefing the Secretaries of State for Fisheries and Environment.

804. The annual review and evaluation program is scheduled to fit into the national planning and budgeting time line. A contractual requirement of the EA will be to convene a participatory evaluation program for each of the Program components and demonstration sites (through the SDMF) where all subcontractors and the IA and stakeholder will present their work for the year, achievements, successes and failures. The evaluation will also reflect on processes and procedures and ascertain were improvements and efficiencies can be achieved. The evaluation process will provide the basis for the synthesis of lessons learned and best management practice that will be compiled into an annual report and electronically distributed throughout the wider learning network.

805. One role of the quality and strategy team will be to provide a mechanism for the program to access high level executive decisions for issues relating to coordination, sector roadblocks etc. This will be through informing the NCC (CTI) and the NEC.

806. For at least one of the four program years the regional learning framework will add a person from one of the other participating countries into the evaluation team. Whenever possible the chair of the Round Table will also participate.

807. Following the national evaluation the IA and the EA from each country will participate in the annual regional evaluation that will involve all CTI Pacific countries. The meeting is convened and hosted by the Pacific Round Table each year. At the regional evaluation meeting each country EA and IA will present the findings of the national evaluation and identify key lessons learned. A score-card system for rating achievement and implementation performance will be tested as a means of creating increased incentives for quality strategic programs.

808. The regional session will address key themes such as legal and regulatory approaches, best management practices, policy frameworks, information systems, planning tools and legal and regulatory changes. The regional round table will require two Program participants, one stakeholder and one non-government institution.

809. In the final year the quality and strategy team will evaluate the total Program and use this with Government to scope the possible extension of the program. This program evaluation shall be linked to the State of Kimbe Bay and State of Manus Province.

810. The RETA will support two return air-tickets for senior DEC staff to participate in the annual CTI Ministers meeting per annum and per diems for 5 days per trip.

811. In addition the RETA will provide return air tickets and per diems for PNG participation in regional events linked to MSG and the annual Minister CTI meetings.

812. PNG will also host a kick-off event for the CTI-pacific. This will be a regional forum on leadership in Sustainable Development and will involve high level managers from the Finance sector, Private sector and Government sector. The forum will identify and discuss key issues and visions on

day one and then a smaller leaders group will develop a vision on how leadership can contribute to achieving these visions. PNG's push on ESEG and its current development program make it the obvious host for such a forum.

813. The Forum findings will provide a context within which the quality and strategy reviews and the annual Round Table will review and assess progress and lessons learned for inclusion in future years work plans.

b. Output 3.2 Marine Policy Development

814. By 2015 the following policies and legal outputs will be achieved:

- PNG Marine Policy
- Legal framework for coastal and marine management in each demonstration site including the marine management status of proposed zonation
- DEC policy analysis capability strengthened

i. Approach and Methods

815. The RETA will support a policy development process over the life of the Program under the leadership of DEC for the Coastal and Marine resources. The support program will consist of:

- The development of a Marine Policy Roadmap based on sector needs and priorities defined in an experts workshop and a series of working group meetings that identify issues and policy options for these by subsector theme.
- Formation of a policy advisory group to review the roadmap process to ensure cross sector and multiple stakeholder participation
- Contracted policy research and field studies to fill data gaps and build knowledge base
- Contracted review of international literature and available policy implementation tools and instruments and how these may be applied.
- Support to the DEC policy wing of the analysis of working group findings through the provision of:
    - Resource economic expertise for cost benefit analysis
    - Social impact assessment
    - Existing legal framework and its reform
- Policy drafting training and support for DEC Policy and Marine unit staff
- Public consultation process using mass media of Newspaper and Radio
- The preparation of a government funded program for the implementation of the policy framework

c. Output 3.3 Beche de Mer Policy and Marketing Study

816. Beche de Mer is the most important near-shore resource for commercial purposes within communities. For most communities these resources area a form of social banking that enable the community to raise cash for payment of school fees and or other community needs. The lack of management has necessitated a closure of the fishery to let the resource recover from over fishing. The closure of the fishery also provides an opportunity for developing new marketing systems that strengthen the power of fishers in the market channel.

The RETA will provide technical assistance to the National Fisheries Authority and Department of Conservation to strengthen their capability in managing beche de mer to protect resource

sustainability and improve the returns that community suppliers of beche de mer receive from the market. The purpose of this technical assistance will be to:

- Improve understanding of international markets and demand for beche de mer by establishing a market reconnaissance information system.
- Investigate and establish a beche de mer marketing coordination structure for community producers such that beche de mer can be sold in larger quantity lots and supplier market power in the marketplace is at least equal to purchaser market power. Community suppliers would sell their beche de mer into the new structure, possibly a cooperative, which would then sell large quantities demanded by buyers.
- Investigate and define standardized processing systems for beche de mer so that there are recognizable differentiated products targeted at specific market segments. Complete a business plan for establishing these production systems.
- Establish quality management and certification systems for beche de mer products.
- Investigate and establish a new international market for trading beche de mer. This could be an online market or a physical market, perhaps located in an Asian center of demand for beche de mer.
- Discuss with Solomon Islands the possibility of their joining with PNG in beche de mer production systems, quality certification, and the new international market. Develop a formal proposal for Solomon Islands participation.

d. Output 3.4: Marine and Coastal Sector Information System

817. Currently DEC is rebuilding its data center, database and GIS capability. The RETA will support the building of a Marine database and information system to support Coastal and Marine Management decision making, monitoring and reporting obligations.

818. The RETA will support:

- System design expat expert for the design of a marine information database and the use of remote sensing for marine and coastal monitoring
- Data collation and organization for the new structure including data sharing protocols, quality controls and data access – Program Administration Contractor – 1,6,3 person months per Program yrs 1-3
- Data assemblage and collation for each demonstration program and manipulation for spatial representation and modeling
- Indicator data sets from State of Demonstration site reporting
- Census breakout of fishing sector from other sectors with questionnaires designed for coastal and marine resource management – Contract to National Statistics Office
- Remote sensing interpretation for monitoring of coastal environments – an application of remote sensing approach to each demonstration site and to the Bismarck sea – competitive service contracting – estimated 8 person months of time, cost of imagery – two time slices being 2000 and 2010

e. Output 3.5 Sustainable Financing –Pilot study

819. The Program will support the following outputs on sustainable financing for each demonstration site:

- Review of policy options for raising fees and revenues from natural resource users or beneficiaries for the financing of coastal management programs. This will include strengths, weaknesses, opportunities, and barriers to alternative approaches of raising fees and revenues. For example, legislation will need to be reviewed as there is no specific authority that allows the levy of local fees. The contract will also include the design and feasibility analysis for the introduction of a fee/revenue program based on coastal resource use including:
- Assess the feasibility of building capital from revenue and contributory sources as a means of the supporting the SDMF and the community level implementation programs.

i. Method and Approach

820. **Review Policy Options**. In Program year two a short-term international technical expert (1 person months), provided by the Program Administration contractor, will review policy options. The expert will form a working group, who will review the work plan for the policy review and analysis.. The policy review will cover the raising of fees and revenues, options for fund ownership and management, and mechanisms for fund distribution.

821. Design and Feasibility Analysis of Fee/Revenue Programs. In year two of the Program, a detailed design and feasibility analyses of introducing user pay systems linked to coastal resources will be contracted to local technical and policy experts. This feasibility analysis will estimate potential user fees/charges, specify procedures for their introduction, identify how to establish a fund or funds with the collected user fees, recommend rules for fund management, and define how the fund can be used to support coastal management.

E. Detailed Description Component Four: Effective Program Management

822. The lack of human resource capacity with Program experience in the DEC and the lack of an effective organizational systems and support program is a significant constraint for successful program implementation. The cross sector nature of the proposed demonstration program and the information and monitoring programs requires actors from a wide range of sectors and from across differing levels of government and the community. To be an effective demonstration program, a learning framework will be essential to inform stakeholders to enable adaptive management to emerge based on best management practice.

823. A critical element in the learning framework will be to access appropriate technical skills and leadership for implementation of the two demonstration sites, the building of enabling conditions, and institutional strengthening of DEC.

824. Program management will be contracted to a service provider with ADB contracting a firm to provide Program Management Administration and service functions. The Program management contractor will report to the Executing Agency – DEC and will be part of the capability building program. Office space will be provided by Government.

825. The consulting firm will provide a full time Program Director, Accountant, Procurement - administrator. The firm will also be responsible for providing technical assistance inputs to DEC.

826. It is proposed that the Demonstration Area Secretariats in Kimbe Bay and Manus Province be provided under a separate contract to The Nature Conservancy given their current role in each site, the strong relationships that exist with Provincial Government and the data bases held on each site. The contract would be awarded on a sole source basis to the TNC by ADB.

827. The contractor shall provide administrative support for reporting to the EA on a monthly basis and to wider Program stakeholders on a quarterly basis. The Firm will support the quality and strategy team in the annual program evaluation and planning process, and ensure that work plans are agreed and reported to the Executing Agency and ADB.

828. Overall program implementation will use local subcontractors for activities such as field surveys, community planning, water resource quality assessments, sanitation and environmental health assessments, socio-economic survey and coastal community management and development planning, education and awareness materials, feasibility assessments of revenue and sustainable financing. The firm will support both DEC and the two Provincial Governments in preparing an annual work plan, contracting of service provision, coordination of contractors and a demonstration area learning program.

829. A further function of the firm will be to coordinate regionally contracted services in the RETA including the regional learning program, the climate change adaptation program, and proposed capacity building programs that are agreed as part of the RETA wide activities.

830. The major responsibilities of DEC management team are:

- Overall Program Leadership and stakeholder involvement
- Institutional strengthening at DEC
- Training and capacity building programs
- Leadership of and input into Policy development
- Building Marine database and information system
- ESEG and sustainable development reporting

831. NFA responsibilities will include:

- EBFM for Manus Island

- Beche de mer marketing
- Participation in each demonstration area implementation

832. NCCO – Adaptation Branch responsibilities will include:

- Coordination of Climate Change vulnerability work and findings
- Data collation and storage
- Climate scenario simulations
- Supervision and coordination of vulnerability assessments, prioritizing adaptation programs,
- Adaptation policy development
- Best Management Practice development and learning frameworks

F. Program Costs

1. Summary Cost Estimate

833. The estimated total cost of the CTI-Pacific Program in PNG is USD 6.6 million including price contingencies. Price contingencies are set to 7% per annum for the life of the Program and for the additional year between data collection and expected Program start up in October 2010. In total price contingencies account for 15% of the total cost.

834. Nearly 50% of the total cost is expended in the best management practice learning sites including climate change adaptation programs. Establishing enabling conditions accounts for 18% of the total investment while organizational capacity accounts for slightly more than 12%. Project management costs are very low as a percentage of total costs at 5% reflecting the administrative role of the PMC and the wider use of outsource contracts as part of DEC strategy.

Table 17: Program Investment Plan (USD)

(USD)

Item			Amount
A.	**Base Cost**		
	1	Component 1: Organizational Capacity	$809,370
	2	Component 2: Best Management Practices	$3,268,140
	3	Component 3: Enabling Conditions	$1,217,320
	4	Component 4: Project Management	$342,140
		Subtotal	**$5,636,970**
B.	**Contingencies**		**$985,084**
Total			**$6,622,054**

2. Summary Costs by Expenditure Category

835. The costs by expenditure category highlight the importance of planning processes and capacity building and training which account for nearly 40% of total base costs. Technical assistance and studies account for another 40% reflecting the major issues with capability and capacity in the sector.

836. As a percentage of base costs contingencies are 17% and are solely price contingencies. The final expenditure categories will vary from those in the table depending on the outcome of the various planning processes under the management of SDMF and the climate change programs both of which will implement pilot demonstration programs for developing best management practice. The actual expenditure required for these will be defined in the implementation of planning and strategy development. Any delays in the planning processes will limit the ability to implement pilot demonstrations at site level.

Table 18: Summary Costs by Expenditure Category

(USD)

Item			Total Cost	% of Total Base Cost
A.	**Investment Costs**			
	1	Civil works	$232,400	4%
	2	Planting materials	$380,800	7%
	3	Field and Operations	$0	0%
	4	Enteprrise development	$190,400	3%
	5	Studies	$711,700	13%
	6	Planning processes	$986,900	18%
	7	Capacity building	$638,400	11%
	8	Training	$615,810	11%
	9	TA - local	$531,800	9%
	10	TA - int'l	$926,620	16%
	11	Project management	$242,240	4%
	12	Office equipment	$39,500	1%
	13	Local transport	$140,400	2%
		Subtotal (A)	**$5,636,970**	**100%**
B.	**Contingencies**			
	1	Physical	$0	0%
	2	Price	$985,084	17%
		Subtotal (B)	**$985,084**	**17%**
Total Project Cost (A+B)			**$6,622,054**	

3. Proposed Financing

837. Total Financing is USD 6.6 million of which ADB finances 3% of USD 200,000 while GEF finances 69% at USD 4.5 million. The government counterpart share of the program totals USD 1.9 million (29%).

Table 19: Program Financing Plan

(USD)

Source	Total	%
Asian Development Bank	$200,031	3%
GEF - International Waters	$585,164	9%
GEF - Climate Change	$362,823	5%
GEF - Biodiversity	$3,585,226	54%
Government	$1,888,811	29%
Total	**$6,622,054**	**100%**

838. The financing plan does not include the support for the West New Britain Coastal program provided by the Provincial Government this year of Kina 200,000 and does not include matching inputs from commercial operators involved in the demonstration area program.

839. NFA will also be contributing nearly two million Kina for the EBFM and community fisheries program and in addition will refocus their community fishers grant program to a needs based allocation under the CTSP supported programs.

4. Proposed Contract Packages

840. The ADB will enter into 5 contracts for the program. Two regional contracts will be partly financed from the total costs being the USP training program and the Roundtable monitoring and evaluation lessons learned program. The National Program Management contractor will have two parts to their contract. The first part relates to the contractors direct costs of a little more than USD 405,943 while the second part finances the contracts, studies and technical assistance supplied through the contractor.

841. Contract 4 is proposed as a direct sole source contract to TNC totaling USD 3.2 million being for the support program for the demonstration areas with the majority being outsourced supply, study or technical services.

Table 20: Proposed Contract Packages

(USD)

Item	Issuer		Total Cost
1a	**ADB**	**Contract 1a - Program Mgmt Contractor - Project Offic**	**$405,943**
1b	**ADB**	**Contract 1b - Program Mgmt Contractor - Subcontract**	**$2,285,807**
2	**ADB**	**Contract 2 - Regional contract - USP**	**$128,205**
3	**ADB**	**Contract 3 - Regional contract - IUCN Roundtable**	**$155,824**
4	**ADB**	**Contract 4 - Contract - Kimbe and Manus Demonstrati**	**$1,757,464**
5	**Govt**	**Government Contribution**	**$1,888,811**
	Program	Subcontract - IUCN legal	$257,336
		Total of ADB Main Contracts - 1a,1b,2,3,4	**$4,733,243**
		Total of ADB Contracts and Government Contribution	**$6,622,054**

Program = Program Management Contractor

G. Implementation Arrangements

1. Executing Arrangements

842. **Program Executing Agency** The Executing Agency will be the Department of Environment and Conservation (DEC) which is responsible for housing the CTI National Coordinator and convening the NCC. Within DEC the senior management team comprising the Deputy Directors will be responsible for reviewing work plans, ensuring strategic fit with Government priorities and processes, and will be submit documents to the NCC and the GEF focal point for ratification.

843. The EA and the NCC will review work plans, approve work plans and ensure cross sector coordination is fostered and institutionalized. DEC will ensure that the Government budget contribution is available and disbursed according to prior agreements that will include the need to demonstrate the linkages of all programs to the Millennium Development Goals (MDG) to the MDG task force team.

844. The EA will also participate in regional forums for the CTI, MSG and other forums that promote Sustainable Development. It is proposed that PNG host a CTI-Pacific Sustainable leadership forum where leaders from the 5 countries, private sector leaders and financiers gather to debate the Sustainable development vision for Melanesia and then discuss how the actions of leaders to address these issues. All countries have emphasized the need for economic growth to be embedded in the CTI program. PNG is selected to host this as it faces some of the largest economic development pressures within Melanesia today and as such provides a strong context for the leadership debate.

845. Operational responsibilities for the program within DEC will the responsibility of the Marine Unit within the Environment Programs Wing. The Marine Unit shall coordinate the overall program planning and reporting supported by a Project Management Coordinator.

846. **Program Management Contractor (PMC)** The Program will support a program management office (PMO) to be located in DEC and reporting to Director Marine Unit while reporting to DEC, the NCC and ADB. A Program Management Contractor will be recruited by ADB using ADB procedures for the selection and contracting of consultants.

847. The successful contractor shall work with DEC and the Implementing Agencies to develop a coordinated and consolidated work plan for the Program. The work plan will be submitted to DEC, the NCC and ADB for approval. On approval the work program that is managed by the National Implementing Agencies will be contracted by the PMC in a process that will include the ratification of TOR and the short list of providers by the EA.

848. Funds will be disbursed via the PMC to contractors, service providers. The PMC shall be responsible for overall Program financial management and reporting to the EA and ADB. These reports will include the activities of regional implementation contractors, and the sub-national implementation agencies.

849. The Contractor will provide a full time Program Director, Financial Accountant and a contracting and administrative support person. National candidates will be preferred.

850. The contractor will mobilize and management technical experts relating to:

- Organisational Assessment
- Organisational strengthening and systems development
- ESEG indicators
- Resource economist
- Social assessment
- Lawyer
- Beche de Mer marketing

- Beche de Mer processing and quality control
- Data systems design
- Remote sensing and use of imagery for monitoring
- Sustainable financing
- Data collection and analysis
- Policy expert
- Adaptation planning

851. Locating the PMO within DEC offers the additional benefit of providing mentoring and professional development as the Department establishes its operational capability.

852. The contractor will be responsible for developing a consolidated work plan, coordinating implementation contracting, contract national service providers, and provide administrative support for the ADB and GEF funds with quarterly and six monthly reports, and financial management and reporting according to the terms of contract.

853. The contractor will provide Program Management functions including:

- Engaging with the Implementing Agencies
- Annual work plan coordination and preparation
- Implementation oversight
- Procurement and contracting
- Financial Management and reporting
- Coordination with the regional Climate Change Program, Regional legal programs, quality and strategy monitoring and evaluation programs and training provider contractors
- Six Monthly Program Progress reports

854. Monitoring and evaluation has been designed into the program through the quality and strategy review process and the associated learning framework. The contractor will ensure that these processes are timely and reported to NCC and the executing agency.

Figure 10: Proposed Implementation Schedule

	Activity	Year One				Year two				Year Three				Year Four			
1	Management capability strengthened																
	Sustainable Development leaders forum																
1.1	Marine Unit organisational strengthening																
	- review of systems																
	- training and implementation of systems																
	- staff mentoring program																
	- USP training program																
1.2	Local stakeholder capacity building																
	- CBNRM, resource planning, etc																
	- EBFM																
	- Village court training																
	- Para legal awareness																
	-LMMA support																
1.3	Legal review and reform roadmap																
	- DEC - CELCOR linkage																
	- CELCOR- IUCN legal linakges																
	- Legal reform for Marine Policy																
2	Demonstration Area Program																
2.1	Contract TNC for Program Management																
	- secretariats established																
	- stakeholder consultation																
	- management forums formed																
	- strategic planning process																
	- Legal review and road map																
	- coastal and marine management program																
	- Land based impacts program																
	- Sustainable Development Planning																
	- Sustainability reporting (ESEG)																
2.2	Climate Change																
	- data collation																
	-scenario development																
	-vulnerability assessments																
	- community and ward adaptation plans																
	-provincial adaptation plans																
	- provincial networking																
	demonstration implementation																
3	Enabling Conditions																
3.1	Learning Framework																
3.2	Marine Policy Development																
3.3	Beche de mer sustainable management																
3.4	Marine and coastal MIS																
3.5	Sustainable financing study																
4	Program Management																
	PMC contracted																
	Planning																
	Monitoring and Reporting																

2. Implementing Arrangements

855. Program implementation will be undertaken at two levels. Nationally the implementation agencies include the Marine Unit of the Environment Wing in DEC and National Office of Climate Change. Sub-nationally the Program will be implemented through two Provincial programs in Manus Provincial Government and West New Britain Provincial Government. Capacity development programs will be implemented through contracting implementation across the regional program see Figure 3 below. The implementation arrangement is based on the DEC policy of outsourcing programs whilst retaining policy evaluation roles within DEC.

856. **The Department of Environment and Conservation – Marine Unit** will implement a capability development program for the environment Wing and the Marine Unit. The program will involve the design and implementation of an organisational systems strengthening program that includes technical assistance in the design of organizational systems such as work planning, job

descriptions, program management, financial budgeting and financial management, contracting and contract management, negotiation and conflict resolution.

857. Marine Unit staffing is currently being built with a total of 6 staff in 2009 planned to increase to 10 with the recruitment of new graduates. The recruitment process provides opportunity to up skill the unit to fit the revised DEC mandate and the Ecologically Sustainable Economic Growth policy principles. The dearth of experience in the Marine Unit will be addressed through the contracting of a long term national for mentoring younger and newly recruited staff.

858. The Marine Unit will work closely with the Policy Coordination wing to define and implement a Marine and Coastal Policy road map using (i) a mult-sector policy taskforce, (ii) policy issues and option working groups, (iii) contracted research and studies, (iv) building understanding of the range of policy implementation tools that would fit the ESEG principles, (v) policy draft and consultation process, and (vi) an implementation planning and action program. The Policy development program will also focus on building capacity within DEC for these roles and will seek to develop clear understandings of the Roles, Rights, Responsibilities and Relationships between implementation, oversight and safeguard providers.

859. The development of a marine and coastal information system that supports strategic planning, monitoring policy implementation progress, reporting against MDG is to be implemented by the Marine Unit with technical assistance support. Key elements will include building and populating databases and developing the capability within DEC and its service providers in the use of remote sensing and aerial photography for monitoring coastal and marine resources.

860. In summary key functions and roles of DEC:

- Building capability and capacity in DEC and the sector
- Development of policy and legal frameworks
- Reporting progress on policy and ESEG principles achievements in each demonstration site
- Consolidating the learning program through the quality and strategy development program
- Management of the quality and strategy team and evaluation program
- Leadership and management of the learning program
- Approval of work plans and contracting of services
- Management of subcontractor inputs
- Implementation of marine management area status for Kimbe Bay

861. **National Office of Climate Change Services (NOCCS)** will act as the joint implementing agency for the climate change adaptation program. NOCCS will be responsible for collating data sets into an accessible data base, building capability for scenario development using the SIMCLIM software and generating provincial level scenarios for Manus Province. The scenarios will be provided to development partners working in the Manus Province Demonstration Area for completing vulnerability analysis and mapping, identifying community based adaptation programs and aggregating adaptation programs into a ward and provincial level adaptation program.

862. NOCCS will also provide leadership in the cross provincial networking by working with the Manus Provincial Government and convening a lessons learned day for the Bismarck Sea provinces. The day will present the program, lessons learned, and also include inputs from community members, and government decisions makers. NOCCS will ensure that the lessons identified, process successes are captured in a best management practice for climate change adaptation field report. The report shall be shared with DEC, NCC, and the Program Management Coordinator.

863. **National Fisheries Authority (NFA)** – the NFA acts as a partner in executing the CTI program in PNG and is currently aligned mostly with the USAID CTSP program. Within the CTI Pacific –ADB/GEF financed program NFA will be responsible for working with DEC in the development of a ESEG based policy for Beche de mer. The policy option envisaged will seek to link the current system of closures to a program of improved drying, certification and specification of output and the introduction of an auction based marketing system – possibly at each province. The purpose of the policy research and development program will be to research options to develop an economic industry and using this to support the specific management requirements of the sector.

864. As a joint policy process NFA and DEC will form a policy working group that will define the project, commission research and studies, complete industry consultations and interviews, define the incentive systems that are expected under alternative systems and make recommendations to both the NFA and DEC management teams.

3. Sub-national Contractors

865. **Provincial Program Management Support.** The two Provincial Government Demonstration Areas will be implemented by a Program Management Support Office that will be provided through a sole source contract to The Nature Conservancy (TNC). The contract award should be direct to ADB to provide opportunity for direct reporting and to ensure that contracting delays are minimized. The single sourcing of the contract reflects the role that the TNC currently provides in each of the two provinces. These include supporting each Provincial Program in Coastal and Marine management, planning, provision of technical services and data management.

866. In Manus province the relationship is built on a consortium of service providers including TNC, WWF, WCS and PNG CLMMA. All partners will be involved in the program of work while TNC will provide the management support program and financial management inputs.

867. In each Province a multi-stakeholder Sustainable Development Management Forum (SDMF) will be formed to work with each Provincial Government. This process will be initiated by TNC working with each Province to form the SDMF and providing a 2 person secretariat paid by the Program. The two staff will be paid for three years when it is proposed that the option of institutionalizing the staff into each Provincial Government in sustainable development support roles.

868. Once established the SDMF will undertake a strategic planning process that will be submitted for approval to the Provincial Government. Once approved priority actions will be developed into annual work plans that will be submitted to TNC and then to DEC and NCC for approval. Once approvals are obtained the TNC will proceed to contract service providers, technical experts or procure goods for implementation.

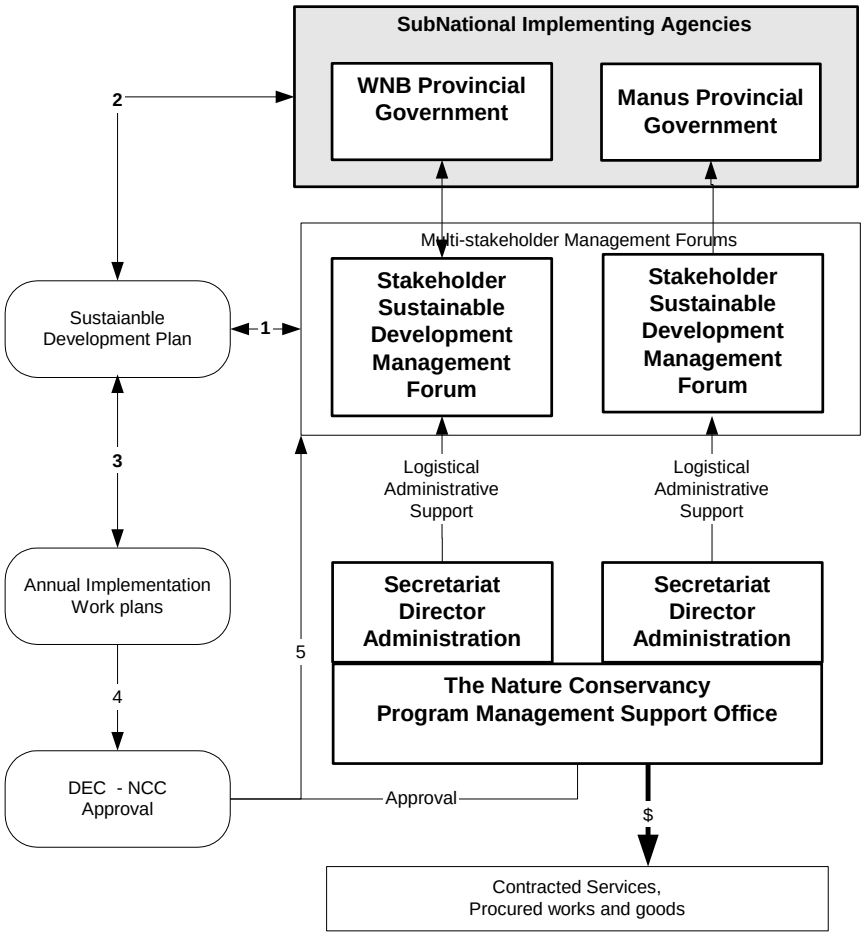
869. The TNC and each of the Demonstration Area Program will participate in the annual quality and strategy team program as part of the wider Program MIS/ monitoring and evaluation.

870. TNC shall be responsible for:

- Provision of secretariat services and personnel
- Ensuring work plans and implementation are timely
- Providing procurement, disbursement
- Financial management and reporting
- Sourcing expertise
- Building Provincial Government capacity in Program Management
- Networking the program amongst all stakeholders

871.

Figure 11: Implementation Arrangements for Demonstration Areas



4. Regional Contractors

872. University South Pacific (USP) is being contracted to provide course on marine management, CBNRM and Marine Conservation in each of the participating countries. Where ever possible this program will be linked to local training institutions. In PNG USP will provide training at the National and Demonstration Area level. Training will be planned with the EA and the PMC to ensure it is fully integrated with annual work plans. All training will be formally evaluated by participants and by the contract manager.

873. **Climate Change Scenario Contractor.** In PNG a regional contractor will not be used. For the climate change program in PNG the application and training of climate change simulation software will be contracted to SimClim. The contract will provide 2 sets of software, training in the software and training in its application.

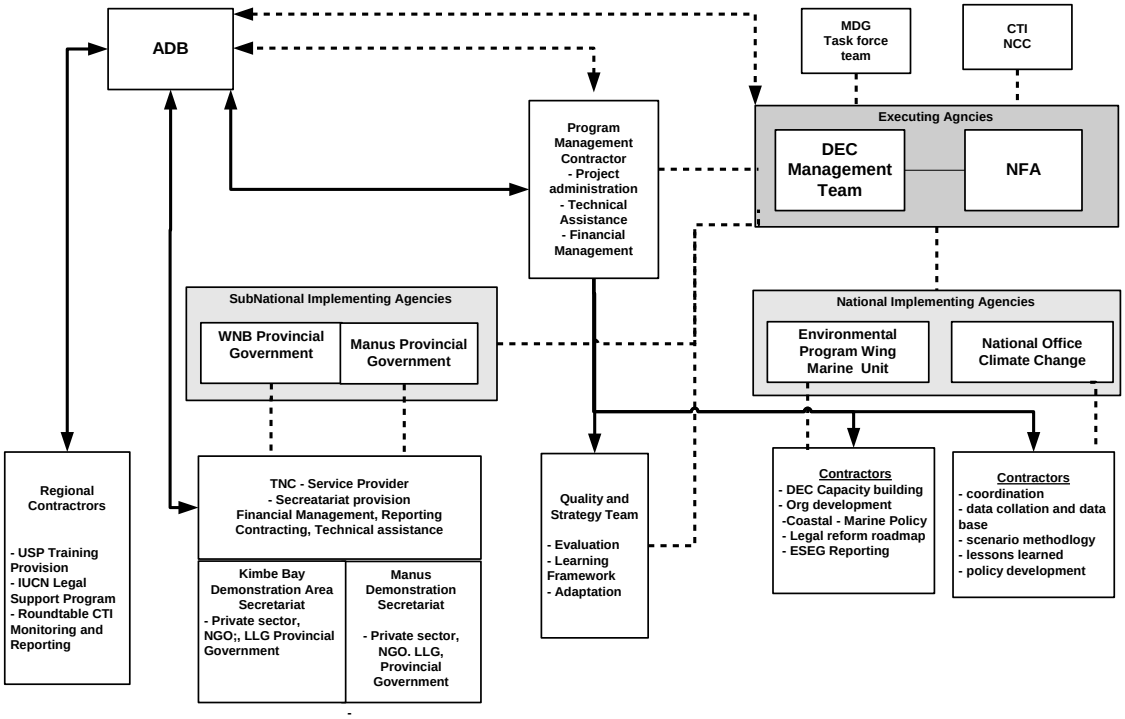
874. **Regional Evaluation** The Round Table currently chaired by IUCN will be contracted for providing round table support for supporting and hosting the annual regional evaluation program that will build on the national level quality and strategy programs. Each year the environment round table meeting will provide a session to CTI countries to have a joint evaluation and for identification of best management practices and lessons learned.

875. **Regional Legal Support** The CTI Pacific is supporting the networking of environmental legal expertise in Melanesia. IUCN is being supported to build cross country visits for training and professional development, the recruitment of local legal expertise to work on coastal and marine

resource management legal reform roadmaps, and legal drafting and training public sector lawyers in drafting.

876. The proposed implementation arrangement for the demonstration area program is presented in Figure 4 below.

Figure 12: Proposed Implementation Arrangements



Appendices

APPENDIX A DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
Impact Increased management capacity to build resilience in the capacity of coastal and marine ecosystems to contribute to food security	Productivity of marine ecosystems under management supporting a 10% increase in catch levels Coastal ecosystems assessments reporting increased diversity, and biomass relative to baseline in 2011-2012 Increased diversification in coastal community household income sources compared to surveys undertaken for management planning	Fisheries coastal assessment and monitoring surveys Government Statistics Monitoring surveys and HIES and Census data	**Assumptions** **-** management is applied to coastal resource management - ICM is effective in managing current and future threats - plans are fully implemented **Risks** - economic development and financial incentives dominate resource management no compliance due to social and traditional land use disputes - failure to adapt to changing threats - external threats from climate change dominate local management
Outcome Policy guided coastal and marine resources management with sustainable development based upon ESEG principles	Marine policy influencing sector programs ICM at each demonstration site with local livelihoods increased by 15% relative to non-participating households 13,000km^2 of Marine Managed Area covering all of Kimbe Bay 12 LMMAs with effective management plans and a 5% improvement in fish biomass 500km ^{2} of coastal habitat with increased resilience and adaptation plans being implemented	Government Statistics Project records Legal records Field surveys and project monitoring	**Assumptions** **-** program treated as a project and not institutionalized **-** DEC does not interfere in implementation roles **Risk** **-**political change
Output 1. Building organizational capability and management competency. **1.1: DEC Marine unit organizational systems strengthening**	Organization systems review completed by end PY 1 Organization systems introduced and 10 marine unit staff trained Staff mentoring program operating by mid PY 2	Project records Systems manuals	**Assumptions** **-** Staff appointed and available for training **-** Director provides leadership and controls based on agreed procedures and work-plans - trainees will be in roles to apply skills **Risks** - no staff to train

1.2: Local stakeholder capacity building in sustainable development and coastal and marine management	20 LMMA Committees strengthened 10 village court training programs completed by PY4 20 para-legal awareness programs completed by mid PY 3	Training materials Training evaluations Project records	**Assumptions;** - Communities adopt LMMA model Village court officials participate **Risks:** - Awareness creates a significant demand for legal services and results in conflict 1.
1.3: Strengthened domestic legal reform and drafting capability in PNG and DEC.	Training course delivered for legal drafting with AG and DEC staff Number of areas of involvement between CELCOR and DEC legal team	DEC and CELCOR records Training materials and evaluations	**Assumptions** **-** willingness to engage with each other **Risks** **-** no legal drafting occurs
Output 2 Defining best management practice through experiential learning **2.1 ICM and EAFM Provincial demonstrations**	Two demonstration areas linked to multi-stakeholder management covering marine and coastal areas totaling 233,000km^2 with estimated 13,000km^2 in West New Britain and 220,000km^2 in Manus Province with sustainable development plans. Land based economic development linked to ecological sustainability Certified oil palm sector meeting PNG environmental standards Food security improvement for a total of approximately 145,000 people Legal framework for 2 provinces and 4 LLG strengthened to support ESEG principles Approximately 20 communities with improved planning capacity and with LMMAs	Project records Government records Statistics Legal reforms	**Assumptions** **-** integration of fisheries, land management, tourism planning systems within community management plans and their implementation **-** management zones can be maintained in community management plans **-** Stakeholder cohesiveness and support for ICM - Land users will adapt behavior for betterment of environment **Risks** - ICM plans are not implemented - learning framework not implemented -corruption continues to define resource extraction
Output 2.2 Climate change adaptation	NOCCS with pilot data base for Manus Province	NOCCS data base SIMclim outputs and software	**Assumptions** Adequate time series data

	Domestic capacity for scenario modeling using SIMclim for up to 10 people Vulnerability assessments at community level for at least 20 communities Adaptation plans prepared for 7 wards and Manus Province with pilot demonstration actions implemented Bismarck Provinces Leadership visit to Manus raises awareness of a further 5 provinces.	purchase records Project reports	NOCCS continues and is staffed with motivated staff Adaptation is a feasible response **Risk** Software becomes too complex for available data sets
Output 3. Enabling conditions for ICM and EAFM established **Output 3.1 Learning Framework**	Regional Sustainable Development Leadership Forum in PY 1 Quality and strategy team formed by late PY 1 Annual evaluations involving the quality and strategy team with lessons identified and incorporated in the following years program by PY 2	Project records and minutes Team reports Round table reports	**Assumptions** **-** lessons identified will be incorporated into future decisions **-** **Risks**
Output 3.2: Marine Policy development	Policy forum formed and issues identified with a policy development road map by end of PY 1 Policy research and options analysis contracted and collated by end PY 2 DEC staff trained in Policy analysis and drafting by mid PY 3. Marine Policy drafted and public consulted and submitted to Minister by mid PY 4.	Policy road map Research contracted Draft policy Public consultation plan and comments received	**Assumptions** - adequate skills and motivation to develop policy **-** effective cross sector engagement **Risks** - Policy is not applied - Lack of analytical input make it generic with little focus on implementation **-**
Output 3.3 Beche de Mer policy and marketing study	Joint project working group formed between DEC and NFA Study into potential for increasing fisher marketing power through quality control, certification and auction based marketing completed by	Minutes of meetings Project records Report on Beche de Mer	**Assumptions** **- -** Adequate data to enable network planning **Risks** **-** community resource owners not engaged in protected area

	late PY 2 Joint policy paper on proposed management model for Beche de mer using ESEG principles presented to NFA and DEC by mid PY 3		system
Output 3.4 Marine and Coastal Sector Information system designed, populated from the use of remote sensing imagery	System needs and design analysis completed by mid PY 2 Remote sensing and aerial photography use as a monitoring tool defined with DEC training in the concepts by early PY 3 Remote sensing habitat mapping in demonstration areas completed by early PY 4. ESEG indicators reported to the MDG TFT for each demonstration area by mid PY 4	Design specifications Data base records Habitat maps Report to MDG TFT by DEC	**Assumptions** **-** Data system will be used and maintained by DEC GIS team **-** DEC MIS is retained and not transferred to private sector **Risks** **-** Database established but not used due to dearth of capability in DEC
Output 3.5: Sustainable Financing	Policy and legal review of options and existing schemes for the development of sustainable financing for each demonstration area by PY 3. Design of proposed system by PY 3	Draft policy review Program design document	**Assumptions** **-** Financing initiatives will be accepted at local level **Risks** **- Public sector see a revenue opportunity rather than sustainable financing**
Output 4. Program management support Output 4.1: Effective Program management	Program Management contractor contracted by mid PY 1 Effective Project management with timely planning, reports and effective implementation of program on schedule from PY 2	Project records ADB mission reports	**Assumptions** **-** PMO contracted on time - Government agencies will work collaboratively **Risks** Sectors work independently
Activities 1.0 Contracting Program Management contractor month 2 PY 1 1.1 Mobilization of technical assistance organizational strengthening and change management 1.2 DEC Marine unit Organizational system reviewed 2011 and strengthening 2013 1.3 Work planned and key performance indicators agreed by Marine Unit by 2012 1.4 Management training and tec```hnical training implemented by end of 2013 1.5 USP national agency training programs completed by 2012 1.6 USP local stakeholder training completed by 2013 1.7 EFBM training (NFA) completed by 2102 1.8 Legal training completed by end 2013 1.9 CELCOR and DEC legal support with IUCN 2012 to 2014 1.10 Marine policy supporting legal reform completed by mid 2013			Inputs ***Finance (USD)*** ADB 200,031 Government 883,941 GEF - Biodiversity 4,605,649 - Int Waters 592,434 - Clim Chge 340,369 Total 6.62 million ***Inputs (USD)*** Civil Works 232,400 P Materials 380,800

2.1 Contractor for provincial program contracted (mid PY 1) and secretariats formed (end PY1) 2.2 Management forum established 2011, strategic planning completed mid 2012 2.3 Provincial and LLG legal roadmaps completed late 2102 2.4 MMA for Kimbe Bay formed by early 2012 2.5 Threat management programs researched, designed and piloted by end of 2013 2.6 Sustainable development plan for each demonstration area including institutionalizing governance 2.7 Climate change data collation for Manus Province by 2012 2.8 Climate change scenarios generated by PNG trained software users Mid 2013 2.9 Vulnerability assessment for Manus province by end 2013 2.10 Adaptation plan prepared for Manus Province early 2014 3.1 Learning framework designed and implemented by mid 2012 3.2 Leadership forum for MSG on sustainable development for our oceans early 2011 3.3 Beche de Mer marketing alternatives study end 2012 3.4 Sustainable financing study reported by early 2013 4.0 Project Management contracted 2010	Field ops Ent Devel 190,400 Surveys 711,700 Planning 986,900 Cap Building 638,400 Training 615,810 Consultants 1,458,420 Prog. Mngte 242,240 Equipment 39,500 Transport 140,400 Total 5,636,970 Contingency 985,084 Total 6,622,054

APPENDICE B: SUSTAINABLE FINANCING

A. Sustainable Finance Options For Learning Demonstration Areas In Kimbe Bay and Manus Island

1. Background

877. The CTI – Pacific will support demonstration areas in Kimbe Bay and Manus Island. These two areas will test how the concepts of integrated coastal management (addressing land-based threats to the inshore marine ecosystem as well as marine-based threats) can be best implemented across an area that includes several existing local marine management areas.

878. Each demonstration will bring together key stakeholders through a Sustainable Development Management Forum (SDMF). Each Forum will initially produce a mid-term strategic plan of actions and annual work plans that could be taken to improve the coastal zone in the demonstration area.

879. The CTI – Pacific program for PNG could fund the first two years of activities of the two Forums. But the CTI – Pacific would like to establish and test a framework that could lead to each Forum having access to sustainable funding from a variety of sources.

2. Sustainable Financing

880. In general, there are two key parts to sustainable funding:

- Establishing or contracting a fund manager that is accountable for investing the funds as they are received into a sustainable capital fund
- Implementing a fund-raising program that is based on a funding plan that identifies funding needs, potential sources of funds, and a “charter” that describes how collected funds can be invested and eventually spent. To be sustainable, the collection of funds must be from a large number of users, each of whom make an independent decision to pay for access or use of the natural resource.

881. A sustainable fund can operate like an endowment fund, with withdrawals being allowed only from the dividends/interest from the fund, or a sinking fund, with regular replenishment of the fund required to sustain withdrawals over a number of years.

882. A fund raising program preferably will be based around regular payments or annuities, such as from a fee charged to visitors to a National Park. Fund-raising can still pursue irregular injections of capital contributions, such as from a conservation foundation that seeks to invest in a natural resource asset.

B. Current Status of Sustainable Financing in the Demonstration Areas

883. There is currently no formal sustainable finance program in operation in the demonstration areas.

884. In June 2008, The Nature Conservancy held a workshop on long-term financing options for their work on marine protected areas and locally managed marine areas in Kimbe Bay and

subsequently issued a report. The workshop identified the following sources of funding in place at the time:

Local Level Gov. LLG	18,000.00
NGOs	150,000.00
JC University	75,000.00
LMMA	15,000.00
Walindi - 1.5 student meal 30K/180days	8,100.00
TOTAL	**266,100.00**

885. The funding from James Cook University was short-term. Thus, apart from the contribution from the Walindi resort, the remaining sources of funding are grants from government or NGOs. None of the funding sources could be classed as long-term sustainable, since they are all dependent on single large donors granting the funds, rather than on many donors independently making a decision to use the natural resource and pay a contribution for so doing.

C. Sustainable Finance Option for CTI Demonstration Areas

1. Sustainable Fund

886. For the two CTI – Pacific demonstration areas, one option is to establish a sustainable fund for each demonstration area. The management of the fund could be contracted to an existing and experienced fund manager.

887. The fund manager would be responsible for establishing a stand-alone fund for each demonstration area. The fund manager would then invest each stand-alone fund, according to instructions received from each SDMF. These instructions would be in the form of a financial charter that would identify the specific goals and operating rules for each fund. For example, a goal might be investment to assure capital preservation – and not to necessarily maximize returns on the capital.

888. The fund manager would also be required to disburse funds at the request of each SDMF, again with the operating rules for disbursement being agreed at the time of finalizing the contract between the SDMF and the fund manager.

889. Essentially the fund manager would operate as a Trustee of the sustainable fund, making investment and disbursement decisions according to agreements between each SDMF and fund manager.

2. Fund Raising

890. Each SDMF should develop its own fund raising plan. This could include collecting fees from users of the natural assets in the demonstration area, seeking investments into the natural assets from either users or non-users, and seeking contributions to the operations of the SDMF.

891. Some types of fund raising could be contracted by the SDMF to third parties. These might initially include collecting a voluntary payment from tourism visitors and users of the natural assets – including from passengers of increasingly frequent cruise ship visits to the demonstration area or nearby; collecting a voluntary payment for users of the environmental services provided by the natural asset, such as absorption of nutrient loadings.

892. Preliminary indications from the Provincial government suggest that there could be as many as 5000 visitors on cruise ships to the Kimbe Bay area or nearby per year. Even a small user payment of USD 20 per head would yield USD 100,000 per year that could be invested into managing the Kimbe Bay assets.

893. Other types of fund raising could be conducted either directly through the SDMF or contracted to a third party. These might include seeking capital investments into the natural assets or donations to support SDMF operations.

894. The SDMFs could contract some fund raising activities to the selected fund manager, particularly if the fund manager has experience in establishing sustainable funds. One example would be the solicitation of capital investments from "habitual investors" into natural assets – the selected fund manager could have regular contacts with these types of investors.

3. Possible Fund Managers

895. There are three alternatives for the SDMFs to manage their funds.

896. PNG has a range of commercial banks and investment companies that could serve as the fund manager to the SDMFs. These businesses would undoubtedly work with the SDMFs on a contract basis and possibly assist the SDMFs to develop their financial and fund management charter.

897. PNG also has organizations that self-manage their funds and it would be theoretically possible for the SDMFs to self-manage their fund. An example of a self-managing a fund is the PNG Sustainable Development Program Ltd, which manages a fund that will exceed USD 1 billion. Given that the SDMF funds will be a small fraction of that – even with considerable success in fund raising – and SDMFs will not have in-house financial expertise, self–management is not a good choice for the SDMFs.

898. Finally, PNG has a non-profit organization that has some experience in fund management. Mama Graun was founded several years ago and in 2007 was restructured into its current form. It raises funds primarily from overseas foundations and distributes these to community groups who are involved in establishing and managing protected areas or conservation areas.

899. Mama Graun is interested in establishing separate funds (advisory funds) that are targeted at particular conservation areas or perhaps community groups. Mama Graun would manage these funds on behalf of interested groups.

900. If the SDMFs contracted Mama Graun to manage their funds, this arrangement could have two strengths: Mama Graun operates in the conservation arena and Mama Graun has some experience in attracting donations from overseas foundations who are interested in conservation.

901. On the other hand, Mama Graun might not be the most commercially astute fund manager, due to its limited experience so far in fund management.

D. Next Steps

902. Inclusion of a sustainable financing option in the PNG CTI – Pacific program will not likely initially yield a significant amount of cash. However, depending on the progress of economic development in the demonstration areas, one or more funding options could eventually yield a worthwhile amount of cash.

903. The CTI – Pacific program will directly fund the administration and management of each SDMF. The CTI – Pacific program will also fund some priority activities of each SDMF.

904. It is possible for the CTI – Pacific program to seed a sustainable development fund, if the seed cash would be used as a sinking fund, or perhaps a revolving loan fund. This would allow the SDMFs to undertake priority activities in future years beyond the CTI – Pacific program. Planning and implementing sustainable funding options will be included on the agenda of each of the SDMFs.

APPENDIX C: INSTITUTION BUILDING IN PAPUA NEW GUINEA: OPPORTUNITIES TO DEVELOP INDIVIDUALS IN THE DEPARTMENT OF ENVIRONMENT AND CONSERVATION AND THE NATIONAL FISHERIES AUTHORITY

Overview

The RETA design team has assessed the opportunities for both individual and organizational development in the Department of Environment and Conservation (DEC) and the National Fisheries Authority (NFA). Key recommendations are for the RETA to support (1) the upskilling of staff in both departments who work in marine management and policy development with training programs, (2) training of staff and management in the DEC to be able to understand and develop relevant policy and legislation, and how they can proactively work through processes to improve these, and (3) the improvement of processes and procedures in the DEC so that staff can function more effectively.

In August 2009, staff who work in DEC and the NFA were asked to complete two surveys. In the first, individuals were asked to rate themselves on a range of personal skills and competencies. In the second, individuals were asked to provide their perception of their organization against a range of characteristics.

The results of these surveys were compiled and analysed. Key results and issues are summarized below.

The RETA team also completed interviews with key managers in the two departments.

Based on the surveys and interviews, the RETA design team completed recommendations on organizational development (improving the organizations) and individual development (training programs for individuals in the organizations).

Surveys and Analysis

The RETA design team constructed a survey of individual skills and competencies for staff who work in environment and in particular in coastal zone management. This survey was based on similar surveys completed in the last few years by a number of organizations but in particular the University of Rhode Island.

This survey asked respondents to assess their competence in several different skill categories:

1. *Project and program management skills*. These include fundraising, proposal writing, budgeting, leadership and management, and contract management.
2. *Marine management processes*. These include integrated coastal management, science, and community participation.
3. *Tools and methods*. These include policy and legislation, spatial planning, site-based and special area management plans.
4. *Professional management*. These include conflict resolution, strategic planning, and fundraising.
5. *Technical*. These include application areas - such as water quality, ecosystems, and coral reefs – and methods, such as biodiversity assessments, community-based natural resource management, fisheries management, and core science.

In the DEC, 22 staff completed the survey; seven staff in the NFA completed the survey. In both cases, the sample size is less than 10 percent of the total staff who work in each department.

The survey results should be considered a broad indicator of staff competencies, rather than a statistically robust measure.

Staff from DEC rate their skills lower than staff from the National Fisheries Authority, as shown in Table 1. DEC staff rate their skills the lowest in Professional, which includes such things as strategic planning, facilitation, communications, and negotiations. DEC staff rate their skills the highest in Tools and Methods, which includes environmental management, site planning, spatial planning, issue profiling, and policy and legislation. NFA staff rate their skills the highest in Project Management - which includes manage meetings, fundraising, budgeting, work planning, and supervision – and Tools and Methods. NFA staff rate their skills the lowest in the Technical category, which includes ecosystem planning watershed planning, pollution control, biodiversity, and a range of disciplines such as GIS, economics, and fisheries. Within this category, NFA staff rate their technical skills the highest where the skill area falls within the current activities of NFA – planning, economics, and fisheries management.

Table 1. Summary median scores of skill levels by category

	Rating	
Skill Category	**Dept of Environment and Conservation**	**National Fisheries Authority**
Project Management	2.44	2.00
Marine Management	2.67	2.17
Tools & Methods	2.31	2.00
Professional	2.83	2.17
Technical	2.47	2.63

Self-assessment of skills by respondents
Rating is the average of medians across all questions in a skill category
1= highest, 4 = lowest

The RETA design team also constructed a survey that asked respondents to rate the characteristics of their organization. Again, this survey was based on similar surveys done previously by other organizations.

This survey asked respondents to rate their organization in the following categories:

1. *Mission* and whether it is supported and used by staff.
2. *Outputs,* including the products and services, the effectiveness of those services, and the impact of the services.
3. *Inputs,* including staff numbers, financial resources, and information.
4. *Actors,* which define the relationship the organization has with other agencies and the public.
5. *Operating Context*, which is the legal and policy framework for the organization.
6. *Strategy*, including its links with the organization's mission, annual work plans, and the monitoring of strategy.
7. *Structures*, which is the division of tasks and the coordination between departments.
8. *Systems and Processes*, including financial/administrative, and performance monitoring.
9. *Staffing,* including numbers, salaries, performance, recruitment, and development.
10. *Management Style*, including timely decision-making and staff involvement in decisions.
11. *Culture,* including staff participation, and short- vs. long-term thinking.

In DEC, 22 staff completed this survey, while 7 staff in the NFA completed this survey. The sample size in both cases is very low and thus the results will only point to broad trends in perception, rather than statistically robust results.

Results, as shown in Table 2, indicate that staff in the NFA are more positive about their organization than are staff in DEC, in every area except organizational culture. Nearly all median scores of each organizational category rated by NFA staff are significantly higher than the comparable scores by DEC staff.

Staff in DEC are particularly concerned about management style and structures of their organization. DEC staff are most positive about the mission and outputs of their organization, along with organizational culture. NFA staff are most concerned about management style, organizational culture, and structures of their organization. NFA staff are most positive about the mission, organizational inputs, operating context, and relationship with other actors.

Table 2. Summary of median scores for organizational categories

	Rating	
Organizational category	**Dept of Environment And Conservation**	**National Fisheries Authority**
Mission	2.00	1.33
Outputs	2.07	1.71
Inputs	2.67	1.58
Actors	2.00	1.53
Operating context	2.00	1.53
Strategy	2.13	2.13
Structures	3.00	2.50
Systems & processes	2.67	2.25
Staffing	2.78	2.61
Management style	3.10	2.70
Culture	2.00	2.50

Self assessment of organizational characteristics by respondents
Rating is the average of medians across all questions in a category
1= highest, 4 = lowest

Key Issues Raised by Management

In the DEC, key issues raised by management include the overall effectiveness of staff and whether they are deployed into the areas that strategically demand the most attention; the lack of competent staff; getting staff buy-in to the recent change in vision and mission of the organization; weaknesses in work planning; and lack of follow-through to deliver completed projects.

In the NFA, the key issue raised by management is the challenge for the organization to move into managing areas of fisheries other than tuna, such as inshore fisheries, fish habitat and ecoystems, and the effects of climate change.

Implications for Individual and Organizational Development

The main implication of the organizational analysis done by the RETA design team is that DEC in particular needs to be strengthened, especially in the Marine and Policy areas. To the RETA team, DEC does not appear to be a functional organization. Few staff work in the DEC office on any given day and many staff constantly travel. The continuing organizational changes have clearly unmotivated staff.

Staff skills and experience appear quite low, which is also backed up by the staff survey results. Management and leadership skills also appear quite low.

To become a functional organization will require investment in both individual training and development and institutional development.

The NFA mainly requires a kick-start to begin to manage inshore fisheries and address issues on a habitat and/or ecosystem basis, rather than a species basis. This requires staff to acquire new skills and experience and possibly at a later time some change to the organizational structure and processes.

Recommended Organizational Development Program

For DEC, the RETA team recommends that the RETA support the following key initiatives:

1. Have an expert assess the functionality, efficiency, and effectiveness of the Environment Programs wing of DEC.
2. Based on the results of that assessment, contract an expert to develop the systems, processes, and operational procedures for the effective functioning of the wing. The expert will also serve as a mentor and organize training courses.
3. Contract a senior expert to serve as a mentor specifically to staff in the Marine Unit of DEC.
4. Conduct a training program for staff in community-based natural resources management, coastal zone management, and sustainable development.
5. Provide technical legal assistance to assess what legislative, regulatory, and policy developments are required for DEC to effectively manage its mandate in coastal marine natural resources, and particularly the effects from land-based threats.
6. Provide legal assistance to draft some elements of the required legal program.
7. Provide training to DEC policy staff in legislative drafting.
8. Provide technical assistance to DEC to develop a marine policy, with particular attention to coastal zone management..
9. Provide a core of technical experts to assist DEC develop capacity in natural resource economics, social assessment, and policy/legal development.

For NFA, the RETA team recommends the following key initiatives:

1. Provide training to NFA staff, along with community leaders and NGOs in ecosystem-based fisheries management.
2. Provide technical economic and policy assistance to develop a new framework for NFA to manage the production and marketing of beche de mer. This is an opportunity for NFA to manage an important coastal resource in a way that delivers more profits to the communities who control beche de mer but yet making this resource m ore available for long periods of time.
3. Provide technical assistance to NFA to develop habitat and ecosystem-based spatial information databases for Manus Province. This will take some existing information, complement that with more data, and place the data in an ecosystem context.

For both organizations, the RETA team recommends providing technical assistance to improve the understanding of the threat of climate change, the vulnerability of coastal communities and ecosystems, and potential methods for these communities to adapt to climate change. This assistance should be provided through the Office of Climate Change, who will work with both organizations to include climate change risks and mitigations in their policy work on coastal zones.

APPENDIX D: DETAILED COSTS BY FINANCIER

.	Base (USD)						Financing with Contingencies (USD)				
	Year 1	Year 2	Year 3	Year 4	Total	Total USD w/ Contgies	IW	CC	BD	ADB	Govt
Project coordination - staff (1 Dir, 1 Fin, 1 Admin)	30,000	40,000	40,000	40,000	150,000	179,330	35,866	0	35,866	107,598	0
Project coordination - local transport	21,600	21,600	21,600	21,600	86,400	102,616	102,616	0	0	0	0
Project coordination - office equipment	13,500	0	0	0	13,500	14,445	0	0	0	14,445	0
Project coordination - meeting costs	12,500	12,500	12,500	12,500	50,000	59,384	59,384	0	0	0	0
Project coordination - accounting and overhead	10,560	10,560	10,560	10,560	42,240	50,168	0	0	0	50,168	0
Capacity Building											
DEC - int'l TA for org assessment (2 mnths)	58,000	0	0	0	58,000	62,060	0	0	62,060	0	0
DEC - int'l TA for org systems (9 mnths)	125,250	125,250	0	0	250,500	277,416	0	0	277,416	0	0
DEC - dom TA for senior mentor (9 mnths)	18,000	18,000	18,000	0	54,000	61,919	0	0	61,919	0	0
Training - DEC in CBNRM (4 weeks, USP)	45,300	0	0	0	45,300	48,471	16,965	0	31,506	0	0
Training - DEC in ICM (4 weeks, USP)	0	45,300	0	0	45,300	51,864	25,932	0	25,932	0	0
Training - DEC in sustainable development (2 weeks, USP)	0	0	22,750	0	22,750	27,870	13,935	0	13,935	0	0
Training - community in CBNRM (12 courses, 1 week ea, dom train	16,300	48,900	0	0	65,200	73,427	36,713	0	36,713	0	0
Training - community in ICM (12 courses, 1 week, dom trainer)	16,300	48,900	0	0	65,200	73,427	36,713	0	36,713	0	0
Training - community in sustainable development (12 courses, 1 we	0	16,300	48,900	0	65,200	78,566	39,283	0	39,283	0	0
Training - community in EBFM (15 courses, 4 days, dom trainer)	32,600	32,600	0	0	65,200	72,206	36,103	0	36,103	0	0
Training - for village court officials (2 courses, 5 days ea, dom traine	0	10,520	0	0	10,520	12,044	6,022	0	6,022	0	0
Training - community in legal rights (45 courses, 2.5 days ea, dom t	0	16,300	32,600	0	48,900	58,598	29,299	0	29,299	0	0
Training - LMMA in data collection & analysis (8 courses, 3 days ea	0	6,650	6,650	0	13,300	15,760	11,820	0	3,940	0	0

.	Year 1	Year 2	Year 3	Year 4	Total	Total USD w/ Contgies	IW	CC	BD	ADB	Govt
Demonstrations											
Kimbe Mgmt Forum - initial consultation (1 month dom consult; 1 w	23,200	0	0	0	23,200	24,824	0	0	24,824	0	0
Kimbe Mgmt Forum - secretariat two roles	31,800	42,400	42,400	0	116,600	134,512	67,256	0	67,256	0	0
Kimbe Mgmt Forum - inaugural forum	12,000	0	0	0	12,000	12,840	0	0	12,840	0	0
Kimbe Mgmt Forum - dom TA for operating charter (1 month)	0	13,300	0	0	13,300	15,227	0	0	15,227	0	0
Kimbe Mgmt Forum - dom TA for strategy and annual plans (3 mon	0	37,900	0	0	37,900	43,392	0	0	43,392	0	0
Kimbe Mgmt Forum - meetings	36,000	48,000	48,000	48,000	180,000	215,195	0	0	215,195	0	0
Kimbe Mgmt Forum - staff travel	5,400	7,200	7,200	7,200	27,000	32,279	0	0	32,279	0	0
Kimbe Mgmt Forum - joint meetings with Manus Mgmt Forum	0	12,000	12,000	12,000	36,000	44,169	0	0	44,169	0	0
Kimbe Mgmt Forum - office equipment	11,000	0	0	0	11,000	11,770	0	0	0	11,770	0
Kimbe Mgmt Forum - study on sediment	0	60,500	0	0	60,500	69,266	0	0	69,266	0	0
Kimbe Mgmt Forum - study on nutrient	0	60,500	0	0	60,500	69,266	0	0	69,266	0	0
Kimbe Mgmt Forum - study on sanitation, wastewater, solid waste	0	60,500	0	0	60,500	69,266	0	0	69,266	0	0
Kimbe Mgmt Forum - study on livelihoods	0	60,500	0	0	60,500	69,266	0	0	69,266	0	0
Kimbe Mgmt Forum - establish info data base and indicators	12,000	12,000	12,000	12,000	48,000	57,009	0	0	57,009	0	0
Kimbe Mgmt Forum - pilot on sedimentation	0	25,000	50,000	25,000	100,000	122,645	0	0	122,645	0	0
Kimbe Mgmt Forum - pilot on nutrients	0	25,000	50,000	25,000	100,000	122,645	0	0	122,645	0	0
Kimbe Mgmt Forum - pilot on sanitation, wastewater, solid waste	0	25,000	50,000	25,000	100,000	122,645	0	0	122,645	0	0
Kimbe Mgmt Forum - pilot on livelihoods	0	25,000	50,000	25,000	100,000	122,645	0	0	122,645	0	0
Kimbe Mgmt Forum - water quality testing	0	15,000	15,000	0	30,000	35,549	0	0	35,549	0	0
Manus Mgmt Forum - initial consultation (1 month dom consultant)	24,000	0	0	0	24,000	25,680	0	0	0	0	25,680
Manus Mgmt Forum - secretariat two roles	31,800	42,400	42,400	0	116,600	134,512	67,256	0	67,256	0	0
Manus Mgmt Forum - inaugural forum	12,000	0	0	0	12,000	12,840	0	0	0	0	12,840
Manus Mgmt Forum - dom TA for operating charter (1 month dom c	13,300	0	0	0	13,300	14,231	0	0	0	0	14,231
Manus Mgmt Forum - dom TA for strategy and annual plans (1.2 m	22,000	0	0	0	22,000	23,540	0	0	0	0	23,540
Manus Mgmt Forum - meetings	36,000	48,000	48,000	48,000	180,000	215,195	0	0	0	0	215,195
Manus Mgmt Forum - staff travel	5,400	7,200	7,200	7,200	27,000	32,279	0	0	0	0	32,279
Manus Mgmt Forum - joint meetings with Kimbe Mgmt Forum	0	12,000	12,000	12,000	36,000	44,169	0	0	0	0	44,169
Manus Mgmt Forum - office equipment	11,000	0	0	0	11,000	11,770	0	0	0	11,770	0
Manus Mgmt Forum - study on sediment	0	60,500	0	0	60,500	69,266	0	0	0	0	69,266
Manus Mgmt Forum - study on nutrient	0	60,500	0	0	60,500	69,266	0	0	0	0	69,266
Manus Mgmt Forum - stuidy on sanitation, wastewater, solid waste	0	60,500	0	0	60,500	69,266	0	0	0	0	69,266
Manus Mgmt Forum - study on livelihoods	0	60,500	0	0	60,500	69,266	0	0	0	0	69,266
Manus Mgmt Forum - establish info data base and indicators	12,000	12,000	12,000	12,000	48,000	57,009	0	0	0	0	57,009
Manus Mgmt Forum - pilot on sedimentation	0	25,000	40,400	25,000	90,400	110,884	0	0	0	0	110,884
Manus Mgmt Forum - pilot on nutrients	0	25,000	40,400	25,000	90,400	110,884	0	0	0	0	110,884
Manus Mgmt Forum - pilot on sanitation, wastewater, solid waste	0	25,000	40,400	25,000	90,400	110,884	0	0	0	0	110,884
Manus Mgmt Forum - pilot on livelihoods	0	25,000	40,400	25,000	90,400	110,884	0	0	0	0	110,884
Manus Mgmt Forum - water quality testing	0	15,000	15,000	0	30,000	35,549	0	0	0	0	35,549
Legal Review of LLG and Provincial resource mgmt - regional IUCN	0	44,100	22,050	22,050	88,200	106,405	0	0	106,405	0	0
Legal support - regional IUCN	8,000	15,000	15,000	15,000	53,000	63,771	0	0	63,771	0	0
Legislation Drafting (16 months domestic)	0	0	48,000	48,000	96,000	121,720	0	0	0	0	121,720
Community paralegal training (6 communities per yr, 1 week ea, do	0	23,680	23,680	23,680	71,040	87,160	0	0	87,160	0	0
Kimbe LMMA training (1 month per year, dom trainer)	0	13,300	13,300	13,300	39,900	48,954	0	0	14,686	0	34,268
Kimbe TA for MMA establishment (2 months, dom consult)	0	0	13,300	13,300	26,600	33,727	0	13,491	20,236	0	0
Manus transects	0	0	10,000	0	10,000	12,250	0	0	12,250	0	0
Manus habitat mapping	0	0	12,000	0	12,000	14,701	0	0	14,701	0	0
Fish market - TA for design (1 month dom consult)	0	13,300	0	0	13,300	15,227	0	0	15,227	0	0
Fish market - survey	0	4,080	16,160	16,160	36,400	45,650	0	0	11,413	0	34,238
Sustainable development - dom TA for cost-benefit & tradeoffs (6 m	0	37,900	37,900	0	75,800	89,821	0	0	35,928	0	53,893
Community livelihood options dom TA (2 months)	25,800	0	0	0	25,800	27,606	0	0	11,042	0	16,564
DEC sustainability indicators workshops	36,000	0	0	0	36,000	38,520	0	0	15,408	0	23,112
DEC dom TA to estimate indicators for demo areas (6 months)	0	63,000	0	12,600	75,600	88,645	0	0	31,026	0	57,619
NFA demo reporting via MDG indicators	0	8,700	0	8,700	17,400	21,365	0	0	21,365	0	0
Climate Change											
Data collection - dom TA (9 months)	14,500	43,500	0	0	58,000	65,318	0	65,318	0	0	0
Data storage - server	4,000	0	0	0	4,000	4,280	0	0	0	4,280	0
Scenario development - int'l contractor	0	88,000	0	0	88,000	100,751	0	100,751	0	0	0
Community vulnerability - 21 local meetings; dom consult	0	55,100	0	0	55,100	63,084	0	63,084	0	0	0
Adaptation planning - dom TA (2 months)	0	17,000	8,500	0	25,500	29,876	0	29,876	0	0	0
Pilot demonstrations - 4 communities	0	0	42,000	105,000	42,000	68,252	0	68,252	0	0	0
Learning communications - 1 forum, printed guidelines	0	0	18,000	0	18,000	22,051	0	22,051	0	0	0
Enabling Conditions											
DEC marine policy workshop (1 large forum, 2 small meetings)	12,000	8,000	0	0	20,000	21,999	0	0	0	0	21,999
DEC marine policy studies (3 studies)	0	30,000	30,000	0	60,000	71,098	0	0	21,329	0	49,769
DEC dom TA for lit review on policy tools (2 months)	6,000	6,000	0	0	12,000	13,289	0	0	3,987	0	9,303
DEC dom TA for resource economics (1 month for ea of 3 yrs)	0	6,000	6,000	6,000	18,000	22,084	0	0	6,625	0	15,459
DEC dom TA for social assessment (1 month for each of 3 years)	0	6,000	6,000	6,000	18,000	22,084	0	0	6,625	0	15,459
DEC dom TA for legal reform (1 month for each of 3 years)	0	6,000	6,000	6,000	18,000	22,084	0	0	6,625	0	15,459
DEC training in policy drafting - int'l TA (2 months)	0	58,000	0	0	58,000	66,404	0	0	19,921	0	46,483
DEC media budget	0	0	8,000	8,000	16,000	20,287	0	0	0	0	20,287
DEC policy implementation	0	0	8,000	0	8,000	9,800	0	0	0	0	9,800
NFA int'l TA on beche de mer (2 months economics and markets)	30,000	30,000	0	0	60,000	66,447	0	0	66,447	0	0
NFA int'l TA on beche de mer (2 months production and quality)	30,000	30,000	0	0	60,000	66,447	0	0	66,447	0	0
DEC int'l TA on data design (6 months)	126,080	42,040	0	0	168,120	183,037	0	0	183,037	0	0
DEC dom TA on data collation (10 months)	6,000	36,000	18,000	0	60,000	69,687	0	0	20,906	0	48,781
Census development on fishing sector - Nat'l Stats Office	0	12,000	0	0	12,000	13,739	0	0	0	0	13,739
DEC remote sensing int'l TA (6.5 months)	0	92,000	92,000	0	184,000	218,035	0	0	218,035	0	0
Sustainable financing int'l TA (2 months)	0	0	58,000	0	58,000	71,052	0	0	71,052	0	0
Quality and Strategy	30,500	30,500	30,500	30,500	122,000	144,898	0	0	144,898	0	0
Senior officials travel to CTI meetings	21,000	21,000	21,000	21,000	84,000	99,766	0	0	0	0	99,766
Roundtable policy leadership forum	50,000	0	0	0	50,000	53,500	0	0	53,500	0	0
Roundtable learning framework	32,800	32,800	32,800	32,800	131,200	155,824	0	0	155,824	0	0
	1,131,490	**2,334,780**	**1,444,550**	**831,150**	**5,636,970**	**6,622,054**	**585,164**	**362,823**	**3,585,226**	**200,031**	**1,888,811**

Supplementary Appendix E
Solomon Islands Detailed Project Design
Country Program

Draft Final Technical Assistance Report

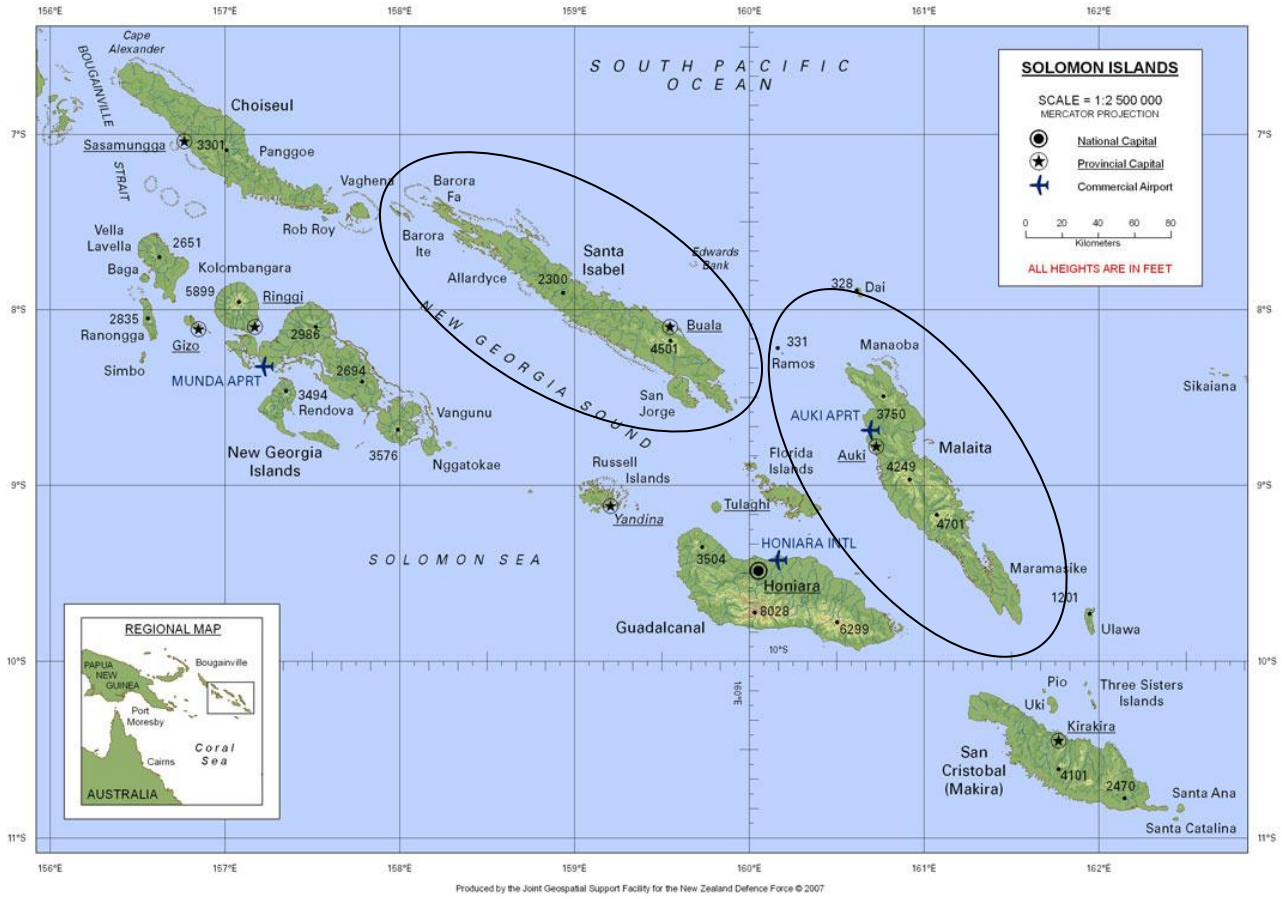
for

RETA 6741 Strengthening Coastal and Marine Resources in the Coral Triangle of the Pacific

ADB, GEF and AIMS Financed

No Official Comments have been received on this document. Once received they will be incorporated into the final document June 10, 2010

Figure 13: Demonstration Program Areas of Work



XIII. INTRODUCTION

905. The following Appendix presents the country level program for Solomon Islands within the Regional Technical Assistance (RETA) program for the Coral Triangle Initiative – Pacific program. The RETA is operating within five countries including Timor Leste, Solomon Islands, Papua New Guinea, Fiji, and Vanuatu. The overall Program documentation will comprise a consolidated RETA technical assistance document and a GEF CEO endorsement template. These documents will, by page limit necessity, be highly aggregated data and descriptions that will not define detailed country level programs.

906. The RETA has prepared individual country reports to present detailed country level programs to support review, ratification, and most importantly implementation of the program.

XIV. ISSUES

A. Background

907. The economy of Solomon Islands is principally based on timber, fish, copra, cocoa, oil palm and minerals. Social unrest in late 1998 resulted in significant reductions in output for these commodities. Most importantly, the closure of the Solomon Islands Plantations Limited (SIPL) which specialized in palm oil and kernel export and the Gold Ridge Mining Ltd (GRML) which was exporting gold and silver resulted in a very limited basis for generating export volume and returns. In 2000, the Central Bank of Solomon Islands (CBSI 2001) reported a record low in the total export of individual commodities: logs = 536,000 cubic meters, fish = 21,163 tonnes, copra = 19,004 tonnes, coconut oil = 8,553 tonnes, cocoa = 2,315 tonnes, palm oil and kernel = nil (closed), gold = 49,954 ounces and silver = 20,744 ounces (before closure).

908. However, the economy recovered post 2000 with a significant economic turn around beginning in 2002. The turn around reflected increased output of the productive sectors and the introduction of the regional assistance mission to Solomon Islands (RAMSI) in July 2003. Consequently, a 5.8% economic growth in real term was achieved, and was attributed to rural communities participating in small scale economic activities (e.g. farming and fishing).

909. In 2007, the economy has grown by 10.3%, the highest in two decades. Forestry sector remains the largest contributor followed by fisheries and agriculture, especially palm oil products, copra and cocoa. The contribution of primary resource based sectors to GDP in 2002 was approximately 22% of which forestry supplied 11%, fisheries 6.2%, agriculture 5.9%, mining exploration -0.6%. By 2007 these sectors supplied 32% of total GDP (which had increased from SBD 1301 million to 1952 million in 1985 prices) with forestry now contributing 20%, agriculture 7.5%. fisheries 5.7% and mining exploration -0.2%.

910. Fisheries accounts for approximately 25% of export earnings based mostly on an abundance of tuna spp. Fisheries has a dual structure with commercial or industrial fishing estimated to catch up to 64,000t per annum and a mixed subsistence near shore fishery.

911. The logging sector was less affected by social unrest and was increasingly relied upon to support export earnings. Log extraction increased from 500,000m^3 in 2000 to 1,446,003m^3 round logs exported in 2005 and 1,130,365m^3 in 2006. Sustainable harvest levels are estimated at 200,000m^3. In 2008 round logs and milled timber contributed 70% of export earnings. Forest cover in 1990 was 80% a figure that declined to 60% in 2009. Forest sector forecasts indicate the total loss of export wood volume by 2015 by which time commercially viable natural forest logging will have exhausted wood supply.

912. The Solomon Islands government faces a prolonged period of fiscal restraint if debt levels are to remain manageable. This need reflects rapidly increasing public sector costs relative to revenue flows and the realization that revenue flows have been enhanced through increased logging of natural forests. The supply of wood for logging is now extremely limited and by 2013 to 2015 the logging sector output will effectively fall to zero.

913. The ability of the SIG to support widespread cost increases in coastal or marine resource management in both human resources and financial terms is unlikely. Government services in the sector are focused primarily on commercial fisheries and there is only limited skills and experience in coastal resources and fishery management.

914. Ideally Provincial agencies would be held responsible for this but their capabilities in staffing and financial terms are constrained. Provincial staff do not have significant linkages with communities and the lack of budget resources mean that the expense of boats and travel is beyond either the short or long run capacity of most Provinces.

915. Community based management systems are essential both in terms of human rights and also due to the lack of effective government alternatives. Communities and their constituent tribes, clans and families control customary owned resources and are the primary decision maler regarding their use. Social conflict and ongoing social wellbeing issues are being faced by the majority of Solomon Islanders. Given this situation, food and security needs predominate over environmental concerns. Therefore, CTI Pacific programs will need to deliver increased security and tangible benefits if it is to be effective.

916. An outcome and cause of uprisings has been the displacement of large numbers of people to areas with increased social and economic opportunity. The movement of people, combined with declining resources per capita due to population growth is challenging the effectiveness of traditional leadership and authority systems. Support for these systems is essential in securing food supplies from coastal and marine resources. While necessary there is also increasing recognition that such approaches will not be sufficient to achieve social and economic imperatives regarding improved social wellbeing and sustainable management of coastal and marine resources.

917. Communities are however not only coast or marine reliant. Agriculture land per capita that has been plentiful for the technology being used is increasingly under pressure with resultant yield and output reductions resulting in increased garden size, shorter fallow periods, and declining soil fertility. There is already evidence that increased populations and the pressure for cash have tipped the balance in some communities resulting in competition of resources, theft and a general break down of authority.

918. Communities increasingly need cash to gain access to essential services (education and health) and consumables including fuel, kerosene, food and alcohol and tobacco. The requirements of cash along with increased social pressures will continue to challenge traditional community social structures and potentially undermine their ability to deliver cost effective management of coastal and marine resources. Developing local resilience to these pressures is a critical factor for achieving sustainable coastal resource management.

919. Community level management systems need to be assisted to improve output of natural resources to meet growing demand. For coastal and marine resources this means building understanding of resources, ensuring essential habitat is not lost, and managing resources in a manner that they are replenished and sustained.

920. Even with improved management the CTI program and the communities that it supports can only buy time. The current population trends are such that the natural resource system will not support the level of demand to maintain a growing population at current levels of demand per capita.

921. Bell et al in assessing the sustainability of fisheries estimated that the current Solomon island fish consumption is 33 kg/annum of which 64% was derived from subsistence based reef fishing. In total the reef systems were predicted to produce nearly 14,000mt per annum however the 2010 demand was estimated to be 18,000 mt and as such declining biomass and productivity was expected. The scenario is bleak when future demand increases are included as by 2020 demand is predicted to be 65% higher than productivity and by 2030 some 210% of the predicted in-shore fishery productivity.

922. Clearly near shore fish resources even with management will not ensure food security. The CTI program will only provide additional time in which wider structural adjustments can occur to ensure that demand and supply are more closely aligned.

B. Coastal Environments

923. Solomon Islands is rich in marine habitats including coral reefs, mangroves, seagrass beds, and in the marine species that rely on these habitats including pelagic and reef fish, Beche de mer, corals, sea grass beds dolphins, crabs, crayfish, clams, seaweed, crocodiles, shark, turtle and dugong. Coral resources are still not fully understood however the 2004[5] survey found one of highest diversities of corals anywhere in the world. A total of 494 species were recorded which included 485 known species and nine that were not previously recorded. This extraordinarily high diversity of coral species is the second highest in the world, second only to the Raja Ampat Islands of eastern Indonesia. Of the described species, 122 species have their known ranges extended by this study.

924. In the Solomon Islands, seagrass beds are found from the intertidal to subtidal, along mangrove coastlines, estuaries, shallow embayments, as well as around coral reefs, inter-reef and offshore island situations. Seagrass biodiversity is considered high in the Solomon Islands. Seagrass and mangroves are an important natural element to climate adaptation for many coastal local villages and provide vital habitat for juvenile fish species, act as natural barriers to storms surges and provide a natural filtering system for land-based nutrients that enter into the coastal system.

925. The Solomon Islands possess one of the richest concentrations of reef fishes in the world (TNC,2004). A total of 1,019 fish species were recorded, of which 786 were observed during the survey and the rest were found from museum collections. A formula for predicting the total reef fish fauna indicates that at least 1,159 species can be expected to occur in the Solomon Islands in 2004. Forty-seven new distributional records were obtained, including at least one new species of cardinal fish. The number of species visually surveyed at each site ranged from 100 to 279, with an average of 184.7. Two hundred or more species per site is considered the benchmark for an excellent fish count, and this figure was achieved at 37 percent of the sites. One site (Njari Island, Gizo) was the fourth highest fish count ever recorded for a single dive, surpassed only by three sites in the Raja Ampat Islands.

926. The fisheries industry in Solomon Islands is dominated by Tuna but also includes a large range of other animals including bêche-de-mer (sea cucumbers), cetaceans, clams, trochus, green snails, lobster and a seaweed industry. There are twenty-two known species of sea cucumber, along with a few undescribed species that are being exploited in various provinces in Solomon Islands. Bêche-de-mer is an important resource for many coastal communities, and it is thought that exports started as early as 1845. The export industry was well established by the late 1870s and early 1880s when up to 90 mt of bêche-de-mer was being exported to Australia annually (Bennett 1987 cited in Kinch et al. 2005). It is currently a multi-million-dollar industry, and is the second most valuable marine resource after tuna to the national economy. Total exports rose from 7.3 mt in 1981 (Skewes, 1990) to a peak of 715.4 mt in 1992 (Holland 1994). In 2004, 408.7 mt were exported (Kinch et al. 2005).

1. Coastal & Marine Resource Threats

927. The Solomon Islands have a diverse range of terrestrial and marine ecosystems that are being impacted by human actions in response to economic and social demands. The spatial and temporal extent of the impacts is related to the type of human actions, the local terrain, previous management and operational practices, and local climatic conditions. Some of these impacts create only short-term alterations to the local environment but have cumulative impacts for the seascape. This includes elevated levels of sediment and nutrients from excessive erosion entering the streams and rivers and ultimately moving to the receiving environment, which is the inshore marine zone.

a. Rapidly increasing population

928. With an estimated 2009 population of 595,613 and an annual growth rate of 2.8% (one of the world's highest), the population is expected to double by 2020. Eighty-five percent of Solomon

[5] Green,A.,et.al.; ed. 2004. Solomon Islands Marine Assessment

Islanders live in rural village communities, most of which are dependent on the sea for their livelihoods. Like other emerging Pacific Island nations with fast growing populations, the Solomon Islands is rapidly depleting its forests, and some fisheries. In some areas of the country, valuable marine resources such as bech-de-mer, trochus, and giant clams have been so heavily exploited that they have almost completely disappeared. Commercially valuable coral reef fish species are also beginning to show signs of overfishing in several provinces. With an increasing population, the pressures on these coastal resources will only be exacerbated without effective management actions.

b. Customary land and sea tenure

929. A large proportion (estimated at between 85% and 90%) of land and in-shore marine areas in the Solomon Islands is customarily owned by family groups or clans living in the subsistence, village-living populations. Sustainable coastal management inevitably entails the tenurial status of coastal land and in-shore marine areas because ownership largely determines where authority for resource management resides.

930. Resource management rights and responsibilities in the Solomon Islands is described as: "local clan groups led by chiefs hold land and sea areas under customary tenure and are able to control rights of access, use and development of resources" (Lane, 2006). Legally and constitutionally the situation is more complex – natural resources are vested in the people of the Solomon Islands and their government

931. The 'partnership between the people and Government' is not necessarily recognized and the resource sovereignty of customary landowners is the dominant refrain. This creates a culture whereby Government regulation of customary-held land and resources is limited and in which customary landowners have largely unfettered decision-making rights (Lane, 2006).

932. Without a 'whole-of-system' approach to the issues impacting on coastal resources and an overarching management plan or regulations which are adhered to, any zone along the coast in which a landowner or community focus on conserving the resources, can still be impacted by an adjoining area in which there is no management or conservation of the resources.

c. Dependence on coastal resources

933. The country is rich in natural resources mainly timber, pelagic fisheries (tuna) and minerals. However there is a strong dependency on coastal resources for subsistence and low-level economic activities. The conservation of the coastal resources is very important as it supports remote communities and has direct links to the health and wellbeing of the communities

934. The main environmental issues impacting on the coastal areas are the rapid increase of sediments into the rivers and streams as a consequence of soil erosion caused by poor logging practices, the loss of natural vegetation due to intensive agriculture operations such as plantations, over fishing and, increased waste as a result of urbanization in some areas as well as climate change impacts.

d. Climate Change

935. Degraded ecosystems face accelerated risks from extreme weather events including an increased vulnerability to climate change. Events such as increased intensity and frequency of cyclones, El Niño effects, and extreme droughts/floods, increase their vulnerability, especially posing a threat to food security.

C. Environmental Problems

936. The key environmental problems in the Solomon Islands are all interlinked and include: logging; deforestation; soil erosion and sedimentation; poor agricultural landuse; poor water quality; loss of habitat and biodiversity; poor fishing practices, and; natural disasters.

937. **Logging practices** are resulting in widespread adverse environmental impacts leading to deforestation, soil erosion and sedimentation, water quality impacts, loss of habitat and biodiversity, and loss of future opportunities for alternative sustainable livelihoods. Logging by clear felling of native forests and harvesting plantation timbers creates impacts at a local level. These impacts are reflected within the marine environment. Impacts include a loss of local biodiversity and increases in invasive species, as well as increasing erosion of the slopes. Although the coastal ecosystems can adapt to low levels of sediments, excessive loads of sediments entering the system from the streams leads to long-term ecological damage as is the case in some areas in the Solomon Islands.

938. The downstream effects include declines in local water quality and impacts to the adjacent coral reefs and hence impacts to local marine resources. This sediment run-off can create local stress to coral reefs as excess fine sediments on live coral can have long-term impacts to the survival of individual coral colonies. Corals, seagrasses and other marine habitats can tolerate low levels of sediment (due to natural erosions and runoff), however, excessive amounts of sediments entering the marine habitats will result in a degradation in coral reef health, smothering of seagrasses and impacts further along the food chain.

939. The Solomon Islands "Code of Logging Practice" sets out a framework for reducing downstream impacts and focuses on key standards which had been identified as harvesting protected and exclusion areas, location of roads and landings, operational best practices relating to transport, road construction, felling, maximizing log value, and reducing waste. Government policy has five areas of interest including: a long-term view of the sector; sustainable economic growth via the protection of the economic value of the sector' increase local participation; protection of environment and ecosystems, and; leaving commercial plantation development to the private sector.

940. **Over fishing** is a result of harvest levels exceeding recruitment levels, which subsequently leads to a collapse in some species abundance. Destructive fishing results in damage to the supporting habitat. Over fishing of sedentary species such as Beche de Mer, trochus and other shellfish is common in areas of the Solomon Islands. Continued unsustainable fishing activities reduce community levels of food security; reduces the level of marine biodiversity, and disrupts the robustness of the coastal ecosystems.

941. Fishing practices are increasingly depleting valuable and fragile coastal and marine resources as they damage the habitat that supports fish abundance and diversity (destructive fishing); reduce the breeding stock of fish species due to harvesting of fish prior to breeding cycles (overfishing), and; target fishing of certain species that impacts on biodiversity (over exploitation of sedentary species). In the absence of a clear and targeted national direction, the inshore fisheries sector has suffered from inefficiencies and ineffective management with limited benefits flowing to the people of the Solomon Islands. This has been further compounded by a history of Government attempts to encourage the commercialization of reef fin fisheries through the provision of subsidy and incentives for the establishment of rural fisheries centers. A recent review NZAID SIMROS project has found most centers to be non-operational and non-viable.

942. **Pollution and solid waste streams** lack management and appropriate final disposal. Within the Solomon Islands there has been increasing volumes of waste, which is being generated from packaging in as a result of communities moving from a subsistence economy to a commercial market economy. Uncontrolled waste disposal leads to degraded water quality through concentrations of contaminates, and contributes to environmental health issues and contaminated food chains via bioaccumulation of heavy metals. Without management plans which focus on the appropriate disposal of solid wastes, the coastal and marine environment will continue to be impacted upon from the contaminates associated with wastes.

943. **Natural Disasters.** Solomon Islands experience severe tropical cyclones during the summer months of December to February, and is also vulnerable to anomalously long dry spells associated with the warm phase of the El Nino-Southern Oscillation (ENSO).

944. Solomon Islands is also highly vulnerable to other extreme climate events including, for example, coral bleaching associated with high ocean surface temperatures and/or extremely low tides. The impacts of climate-related events are felt right across the nation's economic, social and environmental systems, thus making future changes in climate, including extreme events, an issue of

great concern nationally. The Solomon Islands are prone to natural disasters. Most recently a Tsunami struck the islands of Western Province causing considerable loss of life and causing damage to infrastructure and housing.

D. Institutional Capability

1. Ministry of Environment, Conservation and Meteorology

945. Established late in 2007 the Ministry of Environment, Conservation and Meteorology is still being built with wide reaching responsibilities and high expectations for the improved management of the environment, conservation of biodiversity, management and adaptation to climate change and provision of meteorological services.

946. These responsibilities of the Ministry are principally provided for under the Environment Act 1998 and the Wildlife Protection Act 1998. MECM is also the Government focal point for reporting commitments and obligations of international conventions, especially on the United Nations Convention on Biological Diversity (UNCBD) ratified in 1995.

947. The Ministry is expected to provide the following outcomes:

- Environmental awareness improved
- Laws and regulations to safeguard the environment are applied
- Cooperative arrangements with extractive industries to protect eco-systems
- Indigenous flora and fauna are protected by legislation.
- Funding for climate change adaptation projects is secured.
- Commitments under international conventions are upheld.
- National Adaptation Plan for climate change particularly for vulnerable communities.

948. The 87 positions within the Ministry are 70% filled and the staffing process is ongoing but limited by public finances. The Ministry is structured into three technical divisions and a corporate services division; each has different mission, objectives and functions. These divisions are: Environment and Conservation (ECD) with responsibility for environmental protection and conservation of biodiversity; Meteorology (MD); Climatology (CD) and; Corporate Services (CSD).

a. Environment and Conservation Division

949. The mission of Environment and Conservation Division (ECD) is to “improve and strengthen the institutional and administrative capacity of the Division and to be able to promote the protection, conservation and sustainable management of the use of the environment and natural resources of Solomon Islands”, with the overarching objective being to promote the protection, restoration and enhancement of the quality of the environment of Solomon Islands for the maximum benefit and welfare of Solomon Islanders with views of promoting Sustainable Development.

950. In pursuit of its stated objectives, the ECD operates along and within the requirements of the Environment Act 1998 and the Wildlife Protection and Management Act 1998 as well as other regional and global treaties, and ensures all parties concerned are complying with these laws and conventions. The ECD is mandated to carry out the following functions:

- environmental impact assessment;
- environmental auditing;
- conservation area management and development;
- biodiversity planning and conservation;
- waste management and pollution prevention;
- environmental planning;
- invasive species management;
- environmental awareness and education;

- biological safety;
- chemicals management; and
- sustainable development issues.

b. Meteorological Division

951. The Meteorological Division's Mission is to "modernise, strengthen and enhance the institutional and administrative capacity and to be able to provide improved and better meteorological services for the protection of lives, properties and become an effective partner in the socio-economic development of the country", with the objective to "ensure that the government, people and all sectors of the country receive relevant weather information services for safety of their lives, properties and the socio-economic development of the country."

952. The functions and responsibilities of the Meteorological Division are provided for in the Meteorological Services Act 1985. In addition to this, the work of the Division is guided by the regulations and standards of the World Meteorological Organization. The main functions of the Division include:

- Forecasting – provision of weather forecasting services and tropical cyclone warnings
- Technical – provides technical support services for the Division
- Operations – manage and collect meteorological data from the surface and upper-air observations network
- Training and Development – Provision of training and staff development to all Meteorological Officers and the general public.

c. Climatology Division

953. The mission of the Climatology Division is to "pursue institutional strengthening and capacity building of the division so as to enable Solomon Islanders to be better equipped and made better aware of issues relating to climate change mitigation and adaptation." Under this mission, the Division's objective is to "ensure that the people of Solomon Islands are properly equipped with necessary tools, i.e. they have access to relevant and accurate information on climatology so as to effectively mitigate and adapt to climate change."

954. The newly established Division of Climate Change aims to send a strong message of the importance the Government places on the issue of climate change. The mandate and operations of the division will include: close monitoring on the extent to which the country is vulnerable to the effects of climate change; play a leading role in mobilizing resources for adaptation and mitigation initiatives; conduct relevant and priority research and information dissemination activities; seek resources to support national programs to mitigate the causes of climate change, and; be the lead agency in addressing the obligations as a Party to the United Nations Framework Convention on Climate Change (UNFCCC) and commitments to the Pacific Islands Climate Change Framework.

E. Ministry of Fisheries and Marine Resources

955. The Ministry of Fisheries and Marine Resources (MFMR) is mandated under the Fisheries Act 1998 to undertake and enforce the dual responsibilities of; (i) the provision of ongoing fisheries management initiatives and (ii) the introduction and embedding of new practices. This includes the overall management of the Fisheries resources including costal, marine and offshore fisheries. These responsibilities of the ministry are principally provided for in the Fisheries Act 1998.

- The mission of the MFMR is to "*maintain the importance of fisheries to the country's economic development*" with the objective to "develop and sustain utilization of sea and marine resources to benefit all Solomon Islanders."

956. In carrying out and fulfilling its mandatory functions the Ministry is expected to achieve the following outcomes:

- Increased opportunities for rural fishers to improve their standard of living

- Establishment of a dolphin assessment and monitoring program
- Increased potential value of fisheries and marine products by tuna loin processing
- Strengthen Soltai fishing and processing company to ensure its viability.
- Improve value of resources through effective licensing procedures.
- Management plans and appropriate legislations are in place for the main stocks.
- Monitoring systems timely information on commercial and sustainable fisheries
- Enhanced organizational capacity, systems, and skills
- Promote marine products by small-scale fishermen or fishing communities

957. The Ministry employs 72 qualified officers. Currently the inshore research team, Aquaculture team form the inshore fisheries management unit of 14 staff along with provincial fishery officers. The organisational structure of MFMR is supported by the Solomon Islands Marine Resources Organizational Strengthening (SIMROS) program in its structural transition and will be supported by a phase 2 program that will continue institutional support, provincial capability and community fishers livelihood programs.

XV. PROPOSED TECHNICAL ASSISTANCE

A. Impact and Outcomes

958. The Program seeks to build capability for extending effective coastal and marine resource management in Solomon Islands through introducing integrated coastal management built on ecosystem based fisheries management (EBFM) that is implemented through a community based natural resource management planning program.

959. The long-term impact of the Program is expected to be coastal habitats supporting increased diversity and biomass from ecosystem based management applied to increasing proportions of the coastal zone with ecosystems that are increasingly resilient to impacts from land based threats and external shocks.

960. On completion of the RETA the outcomes of the Program will be improved security of livelihoods from resilient coastal ecosystems, increased management capability and available management tools for applying integrated coastal management (ICM). The increased resilience of coastal ecosystems will reduce vulnerability to climate change and natural disasters and provide opportunity for management to adapt.

B. Detailed Description Component One: Building Organizational Capability and Management Competency

1. Output 1.1: MECM Capacity Building

961. By completion the RETA will deliver the following outputs:

- A three person ICM team trained and implementing through partners ICM in two Provinces
- Capability to report on Sustainability indicators and the state of Coastal and Marine Ecosystems
- Awareness and knowledge of coastal and marine management within a CBNRM framework and an ability to coordinate other sectors to achieve agreed objectives
- Capacity to mainstream coastal and marine management objectives into sector programs through policy and multi-sector coordination and planning
- A biodiversity conservation gap analysis based on ecoregional assessments that can support the implementation of NBSAP

a. Approach and Method

962. The RETA will support three graduate staff members for a period of 3 years during which time they will be trained in CBNRM, ICM, EBFM and sustainable development principles and mentored in the implementation of Integrated Ecosystems Based Management through two Provincial demonstration programs. In Program year 4 the MCEM will absorb the three staff through an arrangement with the PSC.

963. The three graduates along with the wider staff of MCEM (including climate change and meteorology will be provided training in the following thematic areas:

- Sustainability and sustainability reporting PY 1
- Community based natural resource management – principles, and applications PY 1
- Adaptive management systems PY 2
- Integrated Coastal Management PY 1

- Information systems and data analysis PY 2
- Monitoring, analysis and reporting PY 2
- Environmental Policy PY 2

964. The training will be provided through a service provider contracting and the regional USP CTI –Pacific training contract. A total of 25 positions will be offered with a minimum of 10 to be from other sector (development and social) staff and at least 5 from the NGO community.

965. Staff mentoring and field experience will be provided through the subcontracts for each Provincial Demonstration Area. One of the three staff members will be based in Honiara with the other two placed in the Provincial Government whilst working with MCEM. The two Provincial staff will travel to Honiara at least bimonthly for reporting and work planning and mentoring within the MCEM team.

966. One role of the two provincial seconded staff is to demonstrate the value of an environment officer in the Provincial staff cadre. The NCC and the PS MCEM will engage in a dialogue with the two provinces in the expectation of such an appointment by the Provincial Administration in PY 3 or PY 4. On Program completion the MCEM can withdraw their staff and reallocate them to the next group of Provinces.

2. Output 1.2 MFMR Capacity Building

967. On completion the RETA will provide the following outputs:

- EBFM
- Coastal resource assessment
- Habitat Mapping and remote image interpretation
- Coastal Fisheries data and monitoring program
- Data analysis
- MFMR will have the capability to produce awareness materials to support CBNRM and EBFM
- Reporting status of Coastal fisheries

a. Approach and Method

968. EBFM training will be provided to the Inshore team in Honiara and will include the Provincial Fisheries officers. The training program will be under the leadership of WorldFish and will include an awareness of EBFM principles, and detailed training on the elements that are required to implement EBFM. For some elements the training will involve awareness, knowledge and skill development followed by reinforcement of skills in the demonstration areas.

969. Coastal resource assessments will be provided through contracted service providers. The focus of the training will be on further developing the skills relating to near shore fisheries assessment (diversity, biomass, etc) and coastal habitat mapping and planning. The techniques have been applied in Solomons previously either by regional organizations or the International NGOs. The proposed training is designed to develop familiarity and confidence to apply and adapt these techniques to Solomon Islands CBNRM program. The techniques used for the Procfish program will be used for resource assessment purposes while a remote image interpretation program will be used for broad scale habitat mapping that is then fine tuned through underwater transect monitoring. The MFMR will receive 10 sets of diving and underwater equipment for the purposes of coastal resource assessments.

970. Information on coastal resource use and coastal livelihoods is poorly developed. The RETA will provide a socio-economic/resource economics/inshore fisheries expert to design a data collection

system for coastal fisheries and then train the inshore team and service providers before implementing the survey in the RETA demonstration areas. The expert shall have two inputs one for design 6 weeks and one for data analysis and reporting 8 weeks. All inputs will include training of the inshore and MFMR team.

971. The RETA shall assist MFMR through the support for a communication and awareness position for a total of two years (PY 2 and PY 3). The candidate will have experience in the production of awareness materials including multi media, the production of DVD, printed materials and Radio programs.

972. The Communication and Awareness staff will work as part of the inshore fisheries team to develop an awareness and education strategy that will be implemented through a range of Government and donor supported programs. The RETA will provide salary for two years, a desktop for graphics and production purposes, and a budget for production of materials. A contract will be awarded to Live and Learn to provide training in the design and planning of awareness and community education programs. The training will be directed at MFMR inshore staff with a minimum of 10 candidates from outside of MFMR and will be repeated for two years. The contract shall develop programs for CBRNM and EBFM and Sustainable development.

3. Output 1.3 Strengthened Provincial Stakeholder Capability for Integrated Coastal Management built on CBNRM, EBFM, and ICM programs

973. On completion the RETA will provide the following outputs:

- Provincial cross sector coastal planning
- CBNRM and management planning
- Provincial and national legal awareness
- EBFM and ICM principles and practices
- Monitoring coastal environments

a. Approach and Method

974. At the Provincial level MFMR will develop a training and mentoring program for Provincial Fisheries Officers through an exchange forum with head office – see output 3 below. In addition the Environment Officer will convene a program of awareness forums based on the national training programs. Isabel and Malaita Provinces will hold at least one meeting a year for two years on CBNRM, Management Planning, EBFM principles and systems, ICM and spatial management programs.

975. The RETA will provide support to SILMMA to deliver training programs to Agency staff and local service providers that build on the above awareness programs through providing class room and activity based training on each of the same topics through mobilizing skills from within its membership. A total of 3 training programs including design costs, preparation of resource materials and course delivery will be delivered in PY 2, 3, and 4 in both Isabel and Malaita. Courses will be available for implementation in other Provinces as resources become available.

976. SILMMA will also be supported to deliver awareness workshops in each Province on the legal framework, community based management planning, community monitoring, public sector support programs to the service delivery contractors (including NGO, local and indigenous institutions). A total of 6 workshops per year starting from PY 2 will be supported with participants coming from either Malaita or Isobel.

977. Provincial leadership courses will be developed for leaders and the public sector with a direct linkage to building awareness of sustainable development and integrated management systems. Joint provincial courses will be provided by SILMMA twice a year for 3 years.

C. Detailed Description Component Two: Defining Best Management Practices through Experiential Learning

1. Subcomponent 2.1: Integrated Coastal Management and Ecosystems Approach Fisheries Management Demonstrations

a. Overview

Integrated Coastal Management

978. The Community Based Resource Management experience to date in the Solomon Islands and elsewhere within the Pacific region has been based on the ad hoc establishment of Locally Managed Marine Areas. This is usually in response to community's perceived need to take action to re-establish their customary rights over coastal areas. It has resulted in an unconnected mosaic of LMMA's which often do not take into account or have little control over the external threats to the associated fisheries. These threats include heavy fishing on spawning aggregations outside the LMMA and or the sedimentation impacts on reefs and other important near shore habitats (seagrass beds, mangroves, lagoons) arising from arising poor land use practices associated with agriculture and logging in particular.

979. An ecosystem approach to community based resource management takes into account the effects of these factors on fisheries and the ecosystems within which they occur. It focuses not just on the conventional management aims of maximizing fisheries production, economic benefits and food for the community but also on ensuring the sustainability of benefits through the protection of a broader range of ecosystem services and functions. This in turn maintains alternative development options, guarantees long term resource sustainability and ensures that coastal ecosystems are resilient enough to withstand other stresses including global warming.

980. One expression of the ecosystem based approach to resource management is the Integrated Coastal Management (ICM) concept. ICM is a holistic management approach applied on a "ridges to reef" scale aimed at addressing the threats to coastal ecosystem functions and resilience, habitats and species.

981. In applying these integrated management approaches to build ecological resilience by ensuring the protection of habitats, and understanding species interaction and habitat dependencies, it is important to identify priorities for protection be they critical habitats, spawning sites, important biodiversity or rare species or equally cultural and religious sites. Setting priorities and at the same time designing a system of management areas which will be resilient to threats, will sustain ecosystem services while protecting important biodiversity and rare species can be achieved through the application of an Ecoregional Assessment (ERA) approach. Applying the ERA approach at the Provincial level in the Solomon Islands assists communities and managers to identify these priorities and understand their interconnected nature and take them into consideration as they develop their CBRM plans.

982. The ERA process has been trialed in Choiseul Province with success. TNC in partnership with Choiseul communities, the Lauru Land Conference(council of traditional leaders in Choiseul) the Provincial Government and National government agencies including MECM and National Fisheries is completing a "blueprint" of conservation priorities for the Province. This will ensure current and future CBRM activities are undertaken to optimise the sustainability of ecosystem functions and services in the Province.

983. The ERA Approach involves 4 key steps:

- Step 1: Technical Data Collection. This involves the collection and assembly into GIS layers of all available physical, biological and threats data. In the Solomon Islands data sets are available for forest types and distribution, reefs and near shore marine habitats, soils and geology, topography/slope, logging and mining licences, urban areas and roading.
- Step 2: Stakeholder Consultation and Local Data Collection. This is achieved via a consultation process culminating in a one week stakeholder design forum. In Choiseul this was hosted by the Lauru Land Conference and resulted in identification of a wealth of information on locally perceived land, water and key species priorities, culturally important sites and current and proposed CBRMA's.
- Step 3: Analysis of a Data. This is undertaken using MARXAN, a design software tool which generates a range of different scenarios to aid decision making and selection of optimum mix of sites needed to meet conservation and sustainable resource management goals.
- Step 4: Scenario Selection and Implementation. The step involves the interpretation and discussion of a range of scenarios by communities and Government and non Government stakeholders. This process will also lead to the identification of implementation options and strategies and the partnerships and enabling frameworks needed to support these strategies.

984. While some elements of the ERA priority setting approach require a high level of technical expertise, the most important aspect of its implementation given the central role of communities in resource management in the Solomon Islands, is the consultative process on which it is based. The introduction of the stakeholders who are instrumental in making decisions critical to the successful establishment or influencing CBRM areas is essential. The process also provides a successful platform for greatly enhancing their common understanding of the importance of adopting and applying an interconnected, ecosystem approaches to their decisions. One outcome was the development of new understanding of common resource management issues between neighbouring communities and new dialogue on possible alliances for co-ordinated action to establish large scale Community Based Management Area.

985. An added incentive to apply this process to other Provinces, including Isabel and Malaita, is the opportunity it offers the Solomon Islands to develop over time, comprehensive national blueprint of priorities for managing and securing conservation objectives. This will be achieved through the cumulative result of a Province by Province approach to ERA based priority setting helping the Government to meet its protected area system design and gaps analysis obligations under the CBD.

986. **Ecosystems Based Fisheries Management** The RETA shall support the application of EBFM to inshore fisheries focusing on the eco-regional assessment priorities and its subsequent integration with community based management planning. The program seeks to build experience and learning for the ongoing implementation of such approaches and management systems. The EBFM process shall integrate data sets that include socioeconomic, habitat information and fish resource data to identify management zones by objective including the location of reserves, fish refugia and protected areas. These data sets will be combined with other data sets and modeled in MARXAN software as part of the eco-regional assessment process that will underpin the implementation of the ICM program.

987. Where the plan identifies options for limiting catches or reserving areas the MFMR will work with the ICM community management planning process to identify options for minimizing the loss of fish catch or for building alternative livelihood sources. Ultimately, restrictions may need to be negotiated and offset through a range of livelihood alternatives. The responses will range from simple livelihood programs or more complex responses such as enhancement, support for value adding technology, introduction of land use best management practices, and the provision of alternative livelihoods.

988. The EBFM program will be introduced through two aspects of the demonstration program. First a broad scale habitat map will be developed for each of Isabel and Malaita using interpretation of remote sensing images. The resultant 5 or 7 habitat layers can be included in the MARXAN scenario

modeling. Further layers could be developed from the habitat maps in the form of fisheries management zoning by the inshore group.

989. EBFM will be extended and implemented through a more intensive habitat and coastal resource assessment program initially within the selected priority areas. This will involve underwater filming of transects, transects for ascertaining coastal resources including fish, mollusks etc in terms of biomass and diversity estimates along with qualitative assessment of fish size distribution. Finally threats to the habitat would be identified and prioritized. The more detailed assessment would then be used to formulate management strategies that would then be negotiated with the communities for inclusion in their management plan.

b. Demonstration Areas

i. Isabel Province:

990. Isabel Province is one of nine island provinces of the Solomon Islands. It consists of the main island of Santa Isabel, the longest island in the Solomons at over 160 km in length and numerous satellite islands. It has a land area of 4,136 km^2 (14% of the national total) and has a central ridge which reaches a high point 1120 meters. The inland areas are steep and heavily dissected and upper watersheds retain forest cover while the lower slopes and coastal plains have been logged extensively over the past 20 years. Gardening is also extensive and together with fishing, is vital to sustaining the subsistence and semi -subsistence lifestyle. Total population is estimated at 26,150 (based on the 1999 census of 20,241 that grows annually at 2.6%) of which 20,421 is rural. An estimated 190 communities are located within 1 km of the coast. The benefits of a low population density (5 people per km^2) are offset by the population structure that has 42% of the population under the age of 15. Population growth coupled with the disproportionate number of young people ensures increasing pressure on natural resources in the province. Currently social indicators rank Isabel about average across all Provinces with the province ranked 6 of ten on HDI criteria.

991. While the inland areas of Santa Isabel have been modified by logging and to a lesser extent, subsistence gardening, the diverse coastal ecosystems and habitats are in healthy condition. Localized impacts from soil erosion related to land clearing for gardening and from the extensive logging activities are evident as is the destruction of mangrove areas for housing and fuel wood, used for processing of beche de mer. The mangroves, extensive lagoons, seagrass beds, barrier reefs and reef flats of the Province are exploited lightly for reef fish (Johannes and Kile, 2001[6]) due to the current ratio of population to reef fishing grounds being low. However these areas are heavily used for the harvesting of commercial invertebrates, with beche-de-mer and trochus being very important sources of cash generation (Kinch 2004[7]).

992. Ecologically significant reef systems lay either side of the Manning Strait between the islands of Choiseul and Santa Isabel which include the Arnavon islands, site of the Arnavon Islands Marine Community Marine Conservation Area (ACMCA) which protects one of the most important hawksbill turtle rookeries in the Western Pacific. The total area of reef in Isabel is estimated to be slightly more than 502 km^2 some 15% of total national reef area. This area was established in 1996 and is an example of successful community based management. There are significant reef areas surrounding the islands offshore north from Suavanao on the east coast and Sasakolo on the west. The north western island chain dissected by deep, sheltered, narrow passages located north of the Kia Passage and including the islands of Baroa Fa and Baroa Iti along the south-western shoreline forms a mini archipelago linking with the Manning Strait and the ACMCA. The demonstration area would cover approximately 200,000 ha's of coastal habitats ad related watersheds.

993. The Isabel Provincial Administration has embraced opportunities to support sustainable resource management but is constrained by a lack of resources. An Isabel Province Development Program has been established by UNDP and is focused on testing community based marine resource management in an area near Buala the Provincial capital. There is an existing close association with

[6] Johannes, R., and Kile, N., 2001. Protecting Grouper Spawning Aggregations: A potential target of the Live Reef Food Fish Trade in Isabel and Wagina islands Solomon Islands. SPC Live Reef Fish Info. Bulletin. 8 5-9

[7] Kinch,J., 2004. Status of Marine Resources, Santa Isabel Province, UNDP

The Nature Conservancy which has a presence in the Province since 1992, in the establishment of the Arnavon Community Marine Conservation Area under a Provincial Ordinance. TNC is engaged in conservation of leather back turtle nesting beaches at Sasakolo and World Fish has recently begun community based fisheries management efforts at several sites in the Province.

994. Given the importance of customary resource rights and ownership in determining the success of community and ecosystem based management, the Isabel House of Chiefs is a core stakeholder group that consists of the traditional leaders of the 8 main tribes of the Province. TNC has supported this leadership group's work to strengthen community understanding of sustainable development issues in the Province and in Provincial policy making.

995. The presence of TNC, World Fish and indigenous groups in the Province, the history of successful community based conservation efforts as evidenced by the success of the Arnavon Islands, together with the commitment of the Provincial Government and Isabel House of Chiefs in supporting community based sustainable development initiatives form a strong institutional foundation for the successful implementation of an integrated coastal management demonstration. The relatively close proximity to the other proposed demonstration site in Malaita Province enhances the opportunities that will arise for shared "learning and doing" exchanges between the sites.

996. The ecological importance of the diverse coastal ecosystems and habitats of the northern region, the potential to link these in a system of zoned conservation and sustainable management areas together with the history of leadership engagement in community based resource management further refines the choice of site to that area.

997. The CTI NPOA recommends Isabel as a phase one province and supports its inclusion on criteria relating to presence of habitat, the linkage of critical habitat elements to fishing grounds and the ability to develop strong lessons learned from the province.

ii. Malaita Province

998. Malaita Province is one of the largest provinces of the Solomon Islands. It is named for its largest island, Malaita and includes the smaller South Malaita and Sikiana Island and Ontong Java Atoll located some 500 nautical miles to the north east. The 1999 census recorded the population of the Province at 122,620. This is highest population of any Province in the Solomon Islands and translates to an average population density of 29 people per km^2. This is very high and reflects the historical ability of the arable lands and once rich fisheries of Malaita to support a larger population. In the last four decades the development of coastal infrastructure and amenities such as roads, schools, stores and clinics has seen a migration of previously inland dwelling people to the coast bringing greatly increased pressure and impacts on all of Malaita's marine habitats and coastal fisheries.

999. The area of the province is 4,225km^2 and its topography consists of inland rolling to steep hill country, particularly in the central region of the island, with many small watersheds and a coastal fringe of arable land which in the northern regions, are quite extensive. Much of the natural forest of Malaita has been modified or converted through subsistence gardening, plantation development and more recently commercial logging, notably in the East and West Are Are districts of south central Malaita. Most of the suitable arable coastal land in Malaita has been converted to coconut plantation which is now frequently inter-cropped with cocoa and in some cases plantation tree species, primarily teak. Conversion of the forested land of the Aluga Basin in East Malaita for oil palm is currently being promoted by the Government .

1000. The near shore coastal environment consists of a diverse range of ecosystems and habitats. Extensive fringing reef systems often enclosing some of the most extensive shallow lagoon systems in the Solomon Islands including the Langalanga, Lau and Raroi Su'u systems predominate. Long stretches of white sand beaches line the shore of northern Malaita Island and large areas of shallow seagrass beds (54% of those found in the Solomon Islands) located on large inter-tidal reef/mud flats are present in the many protected bays and lagoons. Extensive mangroves (124km^2) fringe these lagoons and inter-tidal zones along much of the coastline. Two long, narrow passages at the north (Lau'alo Passage) and south (Maramasike Passage) ends of Malaita Island separate the main island from the smaller Maana Oba Island and larger Maramasike Island.

1001. The 2004 Solomon Islands Marine Assessment also rated the north-east area of Malaita (Lau Lagoon, Lau Passage and Maana'obi Island) and its associated sea grass beds, extensive shallow reef areas, mangroves and artificial reef island villages as one of the most important places in terms of marine biodiversity, cultural interest and conservation value in the Solomon Islands. However, that same survey found that the population pressure in Malaita had a big impact on surrounding coral reefs with generally low living coral cover at many of the survey sites. Similarly, higher levels of macro algae were found on the reefs around Malaita than in other areas of the Solomon Islands suggesting overfishing, destruction of coral habitats, sedimentation and nutrient eutrophication as threats requiring management response if sustainability of inshore fisheries is to be achieved.

1002. These indicators of over fishing of the inshore fisheries in Malaita exacerbated by land sourced impacts support the NPOA identification of Malaita Province as a primary candidate for a demonstration project based on human need criteria and the presence of enabling conditions supporting project implementation. This is strengthened by the presence of World Fish which is undertaking CBRM activities in the Province. The population of the north east tip of Malaita is the Lau language group who control the customary resource rights to the area, which is known to be one of the richest fishing grounds in Malaita. The people have a long history and tradition of fishing, and will likely be receptive to the CBRM approach. There is a strong market tradition in the Lau area and the potential to improve livelihoods in local Lau communities through fish export to Honiara is significant. The presence of artificial reef villages in the Lau lagoon and their susceptibility to sea level rise provide an added incentive and further justification to choose this area for an ICM/CBRM demonstration an area of approximately 70,000ha. .

1003. The choice of Malaita and Isabel Provinces for project demonstration sites creates an opportunity to pilot community and ecosystem based resource management approaches under quite different socio- economic and environmental conditions. On the one hand, Malaita is heavily populated, facing food security and poverty issues and its inshore fisheries are failing. On the other, Isabel has a low population density, largely intact coastal habitats and relatively healthy food fisheries. These contrasting sets of conditions offer a unique opportunity to broaden the learning experience of the demonstration projects while simultaneously shaping and adapting the various approaches being piloted to meet the variety of socio- economic and environmental conditions prevailing in the Solomon Islands.

1004. Collectively the two islands represent nearly 30% of the Solomon Islands and 30% of the Solomon Island reef area. Both Provinces are linked to the NPOA first phase of Provinces and have strong existing programs on which the RETA will build.

c. Output 2.1: ICM for high value or priority ecosystems

1005. By 2015 an Integrated Coastal Management approach will be defined, implemented and adapted in demonstration areas within Isabel and Malaita Provinces. The RETA Program will introduce skills and tools for management to build increased ecological resilience to reduce the vulnerability of local communities. The program will be used to pilot and test Provincial level spatial planning in order to identify priority areas for ICM and the inclusion of the ICM management strategies into within the CBNR Management planning process.

1006. Specific **ICM** outputs include:

- Capacity to produce a rapid ecological assessment by local staff in two Provinces and the MFMR
- Rapid ecological assessment for a total of 8,361 km^2
- Habitat mapping based on remote imagery and the capacity to map coastal habitats
- MARXAN scenario analysis for both Isabel and Malaita with identified coastal management priorities
- 2 demonstration areas of ICM including the integration of EBFM within CBNRM that successfully manages both water and land based threats

1007. Specific **Climate Change Adaptation** outputs include:

- Increased capability of the Climate Change office to coordinate and develop climate change scenarios, identify priority areas for vulnerability assessments from the community up to the Province, and an adaptation planning program with pilot responses demonstrated
- Climate change being integrated into community level planning
- Increased capacity to self organize and improved resilience of communities in demonstration communities
- Lessons learned and best management practices identified and used to define a climate change framework for Solomon Islands
- A functional national level learning forum with greater regional awareness of climate change adaptation responses in near shore and coastal areas

d. Approach and Methods

i. ICM Demonstration Area

1008. ICM involves the integration of all sectors influencing the coastal environments. ICM seeks to manage threats from both land and water to build greater coastal resilience. Ecosystems Based Fisheries Management seeks to address threats to the coastal habitats that affect fisheries resource management.

1009. Each Province will be provided an awareness and knowledge building program during the first year. The program will be facilitated by the appointment of a MCEM Environment officer that will be posted into each Province. The Environment officer role will be to network amongst development and social sectors and work with SILMMA to advocate for more integrated programs. Once appointed the RETA will support a program of capacity building through training, workshops and stakeholder forums where Provincial Government officers, community leaders and service providers (indigenous organizations) will be participate in structured dialogues, seminars and forum on topics including sustainable development, CBNRM, EBFM, ICM future resource demand, and environment sector laws and responsibilities. The program will be a mix of awareness, introduction to concepts, skills development and evaluation that seeks to build a multi-sector platform for Provincially led ICM.

1010. Each province will build a multi-sector and multi-stakeholder working group that will lead the process of ICM planning and priority-setting in each Province. The process will start in mid PY1 in Isabel Province with Malaita Province starting six months later. During the first six months leaders from Malaita will visit Isabel and various sites within Isabel to understand the process and the benefits being achieved. It is intended that the cross visits will stimulate interest, leadership and ultimately demand for promoting ICM in Malaita Province.

1011. Approach and Method Designing, implementing and monitoring the demonstration area is based on (i) completing at the Provincial level a broad based assessment for establishing priority management areas using the TNC ecoregional assessment approach described above but with the addition of the coastal habitat mapping data layer and priority habitat for fisheries management spatially defined. Once spatially defined priorities are identified the management of these priority areas will be negotiated with the local communities and fully integrated into the community management plans.

1012. The eco-regional assessment process will be led by TNC while the development of ICM and the integration of ICM into the communities for the demonstration areas will be undertaken by TNC in Isabel and World Fish in Malaita as service providers.

1013. The approach will include the following steps:

- ICM assessment will include:
  - Secondary data collation for the province including data on land use, coastal zones, population, threats,
  - Climate change scenarios (if available) see below.
  - Habitat mapping using remote sensing
  - Stakeholder knowledge based data over a range of parameters including, fishing areas, gardens, land use, vegetation type etc.
  - MARXAN spatial modeling of multiple data layers against multiple objectives
  - Interpretation of modeling outcomes
  - Agreed spatial priorities for management objectives
  - Negotiation with TNC and World Fish over which priority areas will be used for the implementation demonstration based on budgeted costs and available resources

- EBFM development within priority areas includes:
  - Detailed habitat information will be collected to build detailed maps from field transects for each major habitat category and site completed by the two service providers after training and mentoring. The habitat mapping will require service providers to provide staff trained in diving (PADI), reef check methods, field monitoring, fish and habitat identification data analysis and reporting. This program will be linked to building capacity in MFMR and local Community for developing a Reef check volunteer program based on snorkel transects.
  - Coastal resource assessment through fish identification, visual assessments of taxa, diversity and abundance –
  - EBFM planning process for identification of priority coastal habitat management zones, definition of management zone objectives, specification of required management changes and selected change management options. This will include proposals to establish gear limits, fishing seasons, forming MPAs, LMMA, Fish refugia, no take zones etc.

- Community Based ICM planning
  - CBNRM management planning process as defined by the MFMR will be used with the additional MARXAN data /objectives
  - Management zones identified and agreed with traditional owners or their representatives
  - Management rules agreed for each zone
  - Social and economic wellbeing strategies agreed and pilot demonstration of new technology demonstrated

- ICM / climate change adaptation community level planning that links the EBFM planning outputs with the needs of community livelihoods, and wider threat management. The community level planning process will be provided by the Climate Change Contractor and will integrate the Climate Change program within the community management planning program –see output 2.2 below.
- A demonstration area stakeholder forum to review the draft management plan and to agree on priorities for implementation. Where community resources are inadequate or there is a lack of knowledge and experience in threat management options the RETA will support pilot demonstration site investments

- Pilot site implementation projects with investment into best management practice or technologies to address threats and livelihoods.

1014. Quality Control The provincial program work plan will be reviewed by the quality and strategy group (see Output 3) and comments provided to the implementing Agency (IA). The comments and the IA responses, and the revised work plan will be presented by the IA back to the stakeholder forum. The Quality and strategy team will report independently to the NCC (CTI) and the EA's..

1015. Data Collection The existing data and information for the demonstration areas will be collated, catalogued and stored in digital and hard copy by the MCEM and shared with MFMR. The data collation program will undertaken by Program Coordination staff with all sector providing data sets.

1016. At demonstration each site multiple transects will be used to interpret the habitat image. Data will be used to produce thematic maps that will then be used to produce coastal and reef fisheries management plans based on an EBFM approach. Transect surveying will be MFMR and service provider implementation responsibility.

1017. Site Level Demonstrations. Using the planning priorities from the stakeholder forum, planning workshop, action plans will be developed by the Program to support and implement the site level pilot projects. Preparation of action plans will be a joint responsibility between the RETA program service provider and recipient village/community.

1018. For agreed priorities the RETA will finance the cost of materials and any expertise (if necessary) while labor will be provided by the community as their in-kind contribution. The RETA will provide an investment that can be applied to the site level demonstrations based on the outcomes of the planning processes and the priorities ratified by the various stakeholder fora.

1019. Each pilot will be required to present a short action plan comprising:

- Stated problem and its underlying causes
- Expected output
- Proposed program to deliver output based on best management practice
- Key indicators of success and base line data to enable the assessment of impacts
- Total cost
- Active participation in the learning process through exposure within the community about the program and what it has or is achieving, and cross visits between communities to expose others with similar problems as per their planning process.

1020. For the demonstration area pilot sites will be developed for the differing threats. For example strategies can be designed and introduced to address solid waste management where containers are used for inorganic waste and its subsequent disposal. Organic waste can be composted and used to overcome the declining fertility levels of home gardens.

1021. Each year MFMR and MCEM will convene a stakeholder planning forum that evaluates all the work completed to date and outlines the work plan for the following year. This forum will be linked to the national quality and strategic reviews.

1022. **Climate Change Adaptation.** The climate change adaptation program will be implemented by a regional contractor working in partnership with the Climate Change Office MECM (CCOM). CCOM has recently been established and has a wide awareness of CC issues and thinking but to date has had few opportunities to develop a comprehensive work plan. The regional contractor will develop and adapt the work plan for the Solomons Islands based on local capacity and to focus the program on mentoring capacity development within the CCOM.

1023. The climate change adaptation program will be planned and integrated with the two field demonstration areas in Malaita. The program will start with the development of scenarios using SIMCLIM software and then using the scenarios develop and implement a site level vulnerability assessment and define adaptation options. The program will be integrated with the community management planning program.

1024. SimClim scenario generation needs to be completed for Malaita. Past attempts to build SimClim scenarios were never completed and need to be finalized based on new projections. Whilst past attempts were based on training a large number of users the RETA will support the training of 3 CCOM staff and 5 others to let training achieve far greater. The training will need to be subcontracted by the regional contractor.

1025. Vulnerability analyses will be conducted using the conceptual framework of the IPCC that partitions vulnerability to climate change into three elements: the frequency and magnitude of exposure to external shocks (e.g., climate changes), the degree of sensitivity to those impacts, and the adaptive capacity of the community or society experiencing those impacts. The vulnerability of a fishery system (including the broader coastal and social dimensions) is composed of exposure to external threats, the effect of those threats and the ability of people to respond (sensitivity and adaptive capacity) (Smit and Wandel 2006; Füssel 2007).

1026. The IPCC framework will be combined with an indicator based approach that includes not just climate change but other sources of vulnerability (see Allison et al. 2009 for a rare fisheries example) and a Sustainable Livelihoods Approach (Carney 1998) to ground the analyses in the lives of rural people. Analyses at regional, national and sub-national scales will be linked based on the work of Zurek and Herichs (2007) for the Millennium Ecosystem Assessment (MA). The ICM demonstration area contractor will integrate the vulnerability analysis with the threat analysis used for managing local threats.

1027. Scenarios and Adaptive Responses. Fisheries are often over fished due to a range of causes. Fisheries will also face increased disruption and vulnerability as a result of climate change. Adaptation to climate change in small scale fisheries will require addressing both existing issues as well as new issues arising from climate change. Although aquaculture could defer the loss of stocks, biotechnical interventions such as inshore Fishing Aggregation Devices (FADs) only defer addressing the issue of declining fish stocks. There can be no solution to the looming biodiversity conservation, food security, and economic development crisis without a transformation in the management and governance of inshore fisheries as well as the management of land based threats to coastal ecosystems.

1028. Effective responses to climate change will require actions at the three primary scales of governance: national, island and community. Further, it will require the integration of policy and action among sectors, such as health, environment and education to better mirror the factors that influence the lives of people. Climate change adaptation and marine resource management will succeed or fail at the community or village level and as such the Program will introduce vulnerability assessment outcomes and future scenarios into the community and village planning processes. Through these already proven planning systems the important interactions and feedback patterns between coastal and land-based livelihood activities, for example upstream farming practices, logging, etc., that have profound effects on the coastal zone. Climate change adaptation measures must be integrated into broader rural development initiatives.

1029. Assessments of the potential impact of climate change on fisheries have tended to emphasize predicted changes in resource production and distribution and make only broad inferences about consequent socio-economic vulnerabilities. Assessments across the many domains of a fishery and through the multiple impacts on fishery systems are critical for adaptation policy and action. Assessing how vulnerability to climate change might itself change requires a dynamic assessment framework that accounts for changes in all elements of vulnerability over time (Füssel, 2007). Scenarios are useful tools to estimate future socio-economic conditions, accounting for alternative futures within the data-sparse context of Islands States. Scenarios will be developed using techniques developed by Brown et al. (2001), Chuenpagdee et al. (2001) and Tompkins et al. (2007).

1030. In the absence of the foregoing analysis it is difficult to provide specific examples of adaptations as these will be specific to communities, countries and climate change threats. Broadly adaptations will occur through improved policies and development pathways at national levels, improved capacity to self-organize for collective action at community level, and diversified livelihood platforms at the household level that reduce vulnerability through greater livelihood mobility. Although infrastructure interventions are often identified priorities, local community level responses with support from local and national government will play an important and cost effective role in successful outcomes.

D. Detailed Description Component Three: Enabling Conditions

1. Output 3.1 Learning Framework

1031. On completion the RETA will have produced the following learning outputs:

- Quality and Strategy Team
- Ecosystem Monitoring Programs for 3 sites in 2 Provinces
- Starting PY 2 twice yearly EBFM policy forums linking the Provincial and National staff of MFMR
- Strengthening the operational presence and role of SILMMA at the interface of provincial service providers and communities

a. Quality and strategy team

1032. The Program will build a multi-level ICM learning network that operates across levels ranging from demonstration area, District, National and Regional (CTI-Pacific).

1033. The learning framework seeks to:

- strengthen understanding of ICM and EAFM concepts by identify best management practices for Marine Biodiversity Conservation, ICM, EAFM,
- build implementation capacity, and
- develop implementation approaches customized for Timor Leste.

i. Methods

1034. At the national level the Program will support the formation of a quality and strategy review team. The IA/EA and GEF Focal Point shall form the team which will comprise three individuals being (i) a prominent private sector business person, (ii) a person representing community interests, (iii) a technical expert. The identification of the potential team candidates shall be through the Program Management contractor who will compile a long list of no less than 8 candidates that will be provided to the EA. The EA will confirm acceptability of proposed candidates in terms of institutional and political acceptability. The IA will select from the acceptable candidates to fill the business and community representatives.

1035. The technical expert may change for each year according to the technical issues that are envisaged. The role may be a national role but equally should the need arise the role could be filled from the regional learning framework that will be managed by the Pacific Round Table and IUCN.

1036. The quality and strategy review team will be convened by the EA with the Director of Environment and Conservation Division MECM and will include the Director of Inshore Fisheries MFMR.

1037. The role of the team is to review (i) annual work plans prepared by the IA, (ii) prepare forecast budgets, (iii) review the demonstration area work plan and approach, and (iv) provide independent review and audit of the progress reporting and evaluation in December each year. The team will review work plans before they are approved and will provide the EA and the Program Management Contractor with written comments as well as briefing the Secretaries of State for Fisheries and Environment.

1038. The annual review and evaluation program is scheduled to fit into the national planning and budgeting time line. A contractual requirement of the EA will be to convene a participatory evaluation program at each of the Program sites where all subcontractors and the IA and stakeholder will present their work for the year, achievements, successes and failures. The evaluation will also reflect on processes and procedures and ascertain were improvements and efficiencies can be achieved. The evaluation process will provide the basis for the synthesis of lessons learned and best management practice that will be compiled into an annual report and electronically distributed throughout the wider learning network.

1039. One role of the quality and strategy team will be to provide a mechanism for the program to access high level executive decisions for issues relating to coordination, sector roadblocks etc. This will be through informing the NCC (CTI).

1040. For at least one of the four program years the regional learning framework will add a person from one of the other participating countries into the evaluation team. Whenever possible the chair of the Round Table will also participate.

1041. Following the national evaluation the IA and the EA from each country will participate in the annual regional evaluation that will involve all CTI-Pacific countries. The meeting is convened and hosted by the Pacific Round Table each year. At the regional evaluation meeting each country EA and IA will present the findings of the national evaluation and identify key lessons learned. A score-card system for rating achievement and implementation performance will be tested as a means of creating increased incentives for quality strategic programs.

1042. The regional session will address key themes such as legal and regulatory approaches, best management practices, policy frameworks, information systems, planning tools and legal and regulatory changes. The regional round table will require two Program participants, one stakeholder and one non-government institution.

1043. In the final year the quality and strategy team will evaluate the total Program and use this with Government to scope the possible extension of the program.

b. Ecosystem Monitoring Programs

1044. On Completion the RETA will produce data from monitoring programs at least 3 ecosystem monitor locations that are assessed quarterly by a group of provincial staff and service provider inputs to both MECM and MFMR. MFMR will use the results to ground truth the less intensive community based monitoring of CBNRM management plans. MECM will use the data to assess sustainability indicators and to report progress of the CTI program against agreed sustainability indicators that reflect cross sector nature of demonstration areas.

i. Approach

1045. Monitor ecosystem sites will be selected from the priority sites identified in the eco-regional assessment and ICM planning program. These sites will be included within the demonstration program and will be located either within or adjacent to existing community based management plan locations. At each site the Provincial fisheries officer, forestry officer, agriculture officer, community health officer and the environment officer will at the same time undertake a detailed monitoring exercise. This will include habitat transects, fish/mollusc biomass and diversity, fish/mollusc catch, household livelihoods, agricultural production and forestry indicators.

1046. MECM will analyze the data and report this back to all stakeholders in the format of a 6 monthly indicator progress report. MFMR will undertake a temporal comparative analysis of the

agency monitoring as well as a cross sectional comparative analysis when the results are compared with community monitoring results.

1047. The RETA will support the program with travels costs and field allowances. Training will be provided through the service provider for each demonstration province.

c. Mentoring of Provincial Fishery Officers

1048. On completion of the RETA provincial Fisheries Officers will be an integral member of the MFMR inshore team with a depth of understanding regarding EBFM and able to mentor community service providers.

i. Approach

1049. The RETA will provide a 6 monthly forum through which the Provincial Fisheries Officers meet and develop a consensus on sector issues and progress. The forum will start in the first half of PY 2 after training programs have been implemented and will conclude with in first quarter of PY 4 when the inshore team will prepare a MFMR completion evaluation.

d. SILMMA support to local service providers

1050. Both MECM and MFMR are members of SILMMA with MFMR providing office space and support to build the role of the non government sector within coastal and marine management. The RETA will provide financing for SILMMA to implement activities. The activities will be linked to the development of Provincial forum and training programs for service providers. It is envisaged that these would include CBNRM, ICM EBFM programs, management planning processes, and awareness of the provincial and community by-laws.

2. Output 3.2 Policy Development and Reform

1051. On completion the RETA will produce the following policy related outputs:

- A policy concept paper on ICM and how it will be implemented
- A staff role to support provincial ICM within MECM
- Two MEMR environment officers – one per for each Province where RETA will work to act as lead and coordinator for ICM program.
- EBFM concept agreed and documented for implementation by MFMR national and provincial staff
- Sustainability indicators for coastal and marine management being applied in two Provinces and reported by MECM to NCC (CTI)

a. Approach and Method

1052. The RETA will provide support for the dialogue and analysis necessary for integrated resource management concepts to be defined in terms of the Solomon Islands. The support for spatial integration will be developed along two parallel processes that will be linked to form a sustainable development dialogue and indicator initiative.

1053. Integrated coastal management will be defined by a multi-sector working group that includes forestry, lands, agriculture, health, fisheries, and planning. The working group will be chaired by MECM and will include core service providers in the coastal areas including SILMMA. The working group will be provided an initial awareness and training workshop on the principles of ICM, its objectives, the methods and techniques and the final outcomes. Following on from this the working group shall meet over a 4 month period to define the concept of ICM in the Solomons and to specify

how coordination and integration can be developed at both the National level for the design and delivery of programs and the provincial-community level.

1054. The working groups will specify data needs, process requirements, resource and community assessment needs and analysis, spatial planning and zonation needs, and the relationship to other planning systems and sector programs. A policy concept paper will be prepared by the working group for submission to the NCC for comment and subsequent review by all members of the NCC.

1055. The RETA will support the process through the appointment of 3 MECM staff for integrated coastal management who will support the working group in terms of preparing background papers, collating information, consulting with wider stakeholders, and preparing the policy concept papers for submission to the NCC. After the process one position will be retained in MECM while the remaining two will be posted to Isabel and Malaita for the ICM demonstration programs. All three will be staff of MECM and as such once the ICM program is complete in each Province MECM management can choose to relocate their roles into new provinces as ICM is rolled out. The two Provincial roles would locate with the Provincial Government and would work closely with the two Provincial ICM service providers.

1056. **Ecosystem Based Fisheries Management**. The MFMR coastal strategy aligns to the CTI principle of ecosystem based management. As a development sector Fisheries history and current programs are built upon a fishery development perspective something the RETA will support MFMR to broaden to include Fisheries Management. EBFM will be defined in terms of the requirements of the revised Fisheries Act and MFMR policy, strategies and programs through a working group of the Inshore Division of MFMR. The working group will include provincial representation with the RETA supporting two EBFM forums where Provincial and National staff meeting to develop common understanding and principles for the application of EBFM.

1057. The EBFM program will need to agree on principles, data requirements including resource and habitat assessments, spatial zonation and management rules, monitoring and indicators, linkages to land based influences, and linkage to ICM. For each of the elements methods and approaches applicable to the Solomon Islands will be defined and training requirements identified. Most importantly there needs to be a clear EBFM management model agreed with supporting programs documented. Legal requirement for inclusion in the Provincial ordinances and community bylaws.

1058. A training program will be provided for Fisheries staff at the national and Provincial level to build capability in implementing EBFM and then to actually gain experience through the two demonstration programs.

1059. **Indicators of Sustainable Development** The Government Policy both in Fisheries and the Environment sector acknowledges the importance of CBNRM and the role of natural resources in defining the wellbeing of most Solomon Islands. Coastal and marine resources can not be managed solely for conservation but neither can they be managed solely for development purposes. The forecast excess demand for fish over the available supply in near shore environments highlights one of the most telling challenges for the wellbeing of rural communities. The increased pressure being placed on fisheries as garden productivity declines simply compounds the problem of management.

1060. The balancing of social, ecological, and economic imperatives for a sustainable development pathway is a function of MECM and the CTI program must contribute to these goals. To assist the adoption of a wider perspective the RETA will support the integration of EBFM and ICM principles and processes to ensure that communities work with a single program. The integration will require high level dialogue and discussion that will also be used for defining sustainability indicators from which progress towards SIG policy goals and CTI objectives can be measured through time. The indicators will be based lined within each of the demonstration areas and tracked as part of the ongoing monitoring program. The data will be reported by MCEM to the quality and strategy team and the NCC by the ICM team within MECM.

3. Output 3.3 Strengthening Legal Framework and Capacity

1061. By 2015 the RETA shall produce:

- a set of Provincial ordinances to support the revised Fisheries Act expected to be passed in 2010
- community by-laws to support the Provincial Ordinances and CBNR management plans
- a road-map for the introduction of legal reforms or separate legislation for Integrated Coastal Management based on principles of sustainability
- local legal capacity built through the newly formed Solomon Island Environmental Law Association to assist with legal analysis, and drafting within the natural resource and environment sectors will be undertaken by Government legal advisers supported through a regional legal support network
- implemented a community level training program including para-legal awareness, community or village level court officers

i. Method and approach

1062. The likely passing of the revised Fisheries Act in the first half of 2010 is seen as a milestone in the movement towards increased recognition and legal support for CBNRM in coastal ecosystems. The RETA will provide an International Fisheries Law expert for a total of 6 months in two inputs.

1063. The legal expert shall be sole sourced contracted as the person that worked with MFMR in the final drafting of the National Fisheries Act. Three provincial ordinances will be prepared working with local lawyers and MFMR staff and then reviewed to identify if they can be used as a template for other Province's. The legal expert shall also review examples of management plans and then ascertain what community by-laws are required to support both the community plans and the Provincial Fisheries Ordinances. A draft set of community by-laws will be prepared and only if necessary separate sets prepared for the three provinces. The lawyer shall provide training to MFMR and other sector staff on all aspects of the Fisheries legislative framework at the National, Provincial and Local level in the RETA demonstration Provinces.

1064. Local legal expertise as represented within the Solomon Islands Environmental Law Association will be linked through PNG CELCOR to the IUCN Pacific Regional Legal Support Network. The network will provide training and peer support to local lawyers. The RETA will support the regional network and CELCOR input to the Solomon's to work with local lawyers. Local lawyers will be provided the opportunity to participate in the Program to define sustainable development tools and the ICM policy program. Their role will be to review existing legislative, identify linkages, gaps and overlaps and propose a legal reform roadmap for introducing ICM. The roadmap will include ICM procedures and responsibilities, define the linkages to other sector legislation and would legally define spatial planning zones. The roadmap will be shared with the ICM working group and the NCC for comment as well as the Public Solicitors Office and the Solomon Island Law Commissions.

1065. CELCOR will provide training and assistance in drafting while the regional network will provide peer review and support for the structure of law and for guidance on complex legal issues. CELCOR will be supported for developing and implementing a para-legal awareness program in partnership with the Solomon Island Environment Law Association and for training local service providers to deliver the program to communities.

4. Output 3.4 Establishing Sector Management Information Systems

1066. By completion the program will produce the following sector information systems outputs:

- MECM will have a functional sector data base with basic GIS mapping and interpretation capability that can capture, analyze and report data spatially and in tabular formats including the reporting of progress in achieving sustainability.

- MFMR will develop a spatially defined fisheries database for EBFM and CBNRM including any completed and registered management plans stored within a sector information system.

a. Method and Approach

1067. **Environment sector data base** In early 2010, UNDP funding will provide the MECM with MapInfo Geographic Information System (GIS) software and supporting hardware. UNDP will assist MECM establish a dedicated GIS staff position within MECM by either procuring an expert from outside the ministry, or providing on the job training to an existing MECM staff member.

1068. The RETA will provide support to the MECM to form a interagency working group on natural resource and environmental data sets. The working group will be formed as an output from the ICM working group – see output 3.2 policy development. The working group will identify what data exists, where it is located, and develop a proposal for a whole of government data sharing protocol and a data provision protocol for development partners working in the coastal and marine environment in the social and land based sectors that form an important part of ICM.

1069. Base maps and topographic maps of the Solomon Islands are available from the MoL GIS unit. The RETA will assist the MECM to enter into a user agreement with MoL for use of these data-layers. In recognition of the need for greater sharing of data within the SIG, the RETA will also facilitate a data flow-back mechanism for this agreement, whereby the MECM allows the MoL to access all data generated from the base and topographic maps. Data from other sectors will be collated over the life of the program to populate the GIS data base.

1070. The data developed in the Provincial work programs and especially within the demonstration areas will be flowed back to MECM for building the coastal and marine data bases structure, to test data quality systems and data management skills. The quarterly monitoring data from monitor ecosystems and the climate change programs will be captured as well.

1071. A research assistant to enter and check data will be supported for two years in PY 2 and PY 3. The program will support training for the production of thematic maps, for reporting data in the database, and for data analysis. The RETA will provide support for maintaining printer supplies for the production of maps etc. The training support for building the databases will be contracted by NZAID under the FSP program.

1072. The coastal and marine sustainability indicator monitoring will be used to demonstrate to MECM how it can move towards reporting progress in achieving its commitments to international conventions and to its own Government policy goals.

1073. <u>MFMR Information System</u>

1074. The RETA will support a Mapinfo GIS system to MFMR including one license for software, one work station, one plotter and a table for digitizing. The purchase of the equipment is contingent on (i) the appointment of a fulltime staff position for managing the database and operating the GIS software, (ii) a reciprocal agreement for data sharing within the CIM platform being developed by MECM, (iii) a research assistant for data capture from the community based natural resource management planning program and (iv) a memorandum of understanding that all service providers working with MFMR provide raw data in addition to project reports.

1075. MFMR will receive copies of (i) habitat mapping exercise, (ii) eco-regional planning process, and (iii) all the quarterly monitoring data from the ICM program.

E. Detailed Description Component Four: Effective Program Management

1076. The lack of human resource capacity with Program experience in the Executing Agencies and the requirement to flow ADB funds through an third party bank account support the need the requirement for an Program Management and Administration contractor. The contractor will be selected according to ADB rules using QCBS based on 80:20 (Technical;Financial) evaluation criteria.

1077. The role of the contractor will be to provide program implementation support to the executing and implementing agencies, to coordinate work planning, approvals, and disbursement across the different programs. The Contractor will be responsible for subcontracting to the demonstration area providers, SILMMA, Live and Learn while also supporting the quality and strategy teams.

1078. A critical element in the learning framework will be to access appropriate technical skills and leadership for implementation of the two demonstration sites, the building of enabling conditions, and institutional strengthening of both implementing and executing agencies.

1079. Program management will be contracted to a service provider with ADB contracting a consulting firm to provide Program Management functions. The Program management contractor will report to the GEF Focal Point and Executing Agency – the PS (MECM) who will also house the contractor. Office space will be provided by Government as part of their in-kind contribution.

1080. The contractor will provide a full time Program Director, Accountant, Procurement - administrator. The firm will also be responsible for providing technical skills including:

- Fisheries lawyer expert
- Socio-Economics expert
- Remote sensing expert

1081. The contractor shall provide administrative support for reporting to the EA on a monthly basis and to wider Program stakeholders on a quarterly basis. The contractor will support the quality and strategy team in the annual program evaluation and planning process, and ensure that work plans are agreed and reported to the Executing Agency and ADB.

1082. Overall program implementation will use local subcontractors for activities such as field surveys, community planning, water resource quality assessments, sanitation and environmental health assessments, socio-economic survey and coastal community management and development planning, education and awareness materials, feasibility assessments of revenue and sustainable financing. The firm will support both the MECM and MFMR in preparing an annual work plan, contracting of service provision, coordination of contractors and a demonstration area learning program.

1083. A further function of the firm will be to coordinate regionally contracted services in the RETA including the regional learning program, the climate change adaptation program, and proposed capacity building programs that are agreed as part of the RETA wide activities.

1084. Demonstration areas will be a joint responsibility. For both sites this will include MECM and MFMR working with the Provincial Government and Provincial Service Providers.

F. Program Costs

1. Summary Cost Estimate

1085. The estimated total cost of the Program for the Solomon Islands is USD 3.2 million including price contingencies. Price contingencies are set to 7% per annum for the life of the Program and for the additional years between data collection and program start in October 2010. Contingencies account for 13% of total costs.

1086. Component one capacity building costs USD 771,552 (24% of total costs) including the costs of building capacity in MECM, MFMR and Provincial stakeholders. Component two Best Management Practices – demonstration application of new skills has a large component of capacity building as well as direct implementation of ICM, EBFM and CBNRM and accounts for 31.5% of total costs. The development of enabling conditions through the learning network, policy dialogues and development, subnational legal frameworks and information systems in MFMR and MECM accounts for 19% of the total cost while Project Management costs (component 4) account for 12.5% of total costs.

Table 21: Program Investment Plan (USD)

(USD)

Item			Amount
A.	**Base Cost**		
	1	Component 1: Organizational Capacity	$771,552
	2	Component 2: Best Management Practices	$1,023,479
	3	Component 3: Enabling Conditions	$650,242
	4	Component 4: Project Management	$397,411
		Subtotal	**$2,842,683**
B.	**Contingencies**		**$341,997**
Total			**$3,184,680**

2. Summary Costs by Expenditure Category

1087. Costs by expenditure category highlight the importance of capability development in the form of developing knowledge, building capacity, training and technical support cost which account for nearly 66% of the total base costs. Field and operational costs are the funds set aside to implement the pilot ICM demonstration in the communities. These funds will be allocated based on the outcome of planning and negotiation processes for CBNRM and Climate Change adaptation purposes.

Table 22: Costs by Expenditure Category

(USD)

Item			Total Cost	% of Total Base Cost
A.	**Investment Costs**			
	1	Civil works	$0	0%
	2	Planting materials	$0	0%
	3	Field and Operations	$366,088	13%
	4	Enteprrise development	$0	0%
	5	Studies/contracts	$473,529	17%
	6	Planning processes	$269,407	9%
	7	Capacity building	$462,890	16%
	8	Training	$496,215	17%
	9	TA - local	$10,720	0%
	10	TA - int'l	$336,273	12%
	11	Project management	$329,774	12%
	12	Office equipment	$49,949	2%
	13	Local transport	$47,838	2%
		Subtotal (A)	**$2,842,683**	**100%**
B.	**Contingencies**			
	1	Physical	$0	0%
	2	Price	$341,997	12%
		Subtotal (B)	**$341,997**	**12%**
Total Project Cost (A+B)			**$3,184,680**	

3. Proposed Financing

1088. The proposed financing includes a total of USD 214,934 or approximately USD 53,000 per annum equivalent provided by Government of which more than 50% of this contribution is in-kind. The three GEF funds contribute 87% of total costs.

Table 23: Summary Financing Plan

(USD)

Source	Total	%
Asian Development Bank	$201,106	6%
GEF - International Waters	$586,039	18%
GEF - Climate Change	$364,456	11%
GEF - Biodiversity	$1,818,143	57%
Government	$214,934	7%
Total	**$3,184,680**	**100%**

1089. The financing does not include the other sector funding through bilateral arrangement which includes NZAID funding of USD 1 million per annum for 11 years to MFMR, CTSP funding of USD 2 million for primarily CBNRM, UNDP funding of USD 3 million for DEC institutional strengthening,

UNDP (CTI) program[8], proposed Australian Government Funding for Climate Change adaptation, possible EU fishing sector support, and Japanese OCFC support to the Fishing sector. In total other Government financing for the fishing or coastal resources sector exceed USD 7.5 million.

4. Proposed Contract Packages

1090. The proposed contract packages include the main Program Management contractor contract which is split into 2 parts. Contract 1a being the funds disbursed by the contractor while contract 1b are funds for subcontracts. The biggest subcontract packages are included for TNC to complete the ERA program, and implement the ICM work in Isabel, for Worldfish to complete EBFM training and implement the Malaita program and for IUCN to support the environmental law and legal program.

Table 24: Proposed Contract Packages

(USD)

Item	Issuer		Total Cost
1a	**ADB**	**Contract 1a - Program Mgmt Contractor - Program Office**	**$346,704**
1b	**ADB**	**Contract 1b - Program Mgmt Contractor - Subcontracts**	**$1,822,076**
2	**ADB**	**Contract 2 - Regional contract - USP**	**$382,328**
3	**ADB**	**Contract 3 - Regional contract - World Fish climate change**	**$275,725**
4	**ADB**	**Contract 4 - Regional contract IUCN roundtable**	**$66,708**
	Project	Contract 5 - Subcontract TNC - ERA & Isabel	$498,959
	Project	Contract 6 - Subcontract World Fish - Malaita & training	$413,714
	Project	Contract 7 - Subcontract IUCN legal	$76,205
5	**Govt**	**Government Contribution**	**$214,934**
		Total of ADB Main Contracts - 1a,1b,2,3,4	**$2,893,541**
		Total of ADB Contracts and Government Contribution	**$3,108,475**

G. Implementation Arrangements

1. Executing Agency

1091. The Executing Agency will be the GF Focal Point the MECM. MECM will be responsible for reporting to the NCC CTI to review work plans, to approve work plans and to ensure cross sector coordination does not become an implementation constraint. MCEM will also ensure that the Government budget contribution is available and disbursed according to prior agreements.

1092. MCEM will provide the platform on which organizational systems and strengthening is based and will ensure that Ministry level services and requirements are well known and integrated into any new system development.

1093. **Program Management Contractor** The Program will support a program management office (PMO) that will be located in the MCEM and will be recruited by ADB using QCBS procedures. The Project Management Contractor will work with the Implementing Agencies to finalize work plans. Once work plans are approved the contractor will mobilize resources via contracting or procurement systems. The Contractor will provide a full time Program Director, Financial Accountant and a contracting and administrative support person all positions. The Program Director will report directly to the GEF Focal Point.

1094. In addition, the contractor will mobilize technical experts based on terms of reference approved by the implementing agency that will host the expert. The experts will work with

[8] No financing information is available and the UNDP Program Officer was not prepared to provide the design team with any project documentation

implementing agencies while being administered by the PMO who will ensure Terms of Reference are agreed and delivered on departure.

1095. Locating the PMO within the MCEM offers the additional benefit of providing mentoring and professional development as operational capability in coastal and marine environments are developed.

1096. The contractor will be responsible for developing a consolidated work plan, coordinating demonstration implementation, contract service providers, and provide administrative support for the ADB and GEF funds with quarterly and six monthly reports, and financial management and reporting according to the terms of contract.

1097. The contractor will provide Program Management functions including:

- Engaging with the Implementing Agencies
- Annual work plan coordination and preparation
- Implementation oversight
- Procurement and contracting
- Financial Management and reporting
- Coordination with regional service providers
- Coordination with the regional Climate Change Program and training provider contractors
- Six Monthly Program Progress reports

1098. Monitoring and evaluation has been designed into the program through the quality and strategy review process and the associated learning framework. The contractor will ensure that these processes are timely and reported to both MECM and MFMR .

Figure 14: Proposed Implementation Schedule

	Activity	Year One				Year two				Year Three				Year Four			
1	Building Capability and capacity																
1.1	MECM capability building																
	Environment Officers appointed																
	ICM/CBNRM/ Sustainability training																
1.2	MFMR capacity building																
	EBM awareness programs inshore division																
	Coastal resource assessment skills																
	Habitat mapping																
	Socio-Economic data collection																
	ICT design capacity																
	ICT material production																
1.3	Provincial stakeholders																
	Provincial forums																
	SILMMA awareness, training, leadership																
2	Demonstration and experiential learning																
2.1	Provincial Program																
	Awareness and knowledge program																
	SILMMA skill development program																
	Provincial ICM Working Group																
	Provincial Spatial Planning																
	Secondary data																
	Habitat mapping -remote sensing																
	Stakeholder perceptions																
	Ecoregional assessment MARXAN																
	EBFM/ICM -CBNRM																
	Resource Assessments																
	EBFM Managemnte zonation and planning																
	CBNRM - Management Planning																
	Community planning																
	Negotiation of ICM EBM objectives																
	Priority Actions																
	Pilot programs																
2.2	Climate Change program																
3	Enabling Conditions																
3.1	Learning Framework																
3.2	Policy																
3.3	Legal reforms																
3.4	Environment sector MIS																
3.5	Fisheries sector MIS																
4	Program Management																
	PMC contracted																
	Planning																
	Monitoring and Reporting																

2. Implementing Arrangements

1099. The implementation of the Program components will be undertaken by different agencies with responsibility for implementing demonstration and support programs.

1100. The implementing agencies will be the Inshore Fisheries Division (MFMR), Environment and Conservation Division (MECM), Climate Change Office (MECM). In partnership with MFMR and MCEM the Isabel and Malaita Provincial Administration will be implementing partners,

1101. **The Environment and Conservation Division MECM** will implement the Program within the Environment sector including capacity and capability development, ICM concept and policy definition, In addition, the MECM will provide leadership in the development of integrated environmental and resource management systems at the provincial level. The program design seeks to add new skills and resources within MCEM to develop environmental and sustainable development principles understood, agreed and measured through awareness, training, the provision of integrated planning platforms and monitoring systems. MECM will also build the Solomon Island Climate Change capability through understanding climate change dynamics in coastal environments and then working through other sectors and with local communities to define how best to respond.

1102. The MCEM will form and manage the quality and strategy team that will undertake participatory evaluations each year and will provide input to the annual work planning processes. This will require the involvement of MFMR and other agency staff from all sectors in the ICM planning programs and for supporting the pilot site programs. The RETA will provide 3 staff to form a coastal resources team in the Environment and Conservation Division for 3 years at which stage the position will convert to Government budget. The new staff will lead the ICM program. MCEM will ensure that the Service providers to communities (NGO's, indigenous organisations, and civil society groups) also participate in the quality and strategy program.

1103. The development of policy concepts and policy drafts is a central role for MCEM who will take the lead in the developing an agreed ICM Policy and spatial priorities for national and international biodiversity values. The Provincial level planning program will provide significant contributions to understanding and identifying gaps for managing these international biodiversity priorities.

1104. The MCEM will work with local and international contractors and technical experts provided by the Program Management Contractor to review policy options and seek broad consensus within Government on these issues before proposing specific policies for their use.

1105. In summary key functions and roles of MCEM include:

- Developing consensus with MFMR in the vision and leadership of the CTI-Pacific program
- Definition of a Solomons Islands sustainable development and ICM strategy
- Leading a program to implement the sustainable development strategy for coastal environments with the integration of ICM and EBFM within a eco-regional assessment and priority setting framework
- Creation of a Provincial Environment program based on coastal ecosystems
- Reporting of state of coastal ecosystems through a sustainable indicators program
- Supporting Environment and sustainable development reporting with a coastal and marine sector database
- Implementing ICM provincial spatial planning and priority setting over Isabel and Malaita provinces as a basis for defining priority management needs
- Supply of training programs on a timely basis
- Leading a cross sector climate change adaptation program including building national skills in scenario development, building national policy dialogue
- Management of the quality and strategy team and evaluation program
- Leadership and management of the learning program
- Approval of work plans and contracting of services for the ICM program

1106. **Inshore Fisheries Division MFMR** will act as the implementing agency for community based natural resource management as defined within the inshore fisheries strategy. MFMR will provide a strong focus on bringing the coastal ecosystems into a CBNRM framework as defined in the proposed revised Fisheries Act that is expected to be passed in 2010. The RETA will assist MFMR to build the capability of the Inshore Fisheries Division to define management planning systems, to inform the planning process, to support management planning through partnerships involving NGO, indigenous organisations and civil society groups.

1107. The Inshore Division will develop consensus on EBFM and how the principles of EBFM are fully integrated within the CBNRM program – this will include developing skills for both broad scale habitat assessment using remote sensing as well as more detailed data sets for priority sites using field investigations. The Inshore Division will support these processes with two new function capabilities being (i) a inshore fisheries database and mapping capability, and (ii) an education,

awareness and information service capability that supports implementing partners. Both of these new capabilities will be linked to the emerging role of the SILMMA network to be located within the MFMR offices.

1108. The Inshore Division will be the primary user of the ICM spatial prioritisation plan produced at the two Provinces. The role of MFMR will be to develop a partnership with Provincial stakeholders for demonstrating the use of ICM/EBFM priorities within the community based management planning process.

1109. In summary key functions and roles of MFMR include:

- Build a work planning and reporting framework for the following activities
- Development of EBFM awareness and skills throughout the Inshore fisheries team including Provincial Fisheries officers
- To convene 6 monthly team forums inclusive of the provincial fisheries officers as a mentoring and skill development program
- To lead a legal team that builds provincial ordinances, develops community by laws and delivers para legal awareness and training
- Develops a sector database, populates the data base, develops data sharing protocols with other agencies and implementation partners, reports of progress and impact of the CBNRM program
- Develops skills and implement broad scale coastal habitat mapping skills and fisheries management zoning based on spatially defined habitat elements
- Develop skills for site based coastal resource assessments and habitat mapping
- Builds capability for the development of awareness and education materials to support the CBNRM program inconjunction with Live and Learn
- Train implementation partners in the integration of EBFM and ICM objectives within CBNRM management plans and support implementation of this within two demonstration areas.
- Provide leadership in priority ecosystem monitoring sites using cross sector provincial input and reporting the findings back to both MCEM and MFMR
- Support SILMMA to provide capacity building and awareness to Provincial and community stakeholders while enabling SILMMA to become a clearing house for the CBNRM program through data sharing protocols with MFMR and MCEM

1110. The implementation of the demonstration programs will be sole sourced contracted to TNC for Isabel and WorldFish in Malaita as both have currently programs of and existing relationships with both communities and the Provincial Administration.

3. Regional Contractors

1111. **Climate Change Adaptation Contractor** The RETA will provide a single regional contractor for the implementation of the climate change adaptation program.

1112. The contractor will be required to develop a work plan that is fully integrated with the wider work plan, especially for the Demonstration Area planning and implementation programs. The contractor will undertake a combined climate change scenario development, vulnerability assessment and priority adaptation program within the CBRNM planning process.

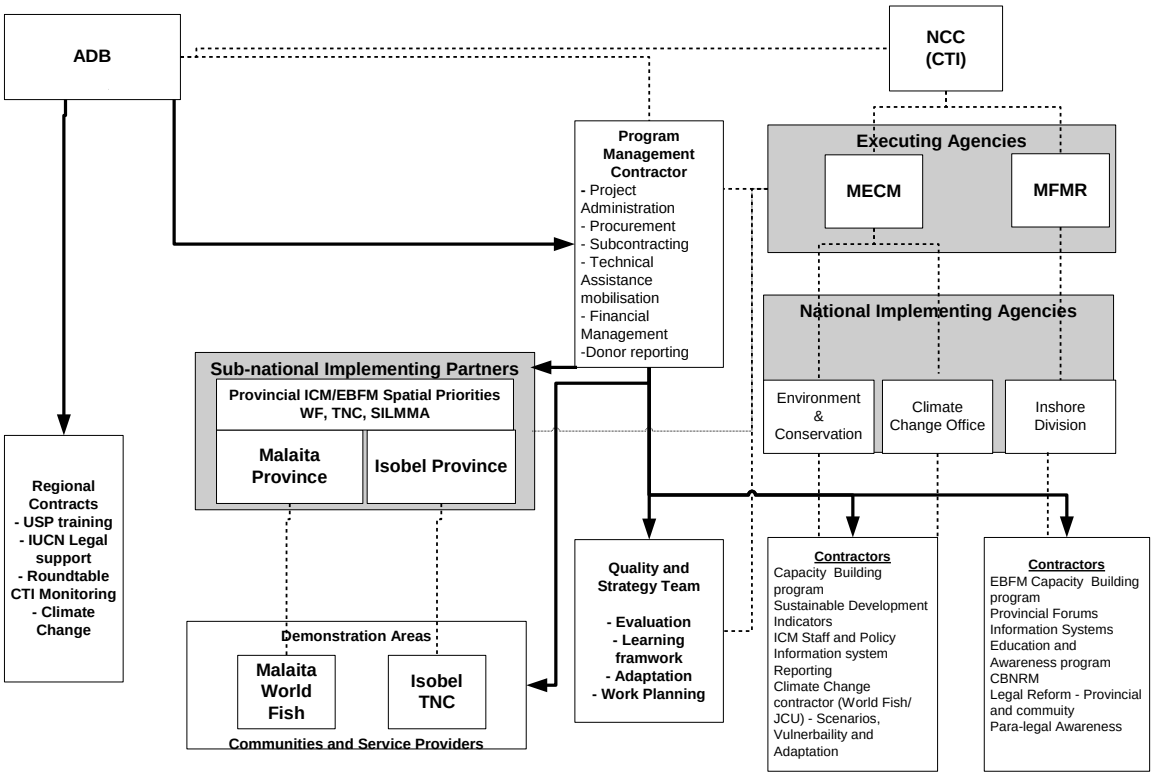
1113. Key aspects of the program in Solomons will be a strong mentoring and capacity building focus of the Climate Change Office and a scaling of the program to fit with available national capacity. Further the contractor will assist MCEM to develop a national climate change dialogue for future policy development.

1114. Building Environmental Law Capability The RETA will provide legal support for the CTI Pacific countries through the IUCN regional Law initiative – this will be in form of supporting legal practitioners, access to training, professional peer support and technical services. For the Solomon's this will involve support from the initiative being channelled to CELCOR (PNG) to support the establishment of the Solomon Islands Environmental Law Association (SIELA). SIELA is currently in its formative stage with a registration pending. CELCOR is supporting a full time administrator for the SIELA. The RETA will provide contracts for legal support through this partnership.

1115. **Regional Evaluation** IUCN will be contracted for providing round table support for supporting and hosting the annual regional evaluation program that will build on the national level quality and strategy programs. Each year the environment round table meeting will provide a session to CTI countries to have a joint evaluation and for identification of best management practices and lessons learned.

1116. The proposed implementation arrangement for the demonstration area program is presented in Figure 2 below.

Figure 15: Proposed Implementation Arrangements



APPENDIX A DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
Impact Increased management capacity to build resilience in the capacity of coastal and marine ecosystems to contribute to food security	Productivity of marine ecosystems under management supporting a 10% increase in catch levels Coastal ecosystems assessments reporting increased diversity, and biomass relative to baseline in 2011-2012 Increased diversification in coastal community household income sources compared to surveys undertaken for management planning	Fisheries coastal assessment and monitoring surveys Government Statistics ICM data base	**Assumptions** **-** ICM is effective in managing current and future threats - plans are fully implemented **Risks** - no compliance due to social and traditional land use disputes - failure to adapt to changing threats - external threats from climate change dominate local management
Outcome A coastal and marine resources management program based on CBNRM inclusive of ICM and EBFM principles	ICM site demonstrating threat management and local livelihoods increased by 20% relative to households not participating by 2020	Fisheries data base Coastal maps Fisheries surveys ICM indicator reports	**Assumptions** **-** that implementing agencies treat it as a Project and do not build ICM and EAFM into their work plans **-** adequate funds for continued implementation - adequate support provided to community resource management **-** priority biodiversity areas can be reserved or protected **Risks** - EBFM becomes a top down technically dominated program - EBFM can not be legally enforced - civil unrest disrupts programs
Output 1. Building organizational capability and management competency. **1.1: MECM Coastal Environment Management Capacity strengthened**	Three staff appointed by Q3 PY1 Training courses delivered in CBNRM, ICM, sustainable development, policy development Sustainable development indicators for coastal and marine resources reported for two demonstration areas end of PY 2	Staff records Training course evaluations and training reports Indicator reports Project records Policy concept and options papers	**Assumptions** **-** Staff appointed and available for training **-** Director provides leadership and controls based on agreed procedures and work-plans - trainees will be in roles to apply skills **Risks** - Staff not appointed on time - Correct staff trained - MCEM does not involve other

	Cross sector planning and policy dialogue platforms developing policy concept papers by end of PY 3		stakeholders in training
1.2: MFMR Inshore fisheries management capacity strengthened	Training of inshore fisheries group trained in EBFM , CBNRM and Sustainable Development by end of PY 2 Broad scale remote sensing based habitat mapping completed for Isabel province (mid PY2) and Malaita (mid PY3) MFMR staff trained in coastal resource assessment techniques and detailed habitat mapping by mid PY 3 Inshore fisheries data collection and management systems in place and reporting by Mid PY3 ICT staff member contracted by RETA in PY2 and transferred to MFMR in PY 4	Staff records Training course evaluations and training reports Habitat maps Project records Policy concept and options papers Program records Resource assessment reports for both demonstrations Coastal and Inshore Fisheries Management EBFM strategy	**Assumptions;** - community dependence on fisheries is sustainable - CBNRM adapts to manage new threats **Risks:** - the balance between fisheries development and management is maintained. - donor programs exceed capacity for implementation 1. 2.
1.3: Increased awareness of Isabel and Malaita Provincial Stakeholders to coastal resource management	Awareness and training programs in CBNRM, ICM, EBFM, Sustainable development by end of PY 2 Cross sector planning forums operating by mid PY 2 Provincial Ordinances and community by laws drafted by mid PY 3 Provincial participation in ICM , EBFM and CBNRM programs Ecosystem monitoring reported quarterly by PY 3 (Isabel) and Mid PY 4 (Malaita)	Training Evaluations Project records Draft Provincial Ordinances and community by laws Monitoring data and reports	**Assumptions** - Provincial engagement is supported and maintained **Risks** Integration of inshore program with provincial implentation is supported
Output 2 Defining best management practice	Eco regional assessments completed for Isabel Q2	Planning documents	**Assumptions** **-** integration of fisheries, land

through experiential learning **2.1 ICM and EAFM demonstrations**	PY 2, and Malaita Q4 PY2 totaling 8,361km^2 MARXAN Spatial Priority maps agreed Priority Coastal Ecosystem Management needs agreed PY2 and Py3 Demonstration area program designed and contracted by end PY 2 and mid PY 3 EBFM and ICM management priorities identified and negotiated within CBNRM Demonstration BMPs piloted by mid PY 4 ICM Ecosystem monitor program operating from Q1 PY 3	Project reports and data sets Contract records CBNRM management plans ICM monitoring records	management, planning systems within community management plans and their implementation **-** EBFM management zones can be maintained in Community management plans **-** Stakeholder cohesiveness and support for ICM - climate change adaptation is feasible **Risks** - ICM plans are not implemented - sector models persists and compete with each other
2.2 Climate Change Adaptation piloted	Climate change contractor mobilized by Mid PY 1 Scenarios generated for Malaita by end of PY 2 Vulnerability assessment program defined and implemented by mid PY3 Adaptation planning and supporting pilot demonstration implemented by PY 4 National policy dialogue underway with a roadmap for developing a CC policy framework	Contract records Scenario software purchased and model outputs Vulnerability assessment report Community adaptation plans Policy meeting minutes and concept papers	
Output 3. Enabling conditions for ICM and EAFM established **Output 3.1 Learning Framework**	Quality and strategy team formed by mid PY 1 Annual evaluations involving the quality and strategy team identifying lessons learned and preparing annual work plans. Analysis of monitoring data reported by PY 3 Provincial Fisheries	Quality and strategy team minutes and recommendations Program records and work plans Demonstration area records	**Assumptions** **-** lessons identified will be incorporated into future decisions **-** **Risks**

	officers mentored by MFMR staff every 6 months starting mid PY 1 SILMMA participation in implementation program by PY 2		
Output 3.2: Policy Reform	ICM concept defined and policy concept draft prepared by end PY 3 and presented to NCC EBFM Concept and principles integrated within CBNRM model Sustainability objectives defined using coastal indicators	Policy documents Project documents	**Assumptions** - integrated management supported by all sectors **Risks** **-** economic development dominates and leads to non-sustainable resource use
Output 3.3 Strengthening Provincial and community legal framework	Preparation of Provincial Ordinances by end of PY 2 Community by laws drafted by end of PY 2 Para legal awareness raising implemented by the end of PY 4 Domestic environmental law professional development and service strengthened with CELCOR support by end of PY 2	Legal documentation Awareness training contracts and materials Environmental law association minutes and records	**Assumptions** **-** supply of Provincial Ordinances can be managed by Provinces **-** ELA is established and grows **Risks** - No laws adopted or enforced
Output 3.4 Establishing sector management information systems	MECM coastal database designed and populated by end of PY 2 Data sharing protocols and data management procedures defined by mid of PY 2 Sustainability indicator reports starting mid PY 3 MFMR Data management and database established by mid PY 2	Database records Project records	**Assumptions** **-** NZAID support to MFMR for GIS training and capacity building - UNDP GIS system operating for MCEM **Risks** **-** No coordination between donors -
Output 4. Program management support	PMO contract awarded by month 2 PY 1	Program records	**Assumptions** **-** PMO contracted on time

<table>
<tr><td>Output 4.1: Effective Program management</td><td>PMO staffed and annual work plan by month 4 PY 1

Technical consultants mobilized and inputs integrated with training and planning program

Program performance reports completed on time for at least 95% of requirements</td><td>Client evaluations</td><td>- Government agencies will work collaboratively

Risks
Sectors work independently</td></tr>
<tr><td colspan="3">Activities
1.0 Contracting Program Management contractor month 2 PY 1
1.1 Environment officer appointed month 3 PY1
1.2 training program implemented for MECM and MFMR by end PY 2
1.3 EBFM awareness program initiated by mid PY 1
1.4 Resource assessment and habitat mapping by mid PY 2
1.5 Data collection and Information system completed by end PY 2
1.6 ICT program developed by mid PY 3
1.7 Provincial awareness forums and SILMMA provincial program in PY 2 and PY 3
2.1 Awareness, training and leadership in PY 2 and PY 3
2.2 Provincial ICM working groups meeting PY 2
2.3 Provincial Habitat mapping exercise PY 2
2.4 Ecoregional assessments PY 2 and PY 3
2.5 MARXAN spatial planning PY 2 and PY 3
2.6 EBFM/ICM objectives for CBNRM in priority spatial zones PY3
2.7 CBNRM management planning and livelihoods PY 3 and PY 4
2.8 Priority ecosystem monitoring PY 2,3,4
3.1 Learning framework mid PY 1 through end of Project
3 .2 Policy development from mid PY 1 to end PY 3
3.3 Legal framework strengthening PY 2 and PY 3
3.4 Information systems in MECM (PY 2) and MFMR (PY 2)
4.0 Program management support from month 3 PTY 1
4.1 Reporting on quarterly and six monthly basis from start of PY1</td><td>Inputs
<u>Finance (USD)</u>
ADB 201,106
Government 214,934
GEF
- Biodiversity 1,817,852
- Int Waters 586,039
- Clim Chge 364,456
Total 3.18 million

<u>Inputs (USD)</u>
Field materials 344,648
Surveys 473,529
Planning 269,407
Cap Blding 462,890
Training 496,215
Consultants 346,993
Program Mngte 329,774
Equipment 49,949
Transport 47,838
Total 2,842,683

Contingency 341,997

Total 3,184,680</td></tr>
</table>

APPENDIX C: DETAILED COSTS BY FINANCIER

Table 25: Detailed Costs By Financier

.	Base (USD)						Financing with Contingencies (USD)				
	Year 1	Year 2	Year 3	Year 4	Total	Total USD w/ Contgies	IW	CC	BD	ADB	Govt
Project coordination - staff (1 Dir, 1 Fin, 1 Admin)	20,100	26,800	26,800	26,800	100,500	114,252	19,423	0	14,853	79,976	0
Project coordination - local transport	9,568	12,757	12,757	12,757	47,838	54,384	0	10,877	21,754	21,754	0
Project coordination - office equipment	17,789	670	670	670	19,799	21,007	0	0	0	21,007	0
Project coordination - meeting costs	20,100	26,800	26,800	26,800	100,500	114,252	57,126	0	57,126	0	0
Project coordination - accounting and overhead	7,504	10,050	10,050	10,050	37,654	42,809	21,405	0	21,405	0	0
In-kind office space	22,780	22,780	22,780	22,780	91,120	103,094	0	0	0	0	103,094
Capacity Building											
Environment 3 graduate trainees	18,090	24,120	24,120	0	66,330	73,509	36,754	0	36,754	0	0
Env Training - Sustainability and indicators (2 weeks, USP)	61,010	0	0	0	61,010	64,061	32,030	0	32,030	0	0
Env Training - CBNRM (4 weeks, USP)	113,980	0	0	0	113,980	119,679	59,840	0	59,840	0	0
Env Training - ICM (2 weeks, USP)	61,010	0	0	0	61,010	64,061	32,030	0	32,030	0	0
Env Training - adaptive mgmt (1 week, USP)	0	30,505	0	0	30,505	33,632	16,816	0	16,816	0	0
Env Training - info systems and data (1 week, USP)	0	30,505	0	0	30,505	33,632	16,816	0	16,816	0	0
Env Training - monitoring and reporting (1 week, USP)	0	30,505	0	0	30,505	33,632	16,816	0	16,816	0	0
Env Training - environmental policy (1 week, USP)	0	30,505	0	0	30,505	33,632	16,816	0	16,816	0	0
Fish Training - EBFM (2 weeks, World Fish)	61,010	0	0	0	61,010	64,061	32,030	0	32,030	0	0
Fish Training - coastal resource assessment (1 week, dom trainer)	6,432	0	0	0	6,432	6,754	3,377	0	3,377	0	0
Fish dive gear - 10 sets	16,080	0	0	0	16,080	16,884	0	0	0	16,884	0
Fish socio-economics/resource economics int'l TA 2.5 months	0	33,266	43,517	0	76,782	87,051	43,526	0	43,526	0	0
Fish communications staff	0	10,318	10,318	0	20,636	23,320	0	0	23,320	0	0
Fish training in community education - Live and Learn	0	19,564	19,564	0	39,128	44,217	22,109	0	22,109	0	0
SILMMA training programs	6,432	12,864	12,864	0	32,160	35,828	0	0	35,828	0	0
SILMMA awareness workshops in provinces	0	12,864	12,864	12,864	38,592	44,711	0	0	44,711	0	0
SILMMA provincial leadership training	0	0	6,432	6,432	12,864	15,264	0	0	15,264	0	0

APPENDIX E: DRAFT TERMS OF REFERENCE # 1

A. Program Management Contractor

1. Background

1117. The ADB will contract a Program Management Contractor (PMC) to implement the ADB and Solomon Islands Government (SIG) components of the Project. The PMC will be based in the Department of Environment and Conservation (DEC) and will comprise three national full time staff, who will be responsible for supporting the Program implementation while reporting to the GEF Focal Point, the two executing agencies (EA) which will be the Ministry of Environment, Conservation and Meteorology (MECM) and the Ministry of Fisheries and Marine Resources (MFMR). The ADB and GEF funding for the Program will be disbursed via the PMC to the respective implementing agencies (IA) and sub-contractors.

1118. The duration of the contract will be up to four years depending on the elapsed time for contracting.

2. Key Obligations of this Contract

1119. The PMC will organize and complete the following activities and outputs:

- Establish a Program Management Office (PMO) in the DEC
- Develop work plans for full time staff and technical experts
- Recruit and manage the following full time national positions to work within the PMO:
  - (d) Program Director
  - (e) Financial Accountant
  - (f) Procurement and Contract Administrator
- Recruit and mobilize the following technical experts:
  a. Fisheries legal expert
  b. Socio-economist
  c. Remote sensing habitat mapping expert
- Assist National Implementing Agencies (DEC, CCD and Fisheries In-shore Division) and sub-national Implementing Agencies (Malaita and Isobel Provincial governments) to develop work plans
- Develop terms of reference and sub-contracting agreements with the identified implementing agencies for the various Program sub-components, particularly in the areas of
  a. ICM demonstration area management and coordination through TNC (Isabel) and World Fish (Malaita)
  b. EbFM capacity building World Fish
  c. Managing GIS and Information Systems
  d. Remote sensing and ground truthing Habitat mapping
- Support both the DEC, CCD and Fisheries In-shore Division to:
  a. Develop annual budgets and work plans,
  b. Coordinate contractors
  c. Coordinate a learning program for demonstration areas
- Support relevant Malaita and Isobel Provincial Government staff to:
  a. Develop annual ICM budgets and work plans,

b. Coordinate contractors
c. Report on ICM progress to the EA

- Support EA to review and provide strategic guidance on ICM demonstration site management.
- Provide ongoing mentoring and professional development to DEC, CCD and Fisheries In-shore Division staff
- Undertake Program monitoring and evaluation on a quarterly and annual basis.
- Assist in the development of relationship building and information and resource sharing among SIG Ministries and departments.
- Provide the Monthly, Quarterly and Annual reports to the MECM, MFMR, NCC-CTI and ADB
- Provide administrative support for reporting to the MECM and MFMR on a monthly basis and to wider Program stakeholders on a quarterly basis.

3. Coordination with other ADB Contractors on the Project

1120. Coordinate regionally contracted services in the RETA including the regional learning program, the climate change adaptation program

B. Program Management Contractor Staff Job Descriptions

1. Program Director

1121. The Program Director will have a masters degree in a natural resource subject, considerable work experience across a number of sectors within Solomon Islands, a close knowledge of both the Fisheries sector, and the Environment sector and strong networking skills. The candidate must be acceptable to the Permanent Secretary (PS) of MECM and the PS MFMR.. They will be responsible for the overall management of the PMO activities and staff. This will involve:

i. Develop annual work plans for PMO staff
ii. Supervise PMO staff
iii. Assisting in the development of relationship building and information and resource sharing among SIG Ministries and departments.
iv. Providing Program implementing agencies advice and support in subcontract work planning
v. Supporting the Implementing Agencies to coordinate ICM demonstration site activities
vi. Undertake quarterly Program monitoring and evaluation
vii. Providing the Monthly, Quarterly and Annual reports to the MECM and MFMR (EA)
viii. Managing technical expert inputs and work plans
ix. Ongoing mentoring and professional development to DEC, CCD and Fisheries In-shore Division staff

2. Financial Accountant.

1122. The Financial Accountant will have knowledge of donor programs and procedures including ADB and GEF financial management standards, reimbursement and disbursement procedures. They will report to the Program Director, and be responsible for tracking and forecasting Program expenditure. This will involve:

i. Developing budgets and cost breakdowns for Program subcontracts.
ii. Liaising with the Program implementing agencies on the tracking and forecasting of sub-contract expenditure.
iii. Disbursement of funds to contractors and implementing agencies and maintaining a set of consolidated Program accounts

iv. Tracking, forecasting and reporting Program expenditure .
v. Preparing quarterly financial reports for the MECM and MFMR (EA) and ADB.

3. Procurement and Contract Administrator

1123. The Procurement and Contract Administrator will have knowledge of both donor and government procurement systems, experience in Program Administration. The candidate will report to the Program Director, and be responsible for Program activities relating to subcontracts and procurement. This will involve:

i. Preparing RFP's for subcontractors
ii. Drafting subcontract agreements for the procurement of Program implementing agency services
iii. Drafting terms of reference for Program subcontracts
iv. Liaising with Program implementing agencies on subcontract progress
v. Raising invoices to the ADB for Program milestones and agreed upon out of pocket expenses
vi. Paying implementing agencies based on subcontract milestones
vii. Providing the Program Financial Accountant with PMO cost and billing records
viii. Other tasks as required by the Program Director

Supplementary Appendix F

Individual Country Investment Plans

Detailed Costs and Key Assumptions

Draft Final Technical Assistance Report

for

RETA 6741 Strengthening Coastal and Marine Resources in the Coral Triangle of the Pacific

ADB, GEF and AIMS Financed

FIJI INVESTMENT PLAN

Table 1: Project Investment Plan
(USD)

Item			Amount
A.	**Base Cost**		
	1	Component 1: Organizational Capacity	$181,459
	2	Component 2: Best Management Practices	$748,869
	3	Component 3: Enabling Conditions	$140,980
	4	Component 4: Project Management	$168,209
		Subtotal	**$1,239,516**
B.	**Contingencies**		**$137,124**
Total			**$1,376,640**

Table 2: Financing Plan
(USD)

Source	Total	%
Asian Development Bank	$202,292	15%
GEF - International Waters	$582,683	42%
GEF - Climate Change	$360,482	26%
GEF - Biodiversity	$0	0%
Government	$231,184	17%
Total	**$1,376,640**	**100%**

Table 3: Detailed Cost Estimates
(USD)

Item			Total Cost	% of Total Base Cost
A.	**Investment Costs**			
	1	Civil works	$191,839	15%
	2	Planting materials	$139,390	11%
	3	Field and Operations	$21,200	2%
	4	Enteprrise development	$58,300	5%
	5	Studies	$142,040	11%
	6	Planning processes	$58,300	5%
	7	Capacity building	$294,349	24%
	8	Training	$58,300	5%
	9	TA - local	$21,200	2%
	10	TA - int'l	$0	0%
	11	Project management	$159,729	13%
	12	Office equipment	$27,560	2%
	13	Local transport	$67,310	5%
		Subtotal (A)	**$1,239,516**	**73%**
B.	**Contingencies**			
	1	Physical	$0	0%
	2	Price	$137,124	11%
		Subtotal (B)	**$137,124**	**11%**
Total Project Cost (A+B)			**$1,376,640**	

Table 4: Contract Packages

(USD)

Item			Total Cost
	Issuer		
1	ADB	National Trust of Fiji - GEF	$727,236
2	ADB	National Trust of Fiji - ADB	$58,433
3	ADB	IUCN (1)	$35,979
4	ADB	Climate change contractor	$239,858
		Government Contribution	$231,184
		Total by ADB contract (includes contingencies)	**$1,061,506**
		Total by ADB contract + government	**$1,292,690**

Note (1) Includes $35,979 for Roundtable and $83,950 for environmental law

FIJI DETAILED COSTS

	Base (USD)						Financing with Contingencie) (USD)				
	Year 1	Year 2	Year 3	Year 4	Total	Total USD w/ Contgies	IW Total	CC Total	BD Total	ADB Total	Govt Total
Dept of Environment coordinator	12,422	16,563	16,563	12,422	57,969	65,575	0	0	0	0	65,575
Project implementation officer - National Trust	12,422	16,563	16,563	12,422	57,969	65,575	32,788	32,788	0	0	0
National Trust - local transport	9,540	12,720	12,720	12,720	47,700	54,227	27,114	27,114	0	0	0
National Trust - meeting costs	9,540	9,540	9,540	9,540	38,160	43,175	21,587	21,587	0	0	0
National Trust - office equipment	3,180		0	0	3,180	3,339	1,670	1,670	0	0	0
National Trust -accounting & overheads	5,300	5,300	5,300	5,300	21,200	23,986	11,993	11,993	0	0	0
DoE - local transport	4,770	6,360	6,360	2,120	19,610	21,960	0	0	0	0	21,960
DoE - meeting costs	4,240	4,240	4,240	2,120	14,840	16,612	0	0	0	0	16,612
DoE - office equipment	3,180	0	0	0	3,180	3,339	3,339	0	0	0	0
Demonstration area											
Ra stakeholder forum	7,950	7,950	7,950	7,950	31,800	35,979	2,878	11,873	0	0	21,227
National ICM committee meeting	1,590	1,590	1,590	1,590	6,360	7,196	0	0	0	0	7,196
Data collection				0							
* water quality	10,600	0	0	0	10,600	11,130	0	0	0	11,130	0
* marine coastal baseline	26,500	0	0	0	26,500	27,825	27,825	0	0	0	0
* sediment traps	2,650	0	0	0	2,650	2,783	0	0	0	2,783	0
* sugar mill effluent	2,650	0	0	0	2,650	2,783	0	0	0	2,783	0
* sanitation & solid waste assessment	23,850	0	0	0	23,850	25,043	0	0	0	25,043	0
* socioeconomic survey of coastal tikinas	15,900	0	0	0	15,900	16,695	0	0	0	16,695	0
GIS data entry	5,300	5,300	5,300	0	15,900	17,544	17,544	0	0	0	0
GIS maps	0	1,590	0	0	1,590	1,753	1,753	0	0	0	0
Threat analysis - Miradi	7,950	0	0	0	7,950	8,348	8,348	0	0	0	0
Tikina planning process	21,200	29,150	0	0	50,350	54,398	40,798	13,599	0	0	0
Site pilots											
* afforestation	0	29,150	36,040	0	65,190	73,859	73,859	0	0	0	0
* sanitation	0	29,404	29,404	0	58,809	66,458	66,458	0	0	0	0
* SME opportunities											
tourism	0	15,900	42,400	0	58,300	66,613	59,952	0	0	6,661	0
ag crops for tourism	0	21,200	53,000	0	74,200	84,727	76,254	0	0	8,473	0
piggery development	0	47,700	21,730	0	69,430	77,744	70,747	0	0	6,997	0
Training for Dept of Environment USP	0	13,250	13,250	0	26,500	19,060	0	0	0	0	19,060
Training for sector depts - USP	0	5,300	5,300	0	10,600	7,624	0	0	0	0	7,624
Support for environmental law - IUCN regional	18,550	18,550	18,550	18,550	74,200	83,950	0	0	0	83,950	0
Strategy & Quality team	3,975	3,975	3,975	3,975	15,900	17,989	17,989	0	0	0	0
Evaluation forum	795	795	795	795	3,180	3,598	3,598	0	0	0	0
Roundtable - IUCN	7,950	7,950	7,950	7,950	31,800	35,979	0	0	0	35,979	0
ICM resource materials	10,600	10,600	10,600	10,600	42,400	47,972	0	0	0	0	47,972
Community awareness & education	0	10,600	10,600	0	21,200	23,957	0	0	0	0	23,957
Officials travel to CTI meetings	3,975	3,975	3,975	3,975	15,900	17,989	16,190	0	0	1,799	0
Climate change			0	0	0	0	0	0	0	0	0
TA	5,300	5,300	5,300	5,300	21,200	23,986	0	23,986	0	0	0
Studies	10,600	10,600	10,600	10,600	42,400	47,972	0	47,972	0	0	0
Pilot projects - civil works	15,900	15,900	15,900	15,900	63,600	71,958	0	71,958	0	0	0
Pilot projects - equipment	5,300	5,300	5,300	5,300	21,200	23,986	0	23,986	0	0	0
Pilot projects - operations	5,300	5,300	5,300	5,300	21,200	23,986	0	23,986	0	0	0
Overheads	10,600	10,600	10,600	10,600	42,400	47,972	0	47,972	0	0	0
	289,579	**388,214**	**396,694**	**165,029**	**1,239,516**	**1,376,640**	**582,683**	**360,482**		**202,292**	**231,184**

FIJI ASSUMPTIONS ON COSTS

Notes on Fiji Detail Costs
in Fiji dollars (F) unless noted as USD

(1) Dept of Environment coordinator assumes pay is F 31,250 per year, per government pay scales; assumes that work can start in 2nd quarter of Year 1 and ends in 3rd quarter of Year 4.
(2) Project implementation officer is paid F 31,250 per year, per government pay scales; assumes that work begins in 2nd quarter of Year 1 and ends in 3rd quarter of Year 4.
(3) National Trust local transport includes travel to demonstration area; car hire = F150/day for 120 days in Year 1, 160 days in Year 2, 3, and 4.
(4) National Trust meeting costs include room hire, incidental cost, and funds to pay for non-local attendees; F1500 per meeting; 12 meetings in Year 1, 2, 3, and 4
(5) National Trust overheads is assumed to be 10% of total direct National Trust charges.
(6) DoE local transport includes travel to demonstration area; F150/day for 60 days in Year 1, 80 days in Year 2 and 3, and 26 days in Year 4.
(7) DoE meeting costs includes room hire and incidental expenses; F1500 per meeting for 6 meetings in Year 1, 2, and 3 and 3 meetings in Year 4.
(8) National Trust and DoE office equipment includes for each a computer at F2500, printer at F500, and copier at F3000 for each office.
(9) Stakeholder forum is to cover meeting costs for 3 day forum, 35 people, at the demonstration area; F 15,000 per year assumes F100/night for hotel = F7000; F7000 for venue hire and food.
(10) National ICM committee meeting is F1500 per meeting and 2 meetings per year.
(11) Demonstration area costs. Water quality is for 40 lab tests at F500 each. Marine coastal baseline assumes 4 people working for 4 months at F6000 per month. Sediment traps includes 10 at F500 each to measure sediment discharges from land. Sugar mill effluent is to measure point source flows at the mill, 10 tests at F500 each. Sanitation and solid waste assessment is to cover a household survey of facilities in 10 villages in the demonstration area; F4500 per village. Socio-economic survey is to collect baseline data for 2 tikinas in the demonstration area; assumes 10 villages at F3000 per village.
(12) GIS data entry is to enter coastal data into existing GIS baseline; F2000 for 5 GIS layers each in Years 1, 2, and 3.
(13) GIS maps is to produce 50 maps of the demonstration area at F60 each.
(14) Miradi threat analysis will be conducted in 4 tikinas at F3750 each.
(15) Tikina planning process is for 4 tikinas at F24,000 each to develop plans to manage their coastal resources.
(16) Demonstration site pilot costs are to carry out specific pilots in selected villages. Funds allocated are indicative only at this point, as the planning process will determine the actual pilots to be run. Afforestation allows for planting up to 500 ha in teak, mahogany, or natives at F190 per ha. Sanitation implementation is F1200 per house for flush toilets for 25 houses and F 3000 per house for 30 composting toilets.
(17) Training for Department of Environment includes 3 courses in integrated coastal management, inshore fisheries management, and community management approaches at F16,000 per course, each to be 4 weeks long. To be delivered by USP.
(18) Training for sector departments includes 2 courses in integrated coastal management at F10,000 each, for 3 weeks each.
(19) Environmental law includes salary support for a lawyer from the Fiji Environmental Law Society for 3 years, as per IUCN regional contract.
(20) Strategy and Quality team is support for an annual meeting plus USD 1000 for 1 int'l airfare and USD 180 per diem per day for 7 days.
(21) Roundtable is a regional program in information sharing and learning to be contracted to IUCN. Fiji cost is about 9% of total regional contract cost of USD 379,500.
(22) Resource materials is cost of writing and reproducing education materials for the local communities; 5 packages at F5000 each.
(23) Climate change is the Fiji component of a regional program in climate change assessment and proposed adaptive measures to be delivered by a single contractor. Pilot projects to be identified as an early part of the climate change work streams.

VANUATU INVESTMENT PLAN

Table 1: Project Investment Plan

(USD)

Item			Amount
A.	**Base Cost**		
	1	Component 1: Organizational Capacity	$344,387
	2	Component 2: Best Management Practices	$1,369,734
	3	Component 3: Enabling Conditions	$361,071
	4	Component 4: Project Management	$627,378
		Subtotal	**$2,702,570**
B.	**Contingencies**		**$304,950**
Total			**$3,007,520**

Table 2: Financing Plan

(USD)

Source	Total	%
Asian Development Bank	$205,178	7%
GEF - International Waters	$583,393	19%
GEF - Climate Change	$364,153	12%
GEF - Biodiversity	$1,364,387	45%
Government	$490,410	16%
Total	**$3,007,520**	**100%**

Table 3: Detailed Cost Estimates

(USD)

Item			Total Cost	% of Total Base Cost
A.	**Investment Costs**			
	1	Civil works	$267,370	10%
	2	Planting materials	$89,971	3%
	3	Field and Operations	$139,608	5%
	4	Enteprrise development	$89,971	3%
	5	Studies/contracts	$288,004	11%
	6	Planning processes	$313,301	12%
	7	Capacity building	$249,835	9%
	8	Training	$230,100	9%
	9	TA - local	$0	0%
	10	TA - int'l	$336,809	12%
	11	Project management	$521,472	19%
	12	Office equipment	$42,693	2%
	13	Local transport	$133,437	5%
		Subtotal (A)	**$2,702,570**	**100%**
B.	**Contingencies**			
	1	Physical	$0	0%
	2	Price	$304,950	11%
		Subtotal (B)	**$304,950**	**11%**
Total Project Cost (A+B)			**$3,007,520**	

Table 4: Contract Packages

(USD)

Item	Issuer		Total Cost
1a	**ADB**	**Contract 1a - Program Mgmt Contractor - Project Office**	**$1,232,365**
1b	**ADB**	**Contract 1b - Program Mgmt Contractor - Subcontracts**	**$822,636**
2	**ADB**	**Contract 2 - Regional contract - USP**	**$166,191**
3	**ADB**	**Contract 3 - Regional contract - Round Table / IUCN**	**$59,103**
3a	**ADB**	**Contract 3a - Regional contract - IUCN legal**	**$11,689**
4	**ADB**	**Contract 4 - Regional contract - Climate Change**	**$225,126**
5	Project	Contract 5 - Subcontract - Fisheries	$152,690
6	Project	Contract 6 - Subcontract - Fisheries/Reef Check	$26,512
7	Project	Contract 7 - Subcontract - Remote sensing	$81,228
8a	Project	Contract 8a - Subcontract - Community NGO Efate	$122,376
8b	Project	Contract 8b - Subcontract - Community NGO Santo	$74,760
8c	Project	Contract 8c - Subcontract - Community NGO Epi	$11,577
9	Project	Contract 9 - Subcontract - Live and Learn	$22,050
10	Project	Contract 10 - Subcontract - Min of Lands - GIS unit	$0
11	Project	Contract 11 - Subcontract - Shefa province	$331,443
		Government in-kind	$96,735
		Government total contribution (including in-kind)	$490,410
		Total by ADB contract - 1a,1b,2,3,3a,4 (includes contingenc	**$2,517,110**
		Total by ADB contract (1a,1b,2,3,4) + government contribut	**$3,007,520**

Project = Project Management Contractor

Program Mgmt Contractor - Program Office Break-Out	
Program Management Office staff (3)	$255,788
Local travel, meetings, other	$165,297
Office equipment	$14,963
TA - int'l	$364,903
DoE & ELMA Coordinators (2)	$58,829
DoE & ELMA local travel, meetings, other	$217,043
DoE & ELMA office equipment	$19,451
Field equipment	$9,213
Planning and studies	$54,628
Quality and evaluation	$36,136
Training - ELMA rangers	$0
Total	**$1,196,251**

VANUATU DETAILED COSTS

.	Base Cost (USD)						Financing with Continegencies (USD)				
	Year 1	Year 2	Year 3	Year 4	Total	Total USD w/ Contgies	IW	CC	BD	ADB	Govt
Project coordination - staff (1 Dir, 1 Fin, 1 Admin)	45,000	60,000	60,000	60,000	225,000	255,788	51,158	51,158	102,315	51,158	0
Project coordination - local transport	13,700	13,700	13,700	13,700	54,800	62,001	12,400	0	49,601	0	0
Project coordination - office equipment	14,250	0	0	0	14,250	14,963	0	0	0	14,963	0
Project coordination - meeting costs	10,000	10,000	10,000	10,000	39,999	45,255	22,627	0	22,627	0	0
Project coordination - accounting and overhead	12,825	12,825	12,825	12,825	51,300	58,041	17,412	11,608	23,216	5,804	0
ICM TA (7 months total)	86,600	45,800	24,130	0	156,530	169,358	84,679	0	84,679	0	0
Capacity Building											
DoE - field coordinator	11,249	15,000	15,000	15,000	56,248	63,944	0	6,394	23,659	0	33,890
DoE - local transport	12,450	8,730	8,730	8,730	38,638	43,413	0	8,683	34,730	0	0
DoE - meeting costs	20,000	20,000	20,000	20,000	80,001	90,514	0	18,103	72,411	0	0
DoE - office equipment	11,400	0	0	0	11,400	11,970	0	0	0	11,970	0
Training - CBNRM	59,200	0	0	0	59,200	62,160	0	0	62,160	0	0
Training - ICM	0	42,200	0	0	42,200	46,525	0	0	46,525	0	0
Training - conservation mgmt	0	14,400	0	0	14,400	15,876	0	0	15,876	0	0
Training - biodiversity assessment	14,400	0	0	0	14,400	15,120	0	0	15,120	0	0
Training - climate change	0	0	14,400	0	14,400	16,670	0	16,670	0	0	0
Training - sustainable development	0	0	22,900	0	22,900	26,509	0	0	26,509	0	0
Training - project mgmt, admin	5,000	0	0	0	5,000	5,250	0	0	0	0	5,250
Demonstration area											
Efate - ELMA project coordinator	11,249	15,000	15,000	15,000	56,248	63,944	0	6,394	15,986	6,394	35,169
Efate - ELMA local transport	10,000	10,000	10,000	10,000	39,999	45,255	0	9,051	22,627	13,576	0
Efate - ELMA meetings	15,751	12,000	12,000	12,000	51,752	58,248	0	11,650	26,211	0	20,387
Efate - ELMA office equipment	7,125	0	0	0	7,125	7,481	0	0	0	7,481	0
Efate - ELMA community plans (21 communities)	42,000	42,000	0	0	83,999	90,404	0	0	90,404	0	0
Efate - ELMA remote sensing - coastal area	16,000	0	0	0	16,000	16,800	0	0	16,800	0	0
Efate - ELMA ground truth remote sensing	24,999	0	0	0	24,999	26,249	0	0	26,249	0	0
Efate - ELMA marine coastal baseline	10,000	0	0	0	10,000	10,500	0	0	10,500	0	0
Efate - ELMA collate existing data	5,000	0	0	0	5,000	5,250	5,250	0	0	0	0
Efate - ELMA GIS data entry and maps	15,000	15,000	0	0	29,999	32,287	0	0	0	0	32,287
Efate - ELMA area council plans & consultation	0	15,000	0	0	15,000	16,537	0	8,269	8,269	0	0
Efate - ELMA provincial plan & consultation (incl Miradi)	0	14,000	0	0	14,000	15,435	0	7,718	7,718	0	0
Efate - ELMA site pilot sanitation	0	105,950	0	0	105,950	116,810	87,607	0	0	0	29,202
Efate - ELMA site pilot solid waste	0	105,950	0	0	105,950	116,810	87,607	0	0	0	29,202
Efate - ELMA site pilot forestry/farming	0	0	89,971	0	89,971	104,152	78,114	0	0	0	26,038
Efate - ELMA site pilot livelihood/tourism	0	0	89,971	0	89,971	104,152	78,114	0	0	0	26,038
Efate - ELMA training for park rangers	37,600	0	0	0	37,600	39,480	0	0	0	0	39,480
Efate - ELMA carbon forestry	0	56,000	0	0	56,000	61,740	0	0	61,740	0	0
Efate - learning materials and workshops for other provs	0	20,000	0	0	20,000	22,050	0	0	22,050	0	0

Santo - community plans (16 communities)	0	64,000	0	0	64,000	70,560	0	0	70,560	0	0
Santo - remote sensing - coastal area	16,000	0	0	0	16,000	16,800	0	0	16,800	0	0
Santo - ground truth remote sensing	18,000	0	0	0	18,000	18,900	0	0	18,900	0	0
Santo - marine coastal baseline	10,000	0	0	0	10,000	10,500	0	0	10,500	0	0
Santo - collate existing data	4,000	0	0	0	4,000	4,200	0	0	0	0	4,200
Santo - GIS data entry and maps	11,999	0	0	0	11,999	12,599	0	0	0	0	12,599
Santo - Miradi threat analysis	8,000	0	0	0	8,000	8,400	0	0	0	0	8,400
Santo - EAFM plan	8,000	0	0	0	8,000	8,400	0	0	8,400	0	0
Santo - integrate EAFM and community plans	4,000	0	0	0	4,000	4,200	0	0	4,200	0	0
Epi - community plans (2 communities)	0	8,000	0	0	8,000	8,820	0	0	8,820	0	0
Epi - remote sensing - coastal area	0	18,000	0	0	18,000	19,845	0	0	19,845	0	0
Epi - ground truth remote sensing	0	13,525	0	0	13,525	14,911	0	0	14,911	0	0
Epi - marine coastal baseline	0	5,000	0	0	5,000	5,512	0	0	5,512	0	0
Epi - collate existing data	0	5,000	0	0	5,000	5,512	0	0	0	0	5,512
Epi - GIS data entry and maps	0	7,500	0	0	7,500	8,269	0	0	0	0	8,269
Epi - Miradi threat analysis	0	5,000	0	0	5,000	5,512	0	0	0	0	5,512
Epi - EAFM plan	0	5,000	0	0	5,000	5,512	0	0	5,512	0	0
Epi - integrate EAFM and community plans	0	2,500	0	0	2,500	2,757	0	0	2,757	0	0
Remote sensing TA	61,200	41,800	0	0	103,000	110,344	0	0	110,344	0	0
Boat engine	4,275	0	0	0	4,275	4,489	0	0	0	4,489	0
GPS - DoE, Fisheries	4,499	0	0	0	4,499	4,724	0	0	0	4,724	0
Enabling conditions											
Sanma Prov - remote sensing	0	0	12,000	0	12,000	13,892	0	0	0	0	13,892
Sanma Prov - interpret image	0	0	1,000	0	1,000	1,158	0	0	0	0	1,158
Sanma Prov - ground truth remote sensing	0	0	18,000	0	18,000	20,837	0	0	20,837	0	0
Sanma Prov - habitat mapping	0	0	2,000	0	2,000	2,315	0	0	2,315	0	0
Sanma Prov - GIS	0	0	7,500	0	7,500	8,682	0	0	0	0	8,682
Penama Prov - remote sensing	0	0	12,000	0	12,000	13,892	0	0	13,892	0	0
Penama Prov - interpret image	0	0	1,000	0	1,000	1,158	0	0	1,158	0	0
Penama Prov - ground truth remote sensing	0	0	18,000	0	18,000	20,837	0	0	20,837	0	0
Penama Prov - habitat mapping	0	0	2,000	0	2,000	2,315	0	0	2,315	0	0
Penama Prov - GIS	0	0	7,500	0	7,500	8,682	0	0	0	0	8,682
Malampa Prov - remote sensing	0	0	12,000	0	12,000	13,892	0	0	13,892	0	0
Malampa Prov - interpret image	0	0	1,000	0	1,000	1,158	0	0	1,158	0	0
Malampa Prov - ground truth remote sensing	0	0	18,000	0	18,000	20,837	0	0	20,837	0	0
Malampa Prov - habitat mapping	0	0	2,000	0	2,000	2,315	0	0	2,315	0	0
Malampa Prov - GIS	0	0	7,500	0	7,500	8,682	0	0	0	0	8,682
Shefa Prov - remote sensing	0	0	8,000	0	8,000	9,261	0	0	0	0	9,261
Shefa Prov - interpret image	0	0	1,000	0	1,000	1,158	0	0	0	0	1,158
Shefa Prov - ground truth remote sensing	0	0	4,000	0	4,000	4,631	0	0	4,631	0	0
Shefa Prov - habitat mapping	0	0	2,000	0	2,000	2,315	0	0	2,315	0	0
Shefa Prov - GIS	0	0	7,500	0	7,500	8,682	0	0	0	0	8,682
Biodiversity planning - Marzan	0	0	29,050	0	29,050	33,629	0	0	33,629	0	0
Sustainable financing TA	0	21,280	0	0	21,280	23,461	0	0	23,461	0	0
Sustainable financing study	15,000	0	0	0	15,000	15,750	0	0	15,750	0	0
Strategy & Quality team	5,985	5,985	5,985	5,985	23,940	27,086	13,543	0	0	13,543	0
Evaluation forum	2,000	2,000	2,000	2,000	7,999	9,050	0	0	0	9,050	0
Roundtable - regional	13,060	13,060	13,060	13,060	52,239	59,103	0	0	0	59,103	0
Legal support - IUCN regional	0	10,602	0	0	10,602	11,689	8,767	0	0	2,922	0
Officials travel to CTI meetings	10,640	10,640	10,640	10,640	42,560	48,153	36,115	0	0	0	12,038
Office - in kind from govt	21,375	21,375	21,375	21,375	85,500	96,735	0	0	0	0	96,735

Regional climate change											
Local technical studies	0	9,918	9,918	0	19,836	22,416	0	22,416	0	0	0
Studies	19,836	20,306	0	0	40,142	43,215	0	43,215	0	0	0
Pilot projects - civil works	0	27,968	13,751	13,751	55,471	63,468	0	63,468	0	0	0
Pilot projects - equipment	0		4,959	4,959	9,918	11,768	0	11,768	0	0	0
Pilot projects - operations	0	9,918	4,959	4,959	19,836	22,703	0	22,703	0	0	0
Overheads	9,918	9,918	9,918	9,918	39,672	44,885	0	44,885	0	0	0
	758,583	**991,846**	**688,242**	**263,901**	**2,702,570**	**3,007,520**	**583,393**	**364,153**	**1,364,387**	**205,178**	**490,410**

VANUATU ASSUMPTIONS ON COSTS

Notes on Vanuatu Detail Costs

all Vatu figures are in 00

(1) Project coordination staff includes 1 project director at Vatu 20,000 per year, 1 finance manager at Vatu 15,000 per year, and 1 administrator at Vatu 12,000 per year. Salaries based on local and government wage rates. All staff work 3 quarters in Year 1 and full time in Years 2,3, and 4.
(2) Project coordination for local transport includes 40 trips to demonstration site on Efate at USD 250 per trip, and 10 trips to work sites on Santo and possibly other islands at USD 360 per trip.
(3) Project coordination office equipment includes 3 computers at Vatu 2500 each, a printer at Vatu 1000, a copier at Vatu 3500, and operating supplies at Vatu 3000.
(4) Project coordination meeting costs includes room rental and incidental costs at Vatu 1500 per meeting for 7 meetings per year.
(5) Project coordination accounting and overhead is based on 15% of direct costs of project coordination.
(6) ICM TA is an international consultant at the rate of USD 18,000 per month for 7 months, airfare of USD 4000 and per diem cost of USD 150 per day for 210 days.
(7) Department of Environment field coordinator salary is Vatu 16,000 per year, based on local and government wage rates. Work is 3 quarters in Year 1 and full-time in Years 2,3, and 4.
(8) Department of Environment local transport is for 35 - 50 trips per year at USD 250 per trip to demonstration site on Efate.
(9) Department of Environment meeting costs are USD 2000 for 10 meetings per year for coordination meetings on Efate.
(10) Department of Environment office equipment includes 3 computers at Vatu 2500 each, a printer at Vatu 1000, and a copier at Vatu 3500.
(11) Training in CBNRM is a course taught by USP at USD $7350 per week for 6 weeks and USD 3100 of travel costs and USD 12,000 of per diems. Available for up to 20 trainees.
(12) Training in ICM is a course taught by USP at $7350 per week for 4 weeks, USD 3100 of travel costs and USD 8400 per diems. Available for up to 20 trainees.
(13) Training in conservation management is a course taught by USP at USD $7350 per week for 10 days and USD 3000 of per diems. No travel cost since this course will be scheduled in conjunction with other USP training.
(14) Training in biodiversity assessment is a course taught by USP at USD 7350 per week for 10 days and USD 3000 of per diems. No travel cost since this course will be scheduled in conjunction with other USP training.
(15) Training in climate change will be conducted by the regional climate change provider at USD 7350 per week for 10 days and USD 3000 of per diems.
(16) Training in sustainable development is a course taught by USP at USD 7350 per week for 14 days , USD 3100 of travel costs, and USD 4200 in per diems.
(17) Training in project management is by a local provider; 2 courses of 5 days each at USD 500 per day.
(18) ELMA project coordinator salary is Vatu 16000 per year, based on local and government wage rates. Work is for three quarters in Year 1 and full time in Years 2,3, and 4.
(19) ELMA local transport is based on 40 trips to demonstration area at USD 250 per trip.
(20) ELMA meeting cost is $500 per meeting for 24 -30 meetings per year.
(21) ELMA office equipment is 1 computer at Vatu 2500, 1 printer at Vatu 1000, 1 copier at Vatu 3500.
(22) ELMA community plans is USD $2000 per community for 21 communities.
(23) ELMA remote sensing is for satellite images of North Efate coastal zone.
(24) ELMA ground truth is for divers to complete 960 transects at 10 sites at a cost of USD 26 per transect. Includes boat hire, fuel, labour, per diems for divers.
(25) ELMA marine coastal baseline is assembling data for North Efate coastal zone, 4 person months at USD 2500 per month.
(26) ELMA collate existing data is adding existing community-based data to the North Efate coastal plan, 2 person months at USD 2500 per monthj.
(27) ELMA GIS is for data entry and map production of North Efate coastal zone, 12 person months at USD 2500 per month.
(28) ELMA area council plans is scaling up the community plans to local areas, 6 person months at USD 2500.
(29) ELMA provincial plan is scaling up regional plans to province level and conducting a Miradi priority analysis, 5 person monhts at USD 2500 per month plus USD 1500 for 2 priority-setting meetings.
(30) ELMA site pilots are preliminary allocations of funds for site demonstrations. Actual site demonstrations will be determine by the planning process. Sanitation costs are USD 2000 per household.
Solid waste costs will be determined by a waste management plan now being drafted. Forestry/farming and tourism site demonstrations are preliminary estimates of funds that could be invested.
(31) ELMA training for park rangers is for 5 days of training for up to 100 park rangers at USD 55 per day to support trainee attendance with per diems and USD 20 per day for a local trainer.
(32) ELMA carbon forestry is for an international TA at USD 13,000 per month for 3 months, USD 13,500 in per diems, and USD 3500 for travel.
(33) Efate learning materials is for 4 packages of locally-produced learning materials about the demonstration area and ICM at USD 5000 each.

(34) Santo community plans are USD 4000 per community for 16 communities.
(35) Santo remote sensing is for satellite images of the East Santo coastal zone.
(36) Santo ground truthing is USD 26 per transect for 680 transects.
(37) Santo marine coastal baseline and collate existing data are to obtain local community plans, 5.5 person months at USD 2500 per month.
(38) Santo GIS is cost of data entry and map production, 5 person months at USD 2500 per month.
(39) Santo Miradi threat analysis is 2 person months at USD 2500 and 1 meeting at USD 3000 attended by all participating communities to decide priorities for plans.
(40) Santo EAFM plan and integration is to produce an ecosystem fisheries plan, 5 person months at USD 2500 per month.
(41) Epi community plans are USD 400 per community for 2 communities.
(42) Epi remote sensing, ground truthing, marine coastal baseline, GIS, Miradi threat analysis and EAFM plan follow the same pattern as for Santo, above.
(43) Remote sensing TA is for an international consultant at USD 12,000 for 6 months, USD 3500 of travel, and USD 27,000 for per diems.
(44) Boat engine is to replace an existing engine in a Department of Fisheries boat to be used for ground truthing and other water duties.
(45) GPS is based on USD 250 per unit for 18 units.
(46) Sanma Province costs are based on purchasing satellite imagery, ground truth costs of USD 26 per transect for 690 transects, and GIS costs for data entry and map production.
(47) Penama Province costs are based on purchasing satellite imagery, ground truth costs of USD 26 per transect for 690 transects, and GIS costs for data entry and map production.
(48) Malampa Province costs are based on purchasing satellite imagery, ground truth costs of USD 26 per transect for 690 transects, and GIS costs for data entry and map production.
(47) Shefa Province costs are for islands other than Efate and are based on purchasing satellite imagery, ground truth costs of USD 26 per transect for 150 transects, and GIS costs for data entry and map production.
(48) Biodiversity planning is for Marzan software tool or similar and producing plans for Sanma, Penama, Malampa, and Shefa provinces at USD 7250 each.
(49) Sustainable financing TA is USD 13,000 for 1 month of an international consultant, USD 4500 in per diems, and USD 3500 for travel.
(50) Sustainable financing study is for a local consultant to complete policy analysis on sustainable financing options.
(51) Strategy and quality team covers 1 meeting per year plus 1 int'l airfare at USD 2000 and 7 days per diem at USD 180.
(52) Evaluation forum is 1 meeting per year at USD 2000 per meeting.
(53) Roundtable is part of the regional learning framework to be run by IUCN. Vanuatu contract cost of USD 59,103 is about 18% of total IUCN regional contract cost of USD 379,500.
(54) Regional climate change work will be provided by a regional climate change contractor. Preliminary estimates only for the break-out of this work into TA, studies, pilot projects, and contractor overheads.

TIMOR INVESTMENT PLAN

Table 1: Project Investment Plan

(USD)

Item			Amount
A.	**Base Cost**		
	1	Component 1: Organizational Capacity	$1,717,800
	2	Component 2: Best Management Practices	$730,800
	3	Component 3: Enabling Conditions	$419,400
	4	Component 4: Project Management	$347,500
		Subtotal	**$3,215,500**
B.	**Contingencies**		**$340,438**
Total			**$3,555,938**

Table 2: Financing Plan

(USD)

Source	Total	%
Asian Development Bank	$210,737	6%
GEF - International Waters	$579,328	16%
GEF - Climate Change	$364,202	10%
GEF - Biodiversity	$1,600,021	45%
Government	$407,586	11%
AIMS	$394,063	11%
Total	**$3,555,938**	**100%**

Table 3: Detailed Cost Estimates

(USD)

Item			Total Cost	% of Total Base Cost
A.	**Investment Costs**			
	1	Civil works	$240,000	7%
	2	Planting materials	$0	0%
	3	Field and Operations	$41,900	1%
	4	Enteprrise development	$251,600	8%
	5	Studies	$864,500	27%
	6	Planning processes	$265,000	8%
	7	Capacity building	$142,400	4%
	8	Training	$221,000	7%
	9	TA - local	$0	0%
	10	TA - int'l	$598,000	19%
	11	Project management	$262,500	8%
	12	Office equipment	$177,600	6%
	13	Local transport	$151,000	5%
		Subtotal (A)	**$3,215,500**	**100%**
B.	**Contingencies**			
	1	Physical	$0	0%
	2	Price	$340,438	11%
		Subtotal (B)	**$340,438**	**11%**
Total Project Cost (A+B)			**$3,555,938**	

Table 4: Contract Packages

(USD)

Item	Issuer		Total Cost
1a	**ADB**	**Contract 1a - Program Mgmt Contractor - Program Office**	1,148,494
1b	**ADB**	**Contract 1b - Program Mgmt Contractor - Subcontracts**	1,341,017
2	**ADB**	**Contract 2 - Regional contract - IUCN roundtable**	62,227
3	**ADB**	**Contract 3 - Regional contract - Climate Change**	202,550
4	Project	Contract 4 - Subcontract office equipment	54,512
5	Project	Contract 5 - Subcontract field equipment	48,773
6	Project	Contract 6 - Subcontract boats	59,956
7	Project	Contract 7 - Subcontract water skils training	0
8	Project	Contract 8 - Subcontract English training	0
9	Project	Contract 9 - Subncontract technical training	0
10	Project	Contract 10 - Subcontract National Dept of Statistics	0
11	Project	Contract 11 - Subcontract NDFA	189,368
12	Project	Contract 12 - Subcontract AIMS	406,639
13	Project	Contract 13 - Subcontract water quality testing	11,025
14	Project	Contract 14 - Subcontract community dive training	0
15	Project	Contract 15 - Subcontract NDES	49,383
16	Project	Contract 16 - Subcontract community education materials	0
17	Project	Contract 17 - Subcontract catchment studies	56,503
18	Project	Contract 18 - Subcontract Atuoro Island pilots (5 packages)	315,745
19	Project	Contract 19 - Subcontract Batugade pilots (5 packages)	149,113
		AIMS in-kind	394,063
		Government contribution	407,586
		Total by ADB contract - 1a,1b,2,3 (includes contingencies)	**$2,754,289**
		Total by ADB contract (1a,1b,2,3) + government + AIMS in-k	**$3,555,938**

Project = Project Management Contractor

Program Mgmt Contractor - Program Office Break-Out	
Project coordination - staff (1 Dir, 1 Fin, 1 Admin)	$230,209
Project coordination - local transport	$58,833
Project coordination - office equipment	$36,604
Project coordination - meeting costs	$24,891
Project coordination - accounting and overhead	$43,156
NDFA corporate services TA	$323,138
NDFA organizational change TA	$245,385
Quality and strategy team	$39,599
Officials travel to CTI	$47,972
Marxan TA	$24,255
Legal international TA	$25,468
Legal local TA	$23,627
Sustainable finance TA	$25,358
Total	**$1,148,494**

TIMOR DETAILED COSTS

	Base Cost (USD)						Financing with Contingencies (USD)					
.	Year 1 USD	Year 2 USD	Year 3 USD	Year 4 USD	Total USD	Total USD w/ Contgies	IW	CC	BD	ADB	Govt	AIMS
Project management												
Project coordination - staff (1 Dir, 1 Fin, 1 Admin)	40,500	54,000	54,000	54,000	202,500	230,209	92,084	46,042	92,084	0	0	0
Project coordination - local transport	13,000	13,000	13,000	13,000	52,000	58,833	11,767	0	47,067	0	0	0
Project coordination - office equipment	15,000	6,000	6,000	6,000	33,000	36,604	0	0	0	36,604	0	0
Project coordination - meeting costs	5,500	5,500	5,500	5,500	22,000	24,891	12,445	0	12,445	0	0	0
Project coordination - accounting and overhead	8,000	10,000	10,000	10,000	38,000	43,156	25,894	0	17,263	0	0	0
Government in-kind contribution	0	0	0	0	0	0	0	0	0	0	0	0
												0
1.1 Institution Building												0
NDFA - corp services coordinator int'l TA	208,000	95,000	0	0	303,000	323,138	161,569	32,314	129,255	0	0	0
NDFA - change management coordinator - int'l TA	114,000	114,000	0	0	228,000	245,385	73,616	49,077	122,693	0	0	0
NDFA - IT development	40,000	3,600	3,600	3,600	50,800	54,512	0	0	0	54,512	0	0
NDFA - field kits and dive gear	24,800	0	0	0	24,800	26,040	0	0	0	0	26,040	0
NDFA training - English	9,000	5,000	0	0	14,000	14,963	0	0	0	0	14,963	0
NDFA training - swim,snorkel, dive	13,000	10,000	0	0	23,000	24,675	0	0	0	0	24,675	0
NDFA training - management and admin	22,000	22,000	0	0	66,000	70,455	0	0	0	0	70,455	0
												0
1.2 Info and Monitoring of Coastal Fisheries												0
Training for survey design and implementation - 70 people	22,000	0	0	0	22,000	23,100	0	0	0	0	23,100	0
Survey staff costs	30,000	30,000	0	0	60,000	64,575	0	12,915	51,660	0	0	0
Survey travel costs	50,000	49,000	0	0	99,000	106,523	0	21,305	85,218	0	0	0
Survey equipment	30,700	0	0	0	30,700	32,235	0	0	32,235	0	0	0
Survey data entry	29,000	25,000	0	0	54,000	58,013	0	0	0	0	58,013	0
Annual survey - training	0	8,000	0	0	8,000	8,820	0	0	8,820	0	0	0
Annual survey - meetings, reports	0	10,000	0	0	10,000	11,025	0	0	0	0	11,025	0
												0
1.3 Building Science Capacity												0
AIMS contract - marine sampling and training	52,000	275,000	17,000	24,000	368,000	406,639	0	0	406,639	0	0	0
AIMS in-kind contribution	27,000	301,000	13,500	15,000	356,500	394,063	0	0	0	0	0	394,063

2.0 Demonstrations												0
Demonstration areas - stakeholder forums	9,000	0	0	0	9,000	9,450	7,088	0	2,363	0	0	0
Habitat mapping/transects	11,200	0	0	0	11,200	11,760	0	0	0	0	11,760	0
Boats for transects	24,000	0	0	0	24,000	25,200	0	0	0	25,200	0	0
Fuel for boat	0	10,000	10,000	10,000	30,000	34,756	0	0	0	34,756	0	0
Dive gear	0	15,000	0	0	15,000	16,538	0	0	0	16,538	0	0
Water quality assessments	0	10,000	0	0	10,000	11,025	0	0	11,025	0	0	0
AI pilot on sanitation	0	64,000	50,000	0	100,000	113,006	113,006	0	0	0	0	0
AI pilot on tourism livelihoods	0	40,800	40,800	0	81,600	92,213	0	0	92,213	0	0	0
AI pilot on alternate livelihoods	0	25,000	25,000	0	50,000	56,503	0	0	56,503	0	0	0
AI investment in seaweed production	0	20,000	20,000	0	40,000	45,203	0	0	45,203	0	0	0
AI investment in wastewater and permaculture	0	8,000	0	0	8,000	8,820	0	0	8,820	0	0	0
Batugade pilot on sanitation	0	25,000	25,000	0	50,000	56,503	56,503	0	0	0	0	0
Batugade pilot on tourism livelihoods	0	10,000	10,000	0	20,000	22,601	0	0	22,601	0	0	0
Batugade pilot on alternate livelihoods	0	25,000	25,000	0	50,000	56,503	0	0	56,503	0	0	0
Batugade investment in aquaculture	0	5,000	5,000	0	10,000	11,301	0	0	11,301	0	0	0
Batugade investment in wastewater and permaculutre	0	2,000	0	0	2,000	2,205	0	0	2,205	0	0	0
Community training on dive and reef check	0	20,000	20,000	0	40,000	45,203	0	0	0	0	45,203	0
Climate change - community planning	20,000	20,000	0	0	40,000	43,050	0	43,050	0	0	0	0
Climate change - vulnerability assessment	10,000	10,000	20,000	20,000	60,000	68,988	0	68,988	0	0	0	0
Climate change - adaptation pilot projects	20,000	20,000	20,000	20,000	80,000	90,513	0	90,513	0	0	0	0
												0
3.0 Enabling conditions												0
Quality and strategy review team	8,750	8,750	8,750	8,750	35,000	39,599	0	0	39,599	0	0	0
Regional Roundtable learning workshops	13,750	13,750	13,750	13,750	55,000	62,227	0	0	62,227	0	0	0
Travel for Officials to CTI meetings	10,600	10,600	10,600	10,600	42,400	47,972	0	0	47,972	0	0	0
Policy design workshops	0	8,000	8,000	8,000	24,000	27,805	0	0	0	0	27,805	0
National marine conservation strategy forums	0	9,000	9,000	9,000	27,000	31,281	0	0	6,256	25,025	0	0
Fisheries sector forums	4,000	4,000	4,000	4,000	16,000	18,103	0	0	0	18,103	0	0
Community education materials	12,000	12,000	12,000	12,000	48,000	54,308	0	0	0	0	54,308	0
Marine biodiversity planning - Marxan software	0	5,000	0	0	5,000	5,513	0	0	0	0	5,513	0
Marine biodiversity planning - international TA	0	22,000	0	0	22,000	24,255	0	0	24,255	0	0	0
Marine biodiversity planning - sessions at Atuoro, Batugade, Dili	0	0	30,000	0	30,000	34,729	0	0	0	0	34,729	0
Land-based threats - catchment assessments in Atuoro and Batuga	0	25,000	25,000	0	50,000	56,503	0	0	56,503	0	0	0
Legal and policy review - international TA	0	0	22,000	0	22,000	25,468	0	0	25,468	0	0	0
Legal and policy review - local lawyers	0	4,000	4,000	12,000	20,000	23,627	0	0	23,627	0	0	0
Sustainable Finance TA	0	23,000	0	0	23,000	25,358	25,358	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	896,800	**1,511,000**	**540,500**	**259,200**	**3,215,500**	**3,555,938**	**579,328**	**364,202**	**1,600,021**	**210,737**	**407,586**	**394,063**

TIMOR ASSUMPTIONS ON COSTS

Timor Notes on Detail Costs
all figures in USD

(1) Project coordination includes 1 project director, 1 finance analyst, 1 administrator at annual salaries of USD 24,000, USD 20,000, and USD 10,000, based on local and government wage rates for three quarters in Year 1 and full time in Years 2,3, and 4.
(2) Project coordination local transport includes 90 days of car hire at USD 100 per day and USD 20 per day for local taxis for 200 days per year.
(3) Project coordination office equipment includes 3 computers at USD 2500, 1 printer at USD 1000, 1 copier at USD 4000, and funds for operating supplies of USD 2500, in Year 1, USD 600 in Years 2
(4) Project coordination meetings include 55 meetings at 100 per meeting.
(5) Project coordination accounting and overhead is based on 12% of direct project coordination costs.
(6) NDFA corp services international TA is based on salary of USD 15000 per month for 16 months, USD 4000 per month per diem, and USD 5000 travel.
(7) NDFA change management international TA is based on salary of USD 15,000 per month for 12 months, USD 4000 per month per diem, and USD 5000 travel.
(8) NDFA IT development includes computers, printers, copiers for NDFA – USD 8000 for fisheries management; USD 11,000 for aquaculture; USD 4,000 for inspection; USD 13,000 for industry devel USD 5000 for director office, and USD 8800 for operating materials.
(9) NDFA field kits includes 8 dive sets at USD 1600 each and USD 12,000 of other field gear, including 10 tents at USD 100, 10 cameras at USD 500, 10 GPS at USD 200, 20 fish identification kits at U
(10) NDFA training in English allows for 40 students to take a 10 week course or equivalent at USD 350 per student.
(11) NDFA training in swim, snorkel, dive allows 30 people to train in snorkel at USD 100 each and 10 people to train in PADI at USD 2000 each.
(12) NDFA training in management allows 190 person spaces in various project courses at USD 300 per student space per course.
Courses could include strategy, change management, finance, management information, human resources, IT, and project management.
(13) Training for survey implementation allows for 70 enumerators to be trained at USD 200 each; 20 data entry people to be trained at USD 200 each, and 10 analysis people to be trained at USD 400 eacl
(14) Survey staff costs allow for 4000 field days at USD 15 per day.
(15) Survey travel costs allow for vehicle hire for 90 days at USD 100 per day and 1 hire vehicle required for each of 11 districts.
(16) Survey equipment includes 22 GPS at USD 200 each; 22 cameras at USD 500; 22 binoculars at USD 200; 22 cellphones at 200; 22 fish ID cards at 50; 22 map sets at 250.
(17) Survey data entry allows for 15 full-time equivalents at USD 3600 per year.
(18) Survey training allows for 20 people to be trained for 3 days and includes USD 900 in per diems, USD 100 in travel costs, USD 300 in trainer cost, USD 1000 for meeting room, etc cost.
(19) Survey meetings and reports allows for 20 people to meet 8 days and includes USD 3000 in per diems; USD 2000 in travel; and USD 1000 in meeting room, etc.
(20) AIMS contract, both cash payment and in-kind, includes ship operating cost of USD 455,000; USD 55,000 in consultant travel costs; USD 214,000 in salary costs.
(21) Demonstration stakeholder forum allows for a 3 day forum at Atauro at USD 4500 and a 3 day forum at Batugade at USD 4500.
(22) Habitat mapping and transects allows for 60 days of diver effort plus USD 4000 for travel.
(23) Boats for transects includes 2 boats at USD 12,000 each and USD 20,000 of fuel and operating costs.
(24) Fuel is for USD 30,000 of boat fuel.
(25) Dive gear includes 8 dive sets at USD 1600 for use by the community plus 10 snorkel sets at USD 220.
(26) Water quality assessment is for laboratory testing of water quality samples at demonstration sites.
(27) Atauro Island pilots are preliminary costs of what could be invested. Planning processes will determine the actual pilots and amounts. Seaweed production is based on USD 500 per ha for establishme Sanitation is based on USD 3000 per household.
(28) Batugade pilots are preliminary costs of what could be invested. Planning processes will determine the actual pilots and amounts. Seaweed production is based on USD 500 per ha for establishment. Sanitation is based on USD 3000 per household.
(29) Community training on dive and reef check allows for 20 people at USD 2000 each.
(30) Climate change will be delivered by a regional contractor. Estimates of costs for community planning, vulnerability assessment, and pilot projects are preliminary only; actuals will be determined after the contractor is engaged.
(31) Quality and strategy review team allows for 1 meeting plua int'l airfare at USD 2000 and 7 days per diem at USD 200 per day.
(32) Regional Roundtable learning workshops are a regional contract to IUCN. Timor cost of USD 62,227 is about 20% of the total regional IUCN contract cost of USD 379,500.
(33) Officials travel to CTI meetings assumes 2 round trip arifares at USD 2500 each, 14 days per diem for two people at USD 200 per day.
(34) Policy design workshops - 6 will be conducted by National Department of Environment with sector agencies at USD 4000 each.
(35) National marine conservation strategy forums - 7 will be conducted by National Department of Environment with industry stakeholders at USD 4000 each.
(36) Fisheries sector forums - 4 will be conducted by NDFA with the fishing industry at USD 4000 each.
(37) Community education materials is for local production of 4 packages of materials on ICM and coastal zone management at USD 12,000 each.
(38) Marine biodiversity planning Marxan is for software purchase.
(39) Marine biodiversity international TA is for 1 month at USD 14,000, USD 4500 in per diems, USD 3500 in travel.
(40) Legal and policy international TA is for 1 month at USD 14,000, USD 4500 in per diems, USD 3500 in travel.
(41) Legal and policy review is to engage a local law firm to provide advice on changes required in legislation, regulation, and policy.
(42) Sustainable finance TA is for 1 month at USD 15,000, USD 4500 in per diems, USD 3500 in travel.

PNG INVESTMENT PLAN

Table 1: Project Investment Plan

(USD)

Item			Amount
A.	**Base Cost**		
	1	Component 1: Organizational Capacity	$809,370
	2	Component 2: Best Management Practices	$3,268,140
	3	Component 3: Enabling Conditions	$1,217,320
	4	Component 4: Project Management	$342,140
		Subtotal	**$5,636,970**
B.	**Contingencies**		**$985,084**
Total			**$6,622,054**

Table 2: Financing Plan

(USD)

Source	Total	%
Asian Development Bank	$200,031	3%
GEF - International Waters	$585,164	9%
GEF - Climate Change	$362,823	5%
GEF - Biodiversity	$3,585,226	54%
Government	$1,888,811	29%
Total	**$6,622,054**	**100%**

Table 3: Detailed Cost Estimates

(USD)

Item			Total Cost	% of Total Base Cost
A.	**Investment Costs**			
	1	Civil works	$232,400	4%
	2	Planting materials	$380,800	7%
	3	Field and Operations	$0	0%
	4	Enteprrise development	$190,400	3%
	5	Studies	$711,700	13%
	6	Planning processes	$986,900	18%
	7	Capacity building	$638,400	11%
	8	Training	$615,810	11%
	9	TA - local	$531,800	9%
	10	TA - int'l	$926,620	16%
	11	Project management	$242,240	4%
	12	Office equipment	$39,500	1%
	13	Local transport	$140,400	2%
		Subtotal (A)	**$5,636,970**	**100%**
B.	**Contingencies**			
	1	Physical	$0	0%
	2	Price	$985,084	17%
		Subtotal (B)	**$985,084**	**17%**
Total Project Cost (A+B)			**$6,622,054**	

Table 4: Contract Packages

(USD)

Item	Issuer		Total Cost
1a	ADB	**Contract 1a - Program Mgmt Contractor - Project Offic**	**$405,943**
1b	ADB	**Contract 1b - Program Mgmt Contractor - Subcontract**	**$2,285,807**
2	ADB	**Contract 2 - Regional contract - USP**	**$128,205**
3	ADB	**Contract 3 - Regional contract - IUCN Roundtable**	**$155,824**
4	ADB	**Contract 4 - Contract - Kimbe and Manus Demonstrati**	**$1,757,464**
5	Govt	**Government Contribution**	**$1,888,811**
	Program	Subcontract - IUCN legal	$257,336
		Total of ADB Main Contracts - 1a,1b,2,3,4	**$4,733,243**
		Total of ADB Contracts and Government Contribution	**$6,622,054**

Program = Program Management Contractor

Program Mgmt Contractor - Program Office Break-Out	
Program Management Office staff (3)	$179,330
Local travel, meetings, other	$212,168
Office equipment	$14,445
Total	**$405,943**

PNG DETAILED COSTS

.	Base Cost (USD) Year 1 USD	Year 2 USD	Year 3 USD	Year 4 USD	Total USD	Total USD w/ Contgies	Financing with Contingencies USD) IW	CC	BD	ADB	Govt
Project coordination - staff (1 Dir, 1 Fin, 1 Admin)	30,000	40,000	40,000	40,000	150,000	179,330	35,866	0	35,866	107,598	0
Project coordination - local transport	21,600	21,600	21,600	21,600	86,400	102,616	102,616	0	0	0	0
Project coordination - office equipment	13,500	0	0	0	13,500	14,445	0	0	0	14,445	0
Project coordination - meeting costs	12,500	12,500	12,500	12,500	50,000	59,384	59,384	0	0	0	0
Project coordination - accounting and overhead	10,560	10,560	10,560	10,560	42,240	50,168	0	0	0	50,168	0
Capacity Building											
DEC - int'l TA for org assessment (2 mnths)	58,000	0	0	0	58,000	62,060	0	0	62,060	0	0
DEC - int'l TA for org systems (9 mnths)	125,250	125,250	0	0	250,500	277,416	0	0	277,416	0	0
DEC - dom TA for senior mentor (9 mnths)	18,000	18,000	18,000	0	54,000	61,919	0	0	61,919	0	0
Training - DEC in CBNRM (4 weeks, USP)	45,300	0	0	0	45,300	48,471	16,965	0	31,506	0	0
Training - DEC in ICM (4 weeks, USP)	0	45,300	0	0	45,300	51,864	25,932	0	25,932	0	0
Training - DEC in sustainable development (2 weeks, USP)	0	0	22,750	0	22,750	27,870	13,935	0	13,935	0	0
Training - community in CBNRM (12 courses, 1 week ea, dom trair	16,300	48,900	0	0	65,200	73,427	36,713	0	36,713	0	0
Training - community in ICM (12 courses, 1 week, dom trainer)	16,300	48,900	0	0	65,200	73,427	36,713	0	36,713	0	0
Training - community in sustainable development (12 courses, 1 w	0	16,300	48,900	0	65,200	78,566	39,283	0	39,283	0	0
Training - community in EBFM (15 courses, 4 days, dom trainer)	32,600	32,600	0	0	65,200	72,206	36,103	0	36,103	0	0
Training - for village court officials (2 courses, 5 days ea, dom trair	0	10,520	0	0	10,520	12,044	6,022	0	6,022	0	0
Training - community in legal rights (45 courses, 2.5 days ea, dom	0	16,300	32,600	0	48,900	58,598	29,299	0	29,299	0	0
Training - LMMA in data collection & analysis (8 courses, 3 days ea	0	6,650	6,650	0	13,300	15,760	11,820	0	3,940	0	0
Demonstrations											
Kimbe Mgmt Forum - initial consultation (1 month dom consult; 1 w	23,200	0	0	0	23,200	24,824	0	0	24,824	0	0
Kimbe Mgmt Forum - secretariat two roles	31,800	42,400	42,400	0	116,600	134,512	67,256	0	67,256	0	0
Kimbe Mgmt Forum - inaugural forum	12,000	0	0	0	12,000	12,840	0	0	12,840	0	0
Kimbe Mgmt Forum - dom TA for operating charter (1 month)	0	13,300	0	0	13,300	15,227	0	0	15,227	0	0
Kimbe Mgmt Forum - dom TA for strategy and annual plans (3 mor	0	37,900	0	0	37,900	43,392	0	0	43,392	0	0
Kimbe Mgmt Forum - meetings	36,000	48,000	48,000	48,000	180,000	215,195	0	0	215,195	0	0
Kimbe Mgmt Forum - staff travel	5,400	7,200	7,200	7,200	27,000	32,279	0	0	32,279	0	0
Kimbe Mgmt Forum - joint meetings with Manus Mgmt Forum	0	12,000	12,000	12,000	36,000	44,169	0	0	44,169	0	0
Kimbe Mgmt Forum - office equipment	11,000	0	0	0	11,000	11,770	0	0	0	11,770	0
Kimbe Mgmt Forum - study on sediment	0	60,500	0	0	60,500	69,266	0	0	69,266	0	0
Kimbe Mgmt Forum - study on nutrient	0	60,500	0	0	60,500	69,266	0	0	69,266	0	0
Kimbe Mgmt Forum - study on sanitation, wastewater, solid waste	0	60,500	0	0	60,500	69,266	0	0	69,266	0	0
Kimbe Mgmt Forum - study on livelihoods	0	60,500	0	0	60,500	69,266	0	0	69,266	0	0
Kimbe Mgmt Forum - establish info data base and indicators	12,000	12,000	12,000	12,000	48,000	57,009	0	0	57,009	0	0
Kimbe Mgmt Forum - pilot on sedimentation	0	25,000	50,000	25,000	100,000	122,645	0	0	122,645	0	0
Kimbe Mgmt Forum - pilot on nutrients	0	25,000	50,000	25,000	100,000	122,645	0	0	122,645	0	0
Kimbe Mgmt Forum - pilot on sanitation, wastewater, solid waste	0	25,000	50,000	25,000	100,000	122,645	0	0	122,645	0	0
Kimbe Mgmt Forum - pilot on livelihoods	0	25,000	50,000	25,000	100,000	122,645	0	0	122,645	0	0
Kimbe Mgmt Forum - water quality testing	0	15,000	15,000	0	30,000	35,549	0	0	35,549	0	0

Manus Mgmt Forum - initial consultation (1 month dom consultant)	24,000	0	0	0	24,000	25,680	0	0	0	0	25,680
Manus Mgmt Forum - secretariat two roles	31,800	42,400	42,400	0	116,600	134,512	67,256	0	67,256	0	0
Manus Mgmt Forum - inaugural forum	12,000	0	0	0	12,000	12,840	0	0	0	0	12,840
Manus Mgmt Forum - dom TA for operating charter (1 month dom	13,300	0	0	0	13,300	14,231	0	0	0	0	14,231
Manus Mgmt Forum - dom TA for strategy and annual plans (1.2 m	22,000	0	0	0	22,000	23,540	0	0	0	0	23,540
Manus Mgmt Forum - meetings	36,000	48,000	48,000	48,000	180,000	215,195	0	0	0	0	215,195
Manus Mgmt Forum - staff travel	5,400	7,200	7,200	7,200	27,000	32,279	0	0	0	0	32,279
Manus Mgmt Forum - joint meetings with Kimbe Mgmt Forum	0	12,000	12,000	12,000	36,000	44,169	0	0	0	0	44,169
Manus Mgmt Forum - office equipment	11,000	0	0	0	11,000	11,770	0	0	0	11,770	0
Manus Mgmt Forum - study on sediment	0	60,500	0	0	60,500	69,266	0	0	0	0	69,266
Manus Mgmt Forum - study on nutrient	0	60,500	0	0	60,500	69,266	0	0	0	0	69,266
Manus Mgmt Forum - stuidy on sanitation, wastewater, solid waste	0	60,500	0	0	60,500	69,266	0	0	0	0	69,266
Manus Mgmt Forum - study on livelihoods	0	60,500	0	0	60,500	69,266	0	0	0	0	69,266
Manus Mgmt Forum - establish info data base and indicators	12,000	12,000	12,000	12,000	48,000	57,009	0	0	0	0	57,009
Manus Mgmt Forum - pilot on sedimentation	0	25,000	40,400	25,000	90,400	110,884	0	0	0	0	110,884
Manus Mgmt Forum - pilot on nutrients	0	25,000	40,400	25,000	90,400	110,884	0	0	0	0	110,884
Manus Mgmt Forum - pilot on sanitation, wastewater, solid waste	0	25,000	40,400	25,000	90,400	110,884	0	0	0	0	110,884
Manus Mgmt Forum - pilot on livelihoods	0	25,000	40,400	25,000	90,400	110,884	0	0	0	0	110,884
Manus Mgmt Forum - water quality testing	0	15,000	15,000	0	30,000	35,549	0	0	0	0	35,549
Legal Review of LLG and Provincial resource mgmt - regional IUC	0	44,100	22,050	22,050	88,200	106,405	0	0	106,405	0	0
Legal support - regional IUCN	8,000	15,000	15,000	15,000	53,000	63,771	0	0	63,771	0	0
Legislation Drafting (16 months domestic)	0	0	48,000	48,000	96,000	121,720	0	0	0	0	121,720
Community paralegal training (6 communities per yr, 1 week ea, dc	0	23,680	23,680	23,680	71,040	87,160	0	0	87,160	0	0
Kimbe LMMA training (1 month per year, dom trainer)	0	13,300	13,300	13,300	39,900	48,954	0	0	14,686	0	34,268
Kimbe TA for MMA establishment (2 months, dom consult)	0	0	13,300	13,300	26,600	33,727	0	13,491	20,236	0	0
Manus transects	0	0	10,000	0	10,000	12,250	0	0	12,250	0	0
Manus habitat mapping	0	0	12,000	0	12,000	14,701	0	0	14,701	0	0
Fish market - study design (1 month)	0	13,300	0	0	13,300	15,227	0	0	15,227	0	0
Fish market - survey	0	4,080	16,160	16,160	36,400	45,650	0	0	11,413	0	34,238
Sustainable development - dom TA for cost-benefit & tradeoffs (6 r	0	37,900	37,900	0	75,800	89,821	0	0	35,928	0	53,893
Community livelihood options dom TA (2 months)	25,800	0	0	0	25,800	27,606	0	0	11,042	0	16,564
DEC sustainability indicators workshops	36,000	0	0	0	36,000	38,520	0	0	15,408	0	23,112
DEC dom TA to estimate indicators for demo areas (6 months)	0	63,000	0	12,600	75,600	88,645	0	0	31,026	0	57,619
NFA demo reporting via MDG indicators	0	8,700	0	8,700	17,400	21,365	0	0	21,365	0	0
Climate Change											
Data collection - dom contract (9 months)	14,500	43,500	0	0	58,000	65,318	0	65,318	0	0	0
Data storage - server	4,000	0	0	0	4,000	4,280	0	0	0	4,280	0
Scenario development - int'l TA (3 months)	0	88,000	0	0	88,000	100,751	0	100,751	0	0	0
Community vulnerability - 21 local meetings	0	55,100	0	0	55,100	63,084	0	63,084	0	0	0
Adaptation planning - dom TA (2 months)	0	17,000	8,500	0	25,500	29,876	0	29,876	0	0	0
Pilot demonstrations - 4 communities	0	0	42,000	105,000	42,000	68,252	0	68,252	0	0	0
Learning communications - 1 forum, printed guidelines	0	0	18,000	0	18,000	22,051	0	22,051	0	0	0

Enabling Conditions											
DEC marine policy workshop (1 large forum, 2 small meetings)	12,000	8,000	0	0	20,000	21,999	0	0	0	0	21,999
DEC marine policy studies (3 studies)	0	30,000	30,000	0	60,000	71,098	0	0	21,329	0	49,769
DEC dom TA for lit review on policy tools (2 months)	6,000	6,000	0	0	12,000	13,289	0	0	3,987	0	9,303
DEC dom TA for resource economics (1 month for ea of 3 yrs)	0	6,000	6,000	6,000	18,000	22,084	0	0	6,625	0	15,459
DEC dom TA for social assessment (1 month for each of 3 years)	0	6,000	6,000	6,000	18,000	22,084	0	0	6,625	0	15,459
DEC dom TA for legal reform (1 month for each of 3 years)	0	6,000	6,000	6,000	18,000	22,084	0	0	6,625	0	15,459
DEC training in policy drafting - (2 months)	0	58,000	0	0	58,000	66,404	0	0	19,921	0	46,483
DEC media budget	0	0	8,000	8,000	16,000	20,287	0	0	0	0	20,287
DEC policy implementation	0	0	8,000	0	8,000	9,800	0	0	0	0	9,800
NFA int'l TA on beche de mer (2 months economics and markets)	30,000	30,000	0	0	60,000	66,447	0	0	66,447	0	0
NFA int'l TA on beche de mer (2 months production and quality)	30,000	30,000	0	0	60,000	66,447	0	0	66,447	0	0
DEC int'l TA on data design (6 months)	126,080	42,040	0	0	168,120	183,037	0	0	183,037	0	0
DEC contract on data collation (10 months)	6,000	36,000	18,000	0	60,000	69,687	0	0	20,906	0	48,781
Census development on fishing sector - Nat'l Stats Office	0	12,000	0	0	12,000	13,739	0	0	0	0	13,739
DEC remote sensing int'l TA (6.5 months)	0	92,000	92,000	0	184,000	218,035	0	0	218,035	0	0
Sustainable financing int'l TA (2 months)	0	0	58,000	0	58,000	71,052	0	0	71,052	0	0
Quality and Strategy	30,500	30,500	30,500	30,500	122,000	144,898	0	0	144,898	0	0
Senior officials travel to CTI meetings	21,000	21,000	21,000	21,000	84,000	99,766	0	0	0	0	99,766
Roundtable policy leadership forum	50,000	0	0	0	50,000	53,500	0	0	53,500	0	0
Roundtable learning framework	32,800	32,800	32,800	32,800	131,200	155,824	0	0	155,824	0	0
	1,131,490	**2,334,780**	**1,444,550**	**831,150**	**5,636,970**	**6,622,054**	**585,164**	**362,823**	**3,585,226**	**200,031**	**1,888,811**

PNG ASSUMPTIONS ON COSTS

PNG Notes on Detail Costs

all figures in Kina unless noted as USD

(1) Project coordination assumes 1 director at K 40,000 per year, 1 Finance at K 35,000 per year, and 1 admin at K 25,000 per year, starting in second quarter of Year 1 and continuing through Year 4.
(2) Local transport assumes 12 flights per year at K 1500 each, 40 days of car rental per year at K 375 per day, and 40 days per diem per year at K 525 per day.
(3) Meetings assumes 25 meetings per year at 1250 per meeting.
(4) Accounting and overheads assumes 14% on annual project management expenses.
(5) Organizational ssesesement international TA assumes a monthly fee rate of USD 20,000, monthly per diem of USD 7500, and USD 3000 in travel for a period of 2 months.
(6) Organizational assessment international TA assumes monthly fee rate of USD 20,000, monthly per diem of USD 7500, and travel of USD 3000 for 9 month
(7) Domestic TA for senior mentor assumes monthly fee rate of K 15,000.
(8) USP training assumes USD 1000 per day for 2 trainers, USD 250 per day per diem for 2 trainers, and USD 2000 for travel per person.
A 4 week training course is assumed to cost USD 42,000 in fees plus travel of USD 4000.
(9) Domestic training assumes a per month cost of K 15,000 for trainer fees, K 2500 for travel, and K 15,750 for per diems at 525 per day, and K 7500 for materials and room hire.
(10) Domestic training assumes for CBNRM 4 1-week courses in Year 1 and 12 in Year 2; for ICM 4 1-week courses in Year 1 and 12 in Year 2;
for sustainable development 4 1-week courses in Year 2 and 12 in Year 3; for EBFM 8 4 day courses in Year 1 and 7 4 day courses in Year 2;
(11) Village court officials training assumes 1 1-week course in each province, which will cost K 7500 in trainer fees, K 2500 in travel, and K3150 in per diems (525 per day).
(12) Community paralegal training assumes 45 courses of 2 days each, or 3 months of training at K 15,000 per month for trainer fees, K 2500 for travel, K 15,750 for per diems at 525 per day,
and K 7500 for materials and room hire.
(13) LMMA data collection training assumes 8 courses of 3 days each, or 0.8 month of training at K 15,000 per month for traienr fees, K 2500 for travel, K 15,750 for per diems at 525 per day,
and K 7500 for materials and room hire.
(14) Kimbe consultation assumes domestic fees of K 15,000 per month, 20 days per diem at K 525 per day, travel of K 2500, and workshop cost of K 30,000.
(15) Secretariat roles assumes manager salary of K 26,000 per year and K 30,000 per for housing; administrator salary of K 20,000 per year and K 30,0000 fpor housing.
(16) Inaugural meeting assumes a cost of K 30,000 for a 3 day workshop - includes, accommodation and food for locals.
(17) Operating charter domestic TA assumes K 15,000 per month fees, K 15,750 per month in per diems at K 525 per day, and K 2500 per month for travel.
(18) Strategy and operating plans domestic TA assumes per month cost of K 15,000 for fees, K 15,750 per month for per diems at K 525 per day, and K 2500 for travel.
(19) Quarterly meetings for forum assumes a cost of 30,000 per meeting (3 days each).
(20) Staff travel assumes 2 trips to Port Moresby, 4 trips to either Manus or Kavieng, 20 days per diem at K 525 per day per a full year of Forum operations. Year 1 is only 75% of travel, .
due to Forum only operating for 3 quarters
(21) Joint meetings assumes K 30,000 per meeting, which includes travel and hotel for Forum members.
(22) Office equipment includes K 6250 for a computer, K 2500 for a printer, and K 12,500 for a copier.
(23) Sediment study assumes per month cost of USD 20,000 fees and USD 7500 per diem; plus USD 2500 international travel, and USD 3000 for local travel.
(24) Nutrient management study assumes per month cost of USD 20,000 fees and USD 7500 per diem; plus USD 2500 international travel, and USD 3000 for local travel.
(25) Sanitation study assumes per month cost of USD 20,000 fees and USD 7500 per diem; plus USD 2500 international travel, and USD 3000 for local travel.
(26) Livelihoods assumes per month cost of USD 20,000 fees and USD 7500 per diem; plus USD 2500 international travel, and USD 3000 for local travel.
(27) Info data base and indicators contract assumes monthly fee of K 15,000, 24 days per diem at K 525 per day, and K 2500 travel cost.
(28) Pilots on sedimentation, nutrients, sanitation, and livelihoods will be specified by the Forum strategy and research program.
(29) Water quality testing assumes USD 500 per sample and 30 samples colected poer year.
(30) Manus initial consultation assumes domestic fees of K 15,000 per month, 20 days per diem at K 525 per day, travel of K 4500, and workshop cost of K 30,000.
(31) Secretariat roles assumes manager salary of K 26,000 per year and K 30,000 per for housing; administrator salary of K20,000 per year and K 30,0000 fpor housing.
(32) Inaugural meeting assumes a cost of K 30,000 for a 3 day workshop - includes, accommodation and food for locals.
(33) Operating charter domestic TA assumes K 15,000 per month fees, K 15,750 per month in per diems at K 525 per day, and K 2500 per month for travel.
(34) Strategy and operating plans domestic TA assumes per month cost of K 15,000 for fees, K 15,750 per month for per diems at K 525 per day, and K 2500 for travel.

(35) Quarterly meetings for forum assumes a cost of 30,000 per meeting (3 days each).
(36) Staff travel assumes 2 trips to Port Moresby, 4 trips to either Manus or Kavieng, 20 days per diem at K 525 per day per a full year of Forum operations. Year 1 is only 75% of travel, due to Forum only operating for 3 quarters.
(37) Joint meetings assumes K 30,000 per meeting, which incljudes travel and hotel for Forum members.
(38) Office equipment includes K 6250 for a computer, K 2500 for a printer, and K 12,500 for a copier.
(39) Sediment study assumes per month cost of USD 20,000 fees and USD 7500 per diem; plus USD 2500 international travel, and USD 3000 for local travel.
(40) Nutrient management study assumes per month cost of USD 20,000 fees and USD 7500 per diem; plus USD 2500 international travel, and USD 3000 for local travel.
(41) Sanitation study assumes per month cost of USD 20,000 fees and USD 7500 per diem; plus USD 2500 international travel, and USD 3000 for local travel.
(42) Livelihoods assumes per month cost of USD 20,000 fees and USD 7500 per diem; plus USD 2500 international travel, and USD 3000 for local travel.
(43) Info data base and indicators contract assumes monthly fee of K 15,000, 24 days per diem at K 525 per day, and K 2500 travel cost.
(44) Pilots on sedimentation, nutrients, sanitation, and livelihoods will be specified by the Forum strategy and research program.
(45) Water quality testing assumes USD 500 per sample and 30 samples collected oer year.
(46) Legal review of provincial law is part of IUCN regional contract, and assumes monthly cost of K 15,000 fees, K 10,500 in per diems at K 525 per day, and K 2500 in travel.
(47) Legal review - part of IUCN regional contract.
(48) Legislation drafting domestic TA assumes domestic fees of K 15,000 per month for a duration of 16 months.
(49) Community paralegal training is part of regional legal contract - IUCN and assumes K 40,750 for 4 weeks training, which includes K 15,000 domestic fees, K s500 for travel, K 15,750 for per diems, and K 7500 for materials.
(50) Kimbe LMMA training assumes a monthly cost of K 40,750 and training of 0.8 a month for each of 3 years. Monthly cost assumes fees of K 15,000 per month, K 2500 in travel, K 12,600 in per diems, and K 10,650 for materials.
(51) Marine Management Area development domestic TA assumes monthly fee of K 15,000, per diems of K 15,750, and travel of K 2500.
(52) Manus transects assumes 130 transects and allows for boat fuel of K 10,000 and local travel of K 15,000.
(53) Manus habitat mapping assumes two months of domestic fees at K 15,000 per month.
(54) Fish market study design assumes monthly fee of K 15,000, per diem of 15,750, and travel of K 2500
(55) Fish market surveys assumes one survey costs K4000 for 1 week fees and K 1100 for local travel; surveys carried out in each demonstration area once in Year 2, and 4 times each in Year 3 and Year 4.
(56) Sustainable development domestic TA assumes monthly cost of K 15,000 fees, K 3000 travel, and K 13,650 per diems.
(57) Livelihoods domestic TA assumes monthly cost of K 15,000 fees, K 3000 travel, and K 14,250 in per diem.
(58) Sustainability indicators workshops assumes 3 workshops at a cost of 30,000 each.
(59) Sustainability indicators domestic TA is based on monthly cost of K 15,000 fees, K 3000 travel, and K 13,500 per diems.
(60) MDG reporting framework assumes cost of K 22,500 for 1 month fees.
(61) Climate change data assumes a monthly cost of K 15,000 fees and K 1000 local travel.
(62) Data storage is the cost of one server.
(63) Scenario development international TA assumes monthly cost of USD 20,000 fees and USD 7,500 in perdiem, plus USD 3000 international travel and USD 2500 domestic travel.
(64) Vulnerability assumes monthly cost of K 15,000 fees, K 3000 travel, and K 15,750 in per diem.
(65) Adaptation planning domestic TA assumes monthly cost of K 15,000 fees, K 3000 travel, and K 15,750 per diem.
(66) Pilot demonstration assumes the climate change process will develop recommendations for specific adaptations to be piloted and funds have been allocatef ro this.
(67) Learning communications assumes 1 workshop at K 30,000 and K 15,000 for materials.
(68) Marine policy workshops assumes a cost of K 30,000 for a large experts workshop and K 10,000 each for 2 working group meetings.
(69) Policy research studies assumes 4 studies at K 25,000 each. Each study assumes a cost of K 15,000 per month fees, K 3000 travel, and K 12,000 per diems.
(70) Review of policy tools domestic TA assumes a monthly cost of K 15,000 for fees.
(71) Resource economics domestic TA assumes a monthly cost of K 15,000 for fees.
(72) Social impact assessment domestic TA assumes a monthly cost of K 15,000 for fees.
(73) Legal framework domestic TA domestic TA assumes a monthly cost of K 15,000 for fees.
(74) Policy drafting training assumes a monthly cost of USD 20,000 fees and USD 7500 per diems plus USD 3000 travel.
(75) Media budget for consultation is an allocation of funds to purchase media space and/or air time.
(76) Preparation of policy implementation assumes a monthly cost of K 15,000 fees.
(77) Beche de mer economics international TA assumes monthly cost of USD 20,000 fees and USD 7500 per diems, plus USD 5000 travel.
(78) Beche de mer production international TA assumes monthly cost of USD 20,000 fees and USD 7500 per diems, plus USD 5000 travel.
(79) Design of database and remote sensing international TA assumes a monthly cost of USD 20,000 fees and USD 7500 per diems, plus USD 2500 travel
(80) Data collection assumes a monthly cost of K 15,000 for fees.
(81) Census development assumes a monthjly cost of K 15,000 for fees.
(82) Remote sensing international TA assumes a monthly cost of USD 20,000 and USD 7500 per diem, plus USD 5250 travel.
(83) Sustainable financing international TA assumes a monthly cost of USD 20,000 fees and USD 7500 per diems, plus USD 3000 travel.
(84) Quality and strategy assumes costs of domestic airfares tow two provinces for 5 people K 29,500, 14 days per diem for 5 people at K 525 per day K 36750, and 2 international airfares at K5000 each.
(85) Senior officials travel to CTI meetings assumes a cost of USD 2500 for travel and USD 4500 for per diems at USD 200 per day per official per year.
(86) Leadership forum assumes cost of USD 15,000 for travel, USD 30,000 per diems at USD 250 per day each, and USD 5000 meeting costs for a 4-day session for 30 attendees.
(87) Roundtable costs are per the regional contract to IUCN.

SOLOMON ISLANDS INVESTMENT PLAN

Table 1: Project Investment Plan
(USD)

Item			Amount
A.	**Base Cost**		
	1	Component 1: Organizational Capacity	$771,552
	2	Component 2: Best Management Practices	$1,023,479
	3	Component 3: Enabling Conditions	$650,242
	4	Component 4: Project Management	$397,411
		Subtotal	**$2,842,683**
B.	**Contingencies**		**$341,997**
Total			**$3,184,680**

Table 2: Financing Plan
(USD)

Source	Total	%
Asian Development Bank	$201,106	6%
GEF - International Waters	$586,039	18%
GEF - Climate Change	$364,456	11%
GEF - Biodiversity	$1,818,143	57%
Government	$214,934	7%
Total	**$3,184,680**	**100%**

Table 3: Detailed Cost Estimates
(USD)

Item			Total Cost	% of Total Base Cost
A.	**Investment Costs**			
	1	Civil works	$0	0%
	2	Planting materials	$0	0%
	3	Field and Operations	$366,088	13%
	4	Enteprrise development	$0	0%
	5	Studies/contracts	$473,529	17%
	6	Planning processes	$269,407	9%
	7	Capacity building	$462,890	16%
	8	Training	$496,215	17%
	9	TA - local	$10,720	0%
	10	TA - int'l	$336,273	12%
	11	Project management	$329,774	12%
	12	Office equipment	$49,949	2%
	13	Local transport	$47,838	2%
		Subtotal (A)	**$2,842,683**	**100%**
B.	**Contingencies**			
	1	Physical	$0	0%
	2	Price	$341,997	12%
		Subtotal (B)	**$341,997**	**12%**
Total Project Cost (A+B)			**$3,184,680**	

Table 4: Contract Packages
(USD)

Item	Issuer		Total Cost
1a	**ADB**	**Contract 1a - Program Mgmt Contractor - Program Office**	**$346,704**
1b	**ADB**	**Contract 1b - Program Mgmt Contractor - Subcontracts**	**$1,822,076**
2	**ADB**	**Contract 2 - Regional contract - USP**	**$382,328**
3	**ADB**	**Contract 3 - Regional contract - World Fish climate change**	**$275,725**
4	**ADB**	**Contract 4 - Regional contract IUCN roundtable**	**$66,708**
	Project	Contract 5 - Subcontract TNC - ERA & Isabel	$498,959
	Project	Contract 6 - Subcontract World Fish - Malaita & training	$413,714
	Project	Contract 7 - Subcontract IUCN legal	$76,205
5	**Govt**	**Government Contribution**	**$214,934**
		Total of ADB Main Contracts - 1a,1b,2,3,4	**$2,893,541**
		Total of ADB Contracts and Government Contribution	**$3,108,475**

Program Mgmt Contractor - Program Office Break-Out	
Program Management Office staff (3)	$114,252
Local travel, meetings, other	$211,445
Office equipment	$21,007
Total	**$346,704**

SOLOMON ISLANDS DETAILED COSTS

.	Base Case (USD)						Financing with Contingencies (USD)				
	Year 1 USD	Year 2 USD	Year 3 USD	Year 4 USD	Total USD	Total USD w/ Contgies	IW	CC	BD	ADB	Govt
Project coordination - staff (1 Dir, 1 Fin, 1 Admin)	20,100	26,800	26,800	26,800	100,500	114,252	19,423	0	14,853	79,976	0
Project coordination - local transport	9,568	12,757	12,757	12,757	47,838	54,384	0	10,877	21,754	21,754	0
Project coordination - office equipment	17,789	670	670	670	19,799	21,007	0	0	0	21,007	0
Project coordination - meeting costs	20,100	26,800	26,800	26,800	100,500	114,252	57,126	0	57,126	0	0
Project coordination - accounting and overhead	7,504	10,050	10,050	10,050	37,654	42,809	21,405	0	21,405	0	0
In-kind office space	22,780	22,780	22,780	22,780	91,120	103,094	0	0	0	0	103,094
Capacity Building											
Environment 3 graduate trainees	18,090	24,120	24,120	0	66,330	73,509	36,754	0	36,754	0	0
Env Training - Sustainability and indicators (2 weeks, USP)	61,010	0	0	0	61,010	64,061	32,030	0	32,030	0	0
Env Training - CBNRM (4 weeks, USP)	113,980	0	0	0	113,980	119,679	59,840	0	59,840	0	0
Env Training - ICM (2 weeks, USP)	61,010	0	0	0	61,010	64,061	32,030	0	32,030	0	0
Env Training - adaptive mgmt (1 week, USP)	0	30,505	0	0	30,505	33,632	16,816	0	16,816	0	0
Env Training - info systems and data (1 week, USP)	0	30,505	0	0	30,505	33,632	16,816	0	16,816	0	0
Env Training - monitoring and reporting (1 week, USP)	0	30,505	0	0	30,505	33,632	16,816	0	16,816	0	0
Env Training - environmental policy (1 week, USP)	0	30,505	0	0	30,505	33,632	16,816	0	16,816	0	0
Fish Training - EBFM (2 weeks, World Fish)	61,010	0	0	0	61,010	64,061	32,030	0	32,030	0	0
Fish Training - coastal resource assessment (1 week, dom trainer)	6,432	0	0	0	6,432	6,754	3,377	0	3,377	0	0
Fish dive gear - 10 sets	16,080	0	0	0	16,080	16,884	0	0	0	16,884	0
Fish socio-economics/resource economics int'l TA 2.5 months	0	33,266	43,517	0	76,782	87,051	43,526	0	43,526	0	0
Fish communications staff	0	10,318	10,318	0	20,636	23,320	0	0	23,320	0	0
Fish training in community education - Live and Learn	0	19,564	19,564	0	39,128	44,217	22,109	0	22,109	0	0
SILMMA training programs	6,432	12,864	12,864	0	32,160	35,828	0	0	35,828	0	0
SILMMA awareness workshops in provinces	0	12,864	12,864	12,864	38,592	44,711	0	0	44,711	0	0
SILMMA provincial leadership training	0	0	6,432	6,432	12,864	15,264	0	0	15,264	0	0
Demonstrations											
Ecoregional assessment - Isabel	33,182	33,182	0	0	66,364	71,424	24,998	0	46,425	0	0
Isabel working group	10,720	10,720	10,720	10,720	42,880	48,515	24,257	0	24,257	0	0
Isabel ICM - data collection	0	13,534	0	0	13,534	14,921	7,461	0	7,461	0	0
Isabel ICM & EBFM - remote sensing maps	30,150	0	0	0	30,150	31,658	15,829	0	15,829	0	0
Isabel ICM - data aggregation & analysis	0	0	4,020	0	4,020	4,654	2,327	0	2,327	0	0
Isabel EBFM - transects	38,619	38,619	0	0	77,238	83,127	0	0	83,127	0	0
Isabel EBFM - habitat mapping	0	8,040	0	0	8,040	8,864	0	0	8,864	0	0
Isabel EBFM - resource assessment	0	8,040	0	0	8,040	8,864	0	0	8,864	0	0
Isabel ICM and EBFM integration and priority-setting - 10 meetings	0	0	10,720	0	10,720	12,410	6,205	0	6,205	0	0
Isabel pilot demonstrations	0	0	60,300	60,300	120,600	143,100	0	0	143,100	0	0
Ecoregional assessment - Malaita	33,182	33,182	0	0	66,364	71,424	24,998	0	46,425	0	0

Malaita working group	4,690	14,070	9,380	9,380	37,520	42,697	21,348	0	21,348	0	0
Malaita ICM - data collection	0	13,320	0	0	13,320	14,685	7,342	0	7,342	0	0
Malaita ICM - remote sensing maps	30,150	0	0	0	30,150	31,658	15,829	0	15,829	0	0
Malaita ICM - data aggregation & analysis	0	0	4,020	0	4,020	4,654	2,327	0	2,327	0	0
Malaita EBFM - transects	38,431	38,431	0	0	76,862	82,723	0	0	82,723	0	0
Malaita EBFM - habitat mapping	0	8,040	0	0	8,040	8,864	0	0	8,864	0	0
Malaita EBFM - resource assessment	0	8,040	0	0	8,040	8,864	0	0	8,864	0	0
Malaita ICM and EBFM integration and priority-setting - 10 meeting	0	0	10,720	0	10,720	12,410	6,205	0	6,205	0	0
Malaita pilot demonstrations	0	0	60,300	60,300	120,600	143,100	0	0	143,100	0	0
Boat for demonstrations (2)	28,408	0	0	0	28,408	29,828	0	0	0	29,828	0
Remote sensing image interpret - int'l TA	0	43,517	0	0	43,517	47,977	0	0	47,977	0	0
		0									
Climate Change - regional contract											
Data collection - domestic staff (9 months)	0	18,090	18,090	0	36,180	40,886	0	40,886	0	0	0
Scenario development - SIMCLIM	0	36,850	36,850	0	73,700	83,286	0	83,286	0	0	0
Community vulnerability - 10 local meetings	0	0	10,720	0	10,720	12,410	0	12,410	0	0	0
Adaptation planning - domestic staff - (4.5 months)	0	0	18,090	0	18,090	20,941	0	20,941	0	0	0
Pilot demonstrations - 4 communities	0	0	40,200	40,200	80,400	95,400	0	95,400	0	0	0
Learning communications - 1 forum, printed guidelines	0	0	0	18,760	18,760	22,803	0	22,803	0	0	0
Enabling Conditions											
Ecosystem monitor travel, per diem, boat fuel for transects	0	19,135	19,135	19,135	57,406	66,507	0	36,579	29,928	0	0
Fisheries mentor forums	0	19,296	19,296	9,648	48,240	55,339	0	27,669	0	0	27,669
Environment ICM definition workshops	1,340	0	0	0	1,340	1,407	0	0	1,407	0	0
Environment sustainable indicators - dom TA	5,360	5,360	0	0	10,720	11,537	0	0	11,537	0	0
Fisheries legal int'l TA	0	71,992	71,992	71,992	215,975	250,216	0	0	250,216	0	0
IUCN - CELCOR local lawyer training/support	10,720	10,720	10,720	10,720	42,880	48,515	0	0	48,515	0	0
IUCN - CELCOR paralegal training to local lawyers	12,864	12,864	0	0	25,728	27,690	0	0	27,690	0	0
Environment info mgmt data forums	5,360	8,040	5,360	5,360	24,120	27,212	0	13,606	0	0	13,606
Environment data entry dom TA	0	5,360	5,360	0	10,720	12,114	0	0	12,114	0	0
Environment map production, GIS training	3,350	10,050	6,700	0	20,100	22,354	0	0	0	0	22,354
Fisheries GIS system	30,150	0	0	0	30,150	31,658	0	0	0	31,658	0
Quality and Strategy	15,323	15,323	15,323	15,323	61,292	69,346	0	0	69,346	0	0
Senior officials travel to CTI meetings	10,653	10,653	10,653	10,653	42,612	48,212	0	0	0	0	48,212
Roundtable learning framework	14,740	14,740	14,740	14,740	58,960	66,708	0	0	66,708	0	0
	799,277	**864,079**	**702,944**	**476,383**	**2,842,683**	**3,184,680**	**586,039**	**364,456**	**1,818,143**	**201,106**	**214,934**

SOLOMON ISLANDS ASSUMPTIONS ON COSTS

Sols Notes on Detail Costs
all figures in SBD unless noted as being USD

(1) Project management office includes 1 Director at 80,000 per year, 1 Finance at 70,000 per year, and 1 Administrator at 50,000 per year. Begins in 2nd quarter of Year 1 and runs through Year 4.
(2) Local travel includes 60 days per year of rental cars at 500/day; 6 return airfares to Malaita per year at 2000 per trip; 6 return airfares to Isabel per year at 1200 per trip;
200 local taxis per year at 30 per ride; 50 days per diem per year at 800/day.
(3) Office equipment includes 3 computers at 3500 each, 1 prointer at 1200, and 1 copier at 6000.
(4) Meetings includes 10 meetings at 20,000 each. This assumes 20 participants per meeting and includes 2000 for room hire, 2000 for food,
and 12,000 for 8 ferry trips at 1200 return per trip, and 8 per diems at 800/day.
(5) Accounting and overheads is 15% of project management costs.
(6) Graduate trainees includes salary of 25,000 per year; 25,000 housing allowance per year; 10,000 per diem per year per trainee.
(7) USP training includes fee rates of USD 1200 per day; per diems of USD 180 per day; and 2 round trip airfares Suva - Honiara per course at USD 500 per return airfare.
Also included is 10 airfares per course at 2000 return each and 800/day per diem for 10 people per course.
(8) Training with a domestic trainer assumes 28,000 per week for 2 trainers; 20,000 per week for meeting room.
(9) Fish dive gear assumes 12,000 per set.
(10) Socio-economic international TA assumes USD 15,000 per month fees, USD 5400 per month per diem, and USD 2500 for international travel.
(11) Communications staff assumes 35,000 per year salary, 35,000 per year housing allowance, and 7000 per year per diem.
(12) Live and Learn contract assumes training of 1 week twice a year at 48,000 per week and 100,000 for training materials.
(13) SILLMA training cost is based on the domestic training cost of 48,000 per week of training.
(14) SILLMA awareness workshops are based on the weekly domestic training rate of 48,000 per week.
(15) SILLMA leadership training is based on domestic training cost of 48,000 per week.
(16) Ecoregional assessments assumes the following costs per island (either Isabel or Malaita): 3 return airfares Brisbane - Honiara at 5250 each, 90 days of per diems for 3 people at USD 180/day,
fee rate of 75,000 per month for 3 people, 5 domestic return airfares of 2000 each; domestic per diems of 800 /day for 2 people, 30 days each, 2 domestic fees at 7500 per month each,
4 months of data assembly and analysis at 7500 per month, and 4 months of scenario selections at 7500 per month.
(17) Working group meetings assumes 40,000 per meeting in Isabel and 30,000 per meeting in Malaita.
(18) ICM data collection assumes domestic fees of 7500/month for 6 months, 400/day per diem for 90 days, 20 boat trips at 800/trip, 2 domestic airfares at 2000 each (Isabel) or 1200 each (Malaita).
(19) Remote sensing maps assumes a base cost of USD 30,000.
(20) Data aggregation and analyssi assumes domestic fees of 7500/month for 4 months.
(21) Transects assumes 60 days of transect work, 1000 litres of fuel per day at 8 per litre, 2 domestic airfares at 2000 each, 60 days per diem for 2 people at 800/day each.

(22) Habitat mapping assumes 2 months domestic fees at 30,000 per month
(23) Resource assessment assumes 2 months domestic fees at 30,000 per month.
(24) EBFM priority-setting meetings assumes 30 meetings at 4000 per meeting, which includes 2 days domestic fees at 1000 each, 2 days per diem at 400 per day, 750 l fuel cost and 450 in misc.
(25) Pilot demonstrations assumes communities will identify specific pilots to be trialled - possibly including new agriculture practices, forestry development, and resolution of specific inter-community issues.
(26) Boat assumes 96000 for 2 boats with 40 hp motors plus 20,000 for shipping costs from Honiara to the provinces.
(27) Remorte sensing international TA assumes fee rate of USD 15,000 per month, USD 5400 per diem per mponth, and USD 2500 for internationalt ravel.
(28) Climate change data collection assumes domestic fees of 30,000 per month for 9 months.
(29) Scenario development assumes domestic fees of 30,000 per month for 4 months.
(30) Adaptation planning assumes domestic fees of 30,000 per month for 4.5 months.
(31) Pilots assumes the cliamte change process will identify specific adaptation pilots to be trialled.
(32) Learning communications assumes 48,000 for 1 week of seminars and 92,000 for materials.
(33) Ecosystem monitor assumes 2 people travelling 4 times per year for 10 days each trip, which includes 8 return airfares at 2000, 80 days per diem at 800 per day,
1000 litres of boat fuel at 8 per litre for 8 trips, per diems for localpeople at 400 per day for 160 days.
(34) Mentor forums assumes 72,000 per forum, which includes airfare and ferry cost of 28,800 for 18 people and 43,200 in per diem cost which includes 18 people at 800 per day for 3 days.
(35) ICM definition workshops assumes 4 workshops at 20,000 each.
(36) EBFM forums assumes 70,000 per forum.
(37) Sustainability indictors assumes domestic fees of 30,000 per month and 10,000 per month expenses for 2 months.
(38) Legal interntaional TA assumes USD 30,000 per month in fees, USD 5400 per month in per diems, and USD 2500 in travel.
(39) Legal paralegal training assumes 48,00 for 1 week of training and 2 weeks of training per year.
(40) Environmental data forums assumes 20,000 per meeting and 2 or 3 meetings per year.
(41) Environmental data entry assumes a fee rate of 30,000 per month and 10,000 per month expenses for 2 months.
(42) Environment map production assumes 1 week of training at 48,000 and 100,000 for map mateirals.
(43) Fisheries GIS productioon assumes 1 server, 1 map printer, 1 work station, and GIS software license.
(44) Quality and strategy assumes 2 domestic airfares each for 3 people at 3200, 800 per diem per day for 3 people for 10 days, 2 international airfares at USD 2500 each,
14 days per diem at USD 180 per day for 2 people.
(45) Travel for officials assumes 2 international airfares at USD 2500 each and 14 days per diem at USD 200 each for 2 people.
(46) Roundtable learning forum is per regional contract to IUCN.

Financing By Country and FInancier

	Country					
Financier	**Fiji**	**Vanuatu**	**Timor**	**PNG**	**Sol Islands**	**Total**
Asian Development Bank	$202,292	$205,178	$210,737	$200,031	$201,106	$1,019,343
GEF - International Waters	$582,683	$583,393	$579,328	$585,164	$586,039	$2,916,607
GEF - Climate Change	$360,482	$364,153	$364,202	$362,823	$364,456	$1,816,116
GEF - Biodiversity	$0	$1,364,387	$1,600,021	$3,585,226	$1,818,143	$8,367,778
Government	$231,184	$490,410	$407,586	$1,888,811	$214,934	$3,232,925
AIMS	$0	$0	$394,063	$0	$0	$394,063
Total	**$1,376,640**	**$3,007,520**	**$3,555,938**	**$6,622,054**	**$3,184,680**	**$17,746,832**

Financing By Component and Financier

Fiji

	IW	CC	BD	ADB	GOVT	AIMS	TOTAL
Comp 1	$3,339	$0	$0	$0	$185,999	0	**$189,338**
Comp 2	$446,416	$265,331	$0	$80,564	$45,185	0	**$837,495**
Comp 3	$37,778	$0	$0	$121,728	$0	0	**$159,506**
Comp 4	$95,151	$95,151	$0	$0	$0	0	**$190,302**
Total	**$582,683**	**$360,482**	**$0**	**$202,292**	**$231,184**	0	**$1,376,640**

Vanuatu

	IW	CC	BD	ADB	GOVT	AIMS	TOTAL
Comp 1	$0	$33,180	$296,992	$11,970	$39,140	0	**$381,282**
Comp 2	336,693	251,537	605,615	36,665	282,297	0	**1,512,807**
Comp 3	$58,424	$16,670	$179,341	$84,618	$72,237	0	**$411,291**
Comp 4	$188,276	$62,766	$282,439	$71,924	$96,735	0	**$702,140**
Total	**$583,393**	**$364,153**	**$1,364,387**	**$205,178**	**$490,410**	0	**$3,007,520**

Timor

	IW	CC	BD	ADB	GOVT	AIMS	TOTAL
Comp 1	$235,184	$115,610	$836,520	$54,512	$228,270	$394,063	**1,864,160**
Comp 2	176,597	202,550	308,736	76,494	56,963	0	**821,340**
Comp 3	$25,358	$0	$285,907	$43,127	$122,354	$0	**476,745**
Comp 4	$142,190	$46,042	$168,858	$36,604	$0	$0	**393,693**
Total	**$579,328**	**$364,202**	**$1,600,021**	**$210,737**	**$407,586**	**$394,063**	**$3,555,938**

PNG

	IW	CC	BD	ADB	GOVT	AIMS	TOTAL
Comp 1	$252,786	$0	$660,842	$0	$0	$0	**$913,628**
Comp 2	134,512	362,823	1,843,258	27,820	1,522,508	0	**3,890,921**
Comp 3	$0	$0	$1,045,260	$0	$366,303	$0	**1,411,563**
Comp 4	$197,866	$0	$35,866	$172,211	$0	$0	**405,943**
Total	**$585,164**	**$362,823**	**$3,585,226**	**$200,031**	**$1,888,811**	**$0**	**$6,622,054**

Sol Islands

	IW	CC	BD	ADB	GOVT	AIMS	TOTAL
Comp 1	$328,960	$0	$496,059	$16,884	$0	$0	**841,903**
Comp 2	159,126	275,725	689,487	29,828	0	0	**1,154,166**
Comp 3	$0	$77,854	$517,461	$31,658	$111,841	$0	**738,813**
Comp 4	$97,953	$10,877	$115,137	$122,737	$103,094	$0	**$449,798**
Total	**$586,039**	**$364,456**	**$1,818,143**	**$201,106**	**$214,934**	**$0**	**$3,184,680**

Total

	IW	CC	BD	ADB	GOVT	AIMS	TOTAL
Comp 1	$820,269	$148,790	$2,290,413	$83,366	$453,409	$394,063	**$4,190,311**
Comp 2	$1,253,343	$1,357,966	$3,447,096	$251,371	$1,906,952	$0	**$8,216,728**
Comp 3	$121,559	$94,524	$2,027,969	$281,131	$672,735	$0	**$3,197,918**
Comp 4	$721,436	$214,835	$602,300	$403,475	$199,829	$0	**$2,141,875**
Total	**$2,916,607**	**$1,816,116**	**$8,367,778**	**$1,019,343**	**$3,232,925**	**$394,063**	**$17,746,832**

Financing By Specific Cost Category and Financier

Fiji

	Total	GEF	Other
TA International	$0	$0	$0
TA Local	$0	$0	$0
Project Management	$180,707	$180,707	$0
Office Equipment	$6,678	$6,678	$0
Local Transport	$76,187	$54,227	$21,960

Vanuatu

	Total	GEF	Other
TA International	$364,903	$364,903	$0
TA Local	$0	$0	$0
Project Management	$545,964	$392,267	$153,697
Office Equipment	$46,182	$19,250	$26,933
Local Transport	$150,669	$137,092	$13,576

Timor

	Total	GEF	Other
TA International	$643,603	$643,603	$0
TA Local	$0	$0	$0
Project Management	$298,256	$298,256	$0
Office Equipment	$91,116	$0	$91,116
Local Transport	$165,356	$165,356	$0

PNG

	Total	GEF	Other
TA International	$1,045,246	$1,045,246	$0
TA Local	$629,246	$286,000	$343,246
Project Management	$288,882	$131,116	$157,766
Office Equipment	$42,265	$0	$42,265
Local Transport	$79,004	$46,724	$32,279

Sol Islands

	Total	GEF	Other
TA International	$385,244	$385,244	$0
TA Local	$11,537	$11,537	$0
Project Management	$374,407	$170,330	$204,077
Office Equipment	$52,664	$0	$52,664
Local Transport	$54,384	$32,630	$21,754

Total

	Total	GEF	Other
TA International	$2,438,995	$2,438,995	$0
TA Local	$640,784	$297,537	$343,246
Project Management	$1,688,216	$1,172,677	$515,539
Office Equipment	$238,905	$25,928	$212,978
Local Transport	$525,599	$436,029	$89,569

Inflation

	2008 Estimates	2009 ADO 09	2009 New Forecast	2010 ADO 09	2010 New Forecast	Price Contingency %
Cook Islands	4.3	5.1	6.5	2.4	2.2	
Fiji	7.7	4.5	7.0	4.5	7.0	7.0
Kiribati	11.0	6.5	6.6	2.0	2.9	
Marshall Islands	17.5	9.2	9.6	0.8	1.7	
Micronesia, Federated States of	5.0	2.9	2.9	0.8	2.2	
Nauru	4.5	3.3	1.8	2.0	1.8	
Palau	12.0	6.4	5.2	0.8	3.0	
Papua New Guinea	10.8	7.0	7.0	6.0	5.5	6.0
Samoa	11.5	7.0	5.7	2.4	3.2	
Solomon Islands	16.5	8.6	8.3	2.0	6.9	7.0
Timor-Leste	7.6	7.1	1.5	6.5	3.1	3.0
Tonga	9.9	6.2	6.2	2.4	3.1	
Tuvalu	5.3	3.7	3.8	2.0	2.3	
Vanuatu	5.8	3.9	4.3	2.0	3.0	3.0
Regional average	**9.5**	**6.2**	**6.1**	**4.9**	**5.2**	
Pacific Islands average*	**8.8**	**5.2**	**6.5**	**3.3**	**5.4**	

** the region exlcuding Timor-Leste and Papua New Guinea*

Taxation

	Timor	PNG	Solomon Islands	Vanuatu	Fiji
VAT / GST	Sales tax – 2.5%, & Services tax (hotel, bar, restaurant, telecommunication) – 5%	10%	Locally manufactured goods - 10%	12.50%	12.50%
Import Duties	2.50%	N/A	5-10% depending on the goods	5-50% depending on the goods	5-27% depending on the goods
Excise Tax	Varying rates for alcohol, tobacco, fuel and luxury items	Varying rates for alcohol, tobacco, fuel and luxury items	For beer, tobacco & cigarettes	Varying rates	

All dollar amounts are in local currency

Supplementary Appendix G
Climate Change Contractor
Terms of Reference

Draft Final Technical Assistance Report

for

RETA 6741 Strengthening Coastal and Marine Resources in the Coral Triangle of the Pacific

ADB, GEF and AIMS Financed

Background

1124. GEF seeks to build the knowledge and experience in the development and implementation of adaptation programs to build resilience within ecosystems resulting in greater capacity of coral based ecosystems to respond to the adverse effects of climate change. Much of the climate change adaptation work within the coastal zone has focused on land based responses or the protection from increased severity of weather patterns. The RETA design team has observed these programs throughout nearly all of the participating countries and considers these to be mostly out of the scope of the GEF funded work on climate change adaptation simply because few if any actually target or influence the resilience of coral reef based ecosystems.

1125. The RETA program shall target the limited resources onto what can be achieved to target the resilience of coral based ecosystems and not simply develop a mitigation program for increased frequency of adverse events such as drought.

1126. The priority for the climate change program is to:

- Identify and implement suitable adaptation measures, and
- Building in-country adaptive capacity

1127. The purpose of these priorities to increasingly reduce vulnerability and increase ecosystem resilience to externally driven climate change. For GEF the focus must be linked directly to the areas delivering against global environmental benefits. The overall goal is to "expand the experiences with adaptation in order to improve global understanding of the challenges brought on by climate change including variability.

1128. The RETA proposes that the two aspects of GEF goal to be supported are the development of "experiences" and the ability to understand the challenges from these experiences. As such it is proposed that a single contractor model will operate in four of the five countries being Timor Leste, Vanuatu, Solomon Islands, and Fiji. The single contractor offers several advantages that are considered to out weigh the benefits of competitive bidding.

1129. In PNG the OCCS has skills and systems in place to deliver the program however the OCCS may choose to contract certain tasks or skills to supplement existing capacity. The focus within PNG is to develop credible scenarios on which to develop and pilot adaptation programs. Existing programs for completing vulnerability assessment and planning are well defined and there are sufficient skilled operators. The current gap is to develop credible scenarios from which future planning and adaptation responses can be developed. The PNG program lies outside of the contract described below.

H. Proposal

1130. The RETA proposes that WORLDFISH is directly contracted using a single source procurement modality for the implementation of the Climate Change adaptation program. WORLDFISH have completed regional climate change reviews for South East Asia and have been working in numerous countries on adaptation programs. Their focus on technical fisheries aspects including the delivering of improved management through CBNRM models in Melanesia provides an added dimension to ensure that the program does not slip into mitigation investment. To balance the fisheries expertise it is recommended that WORLD FISH use their Memorandum of Understanding with James Cook University and existing linkages with the USP to bring the capability for development of credible scenarios against which communities and technical experts can plan against for adaptation.

I. Procurement

1131. The procurement will be single source contracting with annual performance assessment. On Program effectiveness World fish would be responsible for the development of a proposal with detailed implementation and budgets to be presented to ADB. Prior to submission to ADB the proposal WORLDFISH will need to work with the relevant Climate Change agency personnel to build the proposal and then to submit this to the CTI-Pacific oversight group in each country for ratification. The

proposal will detail methods, sites and performance targets that are consistent with field needs and the overall design concept.

1132. WOLRDFISH will hold the contract and then will work through MOU or subcontract with other consortia members, however it is a prerequisite that the consortia clearly demonstrate capability in scenario development, coral responses, fisheries responses and CBNRM. This competency will be demonstrated to ADB as part of the Proposal.

J. Tasks

The proposal will address the following points:

- Country status in Climate change adaptation and vulnerability assessment
- Country priorities and capability
- Proposed outcomes and impacts from RETA:
  a. Whole of government cross sector needs and response
- Outputs
- Activities specified both by time, location and sequence
- Inputs
- Performance Indicators and monitoring
- Linkages to wider RETA program
- Personnel and time inputs
- Budget

1133. The program shall include a detailed section on approach and methodology that links closely to CBNRM and addresses the development and use of scenarios, vulnerability and facilitated community based planning.

K. Budget

1134. The total available budget by major expenditure category is USD 943,260 see table below.

Country	Amount (USD)	Expense Category (USD)						
		TA	Studies	Civil Works	Equipment	Operations	Overheads	Training
Fiji	$239,858	$23,986	$47,972	$71,958	$23,986	$23,986	$47,972	0
Vanuatu	$225,126	$22,416	$43,215	$63,468	$11,768	$22,703	$44,885	$16,670
Timor	$202,550	0	$112,038	0	0	$90,513	0	0
PNG	$0							
Solomons	$275,725	0	$157,522	0	0	$95,400	0	$22,803
Total	**$943,260**	**$46,402**	**$360,747**	**$135,426**	**$35,754**	**$232,601**	**$92,857**	**$39,473**

Supplementary Appendix H
Legal Reform and Support

Draft Final Technical Assistance Report

for

RETA 6741 Strengthening Coastal and Marine Resources in the Coral Triangle of the Pacific

ADB, GEF and AIMS Financed

Background

1135. Each of the five countries in the CTI Program faces challenges to further develop appropriate legislative and regulatory frameworks that will support policies that guide the development and management of marine natural resources. These challenges include:

- strengthening policy development so that it has a stronger legal basis,
- designing and drafting regulatory approaches to support policy goals,
- designing and drafting legislation to support policy,
- ensuring consistency in approach across marine natural resources – e.g., management of fisheries and management of inshore coastal resources,
- developing an integrated approach for coastal natural resource management that includes both terrestrial and marine resources, and
- promoting a broad understanding of how the legal, regulatory, and policy frameworks are meant to function.

1136. The PPTA team has incorporated activities in each country's CTI program to strengthen legal reform and develop skills and experience in legislative and regulatory systems and approaches. To address similar activities across countries, the PPTA team has also put in place a sub-regional contract for legal support.

1137. In the CTI Program, the major emphasis in each country is on capacity building and best-practice demonstrations on integrated coastal resources management and sustainable development of natural resources – learn-by-doing. Development of policy, supported by legal and regulatory frameworks, will follow-on from the first two activities.

L. Country Issues and Approach

1138. Each country faces a slightly different set of policy, legislative, and regulatory issues. These are described below, along with how the CTI program will support legal developments.

1. Fiji

1139. Fiji has years of experience in implementing community-based management of inshore marine resources through its locally-managed marine areas (LMMAs). This initiative has been largely driven by local communities, and supported mainly through customary rights. Legislative and regulatory frameworks have in the main lagged this approach rather than led it.

1140.

1141. A key challenge going forward for Fiji is how to manage larger habitat or ecosystem areas that cross two or more LMMAs. Related to this is the question of how terrestrial resources that impact marine areas can be included along with marine resources in an integrated ecosystem approach to coastal resource management.

1142. Fiji has a relatively new Environment Management Act (2005), but has yet to make this Act operational with an administrative and regulatory framework that includes enforcement. Further, this new Act does not mesh well with several dated pieces of related legislation, including the Fisheries Act 1941, Town Planning Act 1946, Native Land Trust Act 1940, Land Conservation and Improvement Act

1941, Rivers and Streams Act 1882, and Fijian Affairs Act 1945. The more modern Marine Spaces Act 1973 and Forest Decree Act 1992 are also part of this plethora of legislation.

1143. Fiji is at present undergoing processes that could lead to major changes to its Constitution. This could affect any legislative and regulatory changes, at least in the short-term, including those aimed at natural resource management and environmental protection.

1144. One of Fiji's key needs is to develop a larger number of Fijians who are skilled in developing legislative and regulatory frameworks for the natural resources and environmental areas. A new legal association, Fiji Environmental Law Association (ELA), has been formed to promote best practice in environmental legal cases but also to provide key stakeholder support to the government in developing legal and regulatory frameworks.

1145. The CTI program will provide funds

- so that the ELA can provide newer lawyers with experience in environmental law and its development. Some of this experience can come from ELA involvement with CTI-funded pilot projects - helping to identify key legal issues that arise from the projects and then to recommend solutions to these issues.
- to support the mentoring of ELA legal staff by senior international environmental lawyers, who are organized by the IUCN in Fiji.

1146. The CTI program budget to support legal development in Fiji is about USD 85,000.

2. Vanuatu

1147. With a low population base, Vanuatu has historically focused on exploiting its natural resources. In recent years Vanuatu has sought to manage its natural resources as assets from which it can achieve more economic development.

1148. For example, Vanuatu's focus in fisheries has mainly been on catch management. But the Department of Fisheries seeks to develop a more comprehensive ecosystem-based approach to fisheries management, at least for inshore marine resources.

1149. Vanuatu has begun to foster community-based approaches to natural resource management. These are based on customary ownership of resources and mostly have been confined to managing local areas of terrestrial or inshore marine resources. There is at least one community-based approach to natural resource management (the ELMA program on Efate Island) that seeks to develop a larger, ecosystem approach that includes managing terrestrial and inshore marine resources.

1150. Key challenges for Vanuatu include coordinating its legislative and regulatory framework with customary ownership and practices; addressing the possible devolution of legal and regulatory responsibilities between central government and provincial governments; and reviewing legislation to ensure consistency across all natural resource management legislation.

1151. Vanuatu approved its Constitution in 1980 as part of becoming an independent nation. Relevant legislation to natural resources management and environmental protection is mostly fairly new, including the Foreshore Development Act 1976, Maritime Zone Act 1981, Maritime Act 1982, Public Health Act 1994, Forestry Act 2001, Environment Management and Conservation Act 2002, Water Resources Management Act 2002, and Fisheries Act 2005.

1152. Major reviews are underway for changes to the Environment Management and Conservation Act and the Fisheries Act.

1153. The CTI program will support Vanuatu to:

- review its legislative priorities for natural resource management, and
- develop a plan to develop more lawyers who are skilled in environmental and natural resource management. This will be done through the IUCN's legal network.

1154. The CTI program budget for legal support in Vanuatu is about US 12,000.

3. Papua New Guinea

1155. Papua New Guinea has a high number of its people who depend on local renewable natural resources for subsistence – as much as 80 percent of the rural population. Both terrestrial and marine renewable natural resources have been severely degraded while at the same time population growth has been skyrocketing.

1156. In recent years, the PNG government has focused mainly on the development of nonrenewable resources – energy and minerals. But the government also saw renewable resources – especially forestry and pelagic fisheries – as being available for short-term exploitation.

1157. A small number of initiatives to promote community-based management of inshore marine resources have begun – mostly fostered by NGOs operating in PNG. These initiatives have focused on managing local marine areas. There is now interest from NGOs and the government in addressing issues that arise from terrestrial impacts on the marine area and on managing marine resources across a broader ecosystem.

1158. A key challenge now for the PNG government is to manage renewable natural resources as a sustainable asset base that can support the food security and economic development needs of a high population. This will require substantial revisions to policy settings, and supporting legislative and regulatory frameworks.

1159. A second challenge is to define more precisely the roles that provincial governments and local governments can play and the roles that central government will fulfill in natural resource management. A third challenge is to approach renewable natural resource management from an ecosystem perspective.

1160. Key PNG legislation includes the Fauna Protection and Control Act 1966, Conservation Areas Act 1978, National Parks Act 1982, Forestry Act 1991, Fisheries Management Act 1998, and Environment Act 2000. Most of this legislation is ill-suited to meet the challenges noted above.

1161. The CTI program will support PNG to address its challenges by:

- training local communities and local court officials in the legal system, legal rights, and legal opportunities,
- supporting a review of local and provincial government approaches to natural resource management and required legislative and regulatory frameworks,
- strengthening the understanding of staff in the Department of Environment on the legal basis for natural resource management and how to develop legal reforms, and
- providing funding for specific legislative drafting tasks.

1162. The CTI program budget for this is about USD 460,000.

4. Solomon Islands

1163. Solomon Islands has two principal renewable natural resources – forests and fisheries. Commercially-viable forests will disappear from the Solomon's in the next few years. The focus of fisheries management has been maximizing the catch of pelagic fishes and not on inshore marine resources management.

1164. In recent years, a small number of communities have become involved in managing local inshore fisheries and coastal marine resources. These communities have been fostered mainly by NGOs in the Solomon Islands, including a new Solomon Islands local managed marine areas (SILMMA) organization, although the Department of Fisheries has also become more interested in the last three years.

1165. A key challenge for the Solomon Islands is how to extend community-based local management programs while at the same time addressing how larger ecosystems that extend across two or more local areas can be managed. A second challenge is for the government to define the roles of central government agencies and provincial governments in marine resource management. A third challenge is to develop policy settings, supported by a legislative and regulatory framework, that will require sustainable management, especially of inshore ecosystems that include terrestrial as well as marine resources.

1166. Key legislation on natural resource management in the Solomon Islands includes the Forest Resources and Timber Utilization Act 1978, Mines and Minerals Act 1996, Environment Act 1998, Fisheries Act 1998, and Wildlife Protection Act 1998.

1167. The CTI program will support legal reform and development by funding:

- the development of local lawyers in environmental and natural resource law through a new environmental law association, and
- an international legal drafter to work with the Department of Fisheries on revising fisheries legislation.

1168. The CTI program budget for this is about USD 325,000.

5. Timor-Leste

1169. Of the five countries in the CTI program, Timor-Leste is the newest to become an independent nation. As a consequence, its legislative and regulatory framework for natural resources management is not well developed.

1170. Timor-Leste faces the additional challenge that its existing legislation and regulations were designed under different governance systems – those of the Portuguese, Indonesian, United Nations, and the new Republic of Timor-Leste. In addition to significant differences in approach to governance, different languages were used for the existing legislation and regulations. Thus, it is extremely difficult for any government department, much less individual, to be able to access and understand the entire legal and regulatory framework.

1171. Timor-Leste seeks to manage its inshore coastal resources as a sustainable asset – to improve food security and economic development for coastal dwelling people.

1172. A key challenge is to empower local communities to manage their local marine resources, but to also have a broader ecosystem approach to manage issues that extend over multiple local areas and/or to address terrestrial issues that impact on marine resources. A second challenge is to build the capability of central government agencies, so that they can provide communities with needed technical advice and policy information.

1173. Legislation and regulations concerning natural resource management includes Law 23/1997 on Environmental Management, UNTAET Regulation 2000/19 on Protected Places, UNTAET Regulation 2000/17, Regulation 20/1990 on Control of Water pollution, Diploma 01/03/GM/I/2005 on the Definition of Fishing Grounds, Diploma 02/04/GM/I/2005 on Main Fishery Species, Diploma 03/05/GM/I/2005 on Allowable of Percentage By Catch.

1174. The CTI program will support legal development in Timor-Leste by funding:

- international legal technical assistance to set priorities for developing a natural resources legislative framework, and
- domestic legal technical assistance to identify any legal issues that arise in the two demonstration projects and recommend solutions to these.

1175. The CTI program budget for this is USD 49,095.

M. Outputs

1176. The following are the expected key outputs from each country:

Fiji

1. Legal and regulatory issues arising from the demonstration areas are identified.
2. At least one local lawyer gains two years experience in environmental and natural resource law and regulations with a legal reforms road map prioritized for ICM
3. A legal mentoring program has assisted at least 3 local lawyers.

Vanuatu

1. Priorities are agreed for legislative and regulatory reform.
2. A plan is completed to increase the number of environmental lawyers in Vanuatu.

Papua New Guinea

1. At least 600 people in local communities are trained in the legal system and legal opportunities and 20 local court officials are trained in environmental law.
   A review of local and provincial government approaches to natural resource management and required legislative and regulatory frameworks is completed.

2. Department of Environment staff have a program for legal reform necessary to support new policies on sustainable development of inshore marine ecosystems.
3. Specific pieces of legislation have been drafted.

Solomon Islands

1. A new environmental law association has assisted the development of at least 3 local lawyers tin environmental and natural resource law.
2. An international legislation drafter to work has revised fisheries legislation at the at the national level and has developed test legislation for two provinces.

Timor-Leste

1. Priorities agreed for developing a natural resources legislative framework that will enable sustainable development of integrated coastal resources.
2. Legal issues that arise in the two demonstration projects are identified and recommend solutions to these developed.

N. Implementation arrangements

1177. The Regional Legal Support program will establish an informal learning and mentoring network and will provide direct technical assistance and financial support to strengthen developing environmental law associations in Fiji, Solomon Islands, Vanuatu and PNG. The program and the environmental law associations will also support the review and analysis of existing ICM related legislation and policy and work closely with government agencies to identify roadmaps for priority reforms to improve the ICM enabling framework in each country.

1178. Another important function of the Regional Legal Support program will be the strengthening of local and community level understanding of legal rights and requirements relating to the use of and management of coastal and marine resources through the delivery of para legal support services. In the case of PNG this work will extend to the advanced training of village and district court officials so they will be better able to adjudicate over local resource management issues and disputes.

1179. Two organizations (IUCN and CELCOR) exist with the expertise and experience to effectively implement the Regional Legal Support program. IUCN which is based in Fiji has an international reputation for delivering environmental law support to its member organizations which comprise both government and non-government organizations. It has a standing Commission on Environmental Law and a vast international network of expertise on which to draw in support of the implementation of the program. Recently IUCN has recruited an environmental lawyer to provide Technical Assistance and mentoring support to governments and NGO's in the region including the RETA. IUCN will be the primary contractor for the Regional Legal Support program.

1180. CELCOR (Centre for Environmental Law and Community Rights) is based in PNG and has a successful track record of working at the community and local level providing legal advice and training on wide range of resource management issues in PNG. It has also been engaged in the development of innovative Local Level Government environmental legislation which formalizes community based resource management areas including LMMA's by providing legal recognition of management plans and rules. CELCOR has been instrumental in helping establish the newly formed Solomon Islands Environmental Law Association and is keen to share its expertise and experience across the region. CELCOR will be sub-contracted to provide a range of appropriate services in support of the RETA enabling framework outputs.

1181. These two organizations will form a highly effective partnership which over the four years of the RETA , will significantly improve the standard of the national ICM and community based resource management enabling frameworks, raise community level awareness of resource management legislation and its effective implantation and most importantly, will build a linked regional cadre of environmental lawyers with experience in legal analysis and drafting of integrated resource management legislation.

1. Summary of IUCN Regional Legal Support Program Outputs.

a. Fiji.

1182. RETA will provide financial support and technical assistance through the IUCN Regional Legal Support program to the Fiji Environmental Law Association (FELA) to:

- Provide an intern to work with National Trust of Fiji (IA) and Dept. Of Environment (EA) to identify ICM legal requirements and reforms
- To engage with the DoE Project Law Officer in above process
- Support engagement of FELA in Demonstration Area activities including:
- review of local level village/Tikina rules and regulations supporting CBRM
- review of Provincial/National law, ordinances and institutional framework supporting ICM implementation and compliance
- identify priority reforms and draft suitable legal responses

- Participate in annual Q&S review process

b. PNG

1183. RETA will provide financial support and technical assistance through the IUCN Regional Legal Support program to develop domestic capability to identify and undertake legal reviews and drafting to support coastal and marine resource management needs by:

- Linking DEC Legal team, CELCOR and F ELA through IUCN Regional Law Support program for training in legal review and drafting (31 tickets + per diem per year or exchange visit)
- Developing legal reform road map and priorities for coastal and marine policy implementation
- Drafting associated legal and regulatory reforms to strengthen coastal and marine resource management and governance.
- Supporting CELCOR in undertaking para legal training in demonstration area communities.

c. Solomon Islands

1184. RETA will provide financial support and technical assistance through the IUCN Regional Legal Support program to build the capability of the Solomon Islands Environmental Law Association (SIELA) to participate in the drafting of improved institutional legal framework for Community Based Resource Management in the Solomon Islands and provision of para-legal services to communiities by:

- Assisting SIELA to contribute to the work of the Fisheries Legal expert developing improved community based coastal and marine resource management legislation
- Providing training in legal review and drafting skills via CELCOR
- Developing and implementing a para- legal awareness program and associated training via CELCOR

d. Vanuatu

1185. RETA will build linkages with the USP Law Campus located in Port Vila and where appropriate, will utilize that agency's expertise to assist with the delivery of the Regional Legal Support Program. It will also gauge interest and support for the establishment of a Environmental Law Association in Vanuatu.

1186. The CTI program will contract the IUCN to deliver a sub-regional legal support program in Fiji, Vanuatu, Papua New Guinea, and Solomon Islands. Table D1 shows the summary budget for this contract.

1187. In addition to this IUCN contract, there will be the following country contracts that will be tendered by the country project manager:

- In Papua New Guinea, contracts for training of local judicial officials and local communities on the legal system (USD 70,642), legislative drafting (USD 121,720), and legal reform in the Department of Environment (USD 22,084),
- In Solomon Islands, a contract for drafting of fisheries law by an international expert (USD 250,216), and
- In Timor-Leste, contracts to review legislative priorities and identify legal issues arising from the two demonstration areas (USD 49,095).

Table 26: Budget for IUCN Regional Contract for Legal Support

Country		Amount (USD)		Expense Category (USD)			
			Domestic TA	Travel	Training	Overhead
Fiji		$83,950	$64,000	$6,000	$5,555	$8,395
Vanuatu		$11,689	$11,689	$0	$0	$0
Timor		$0				
PNG		$257,336	$86,405	$58,037	$87,160	$25,734
Solomons		$76,205	$36,000	$8,700	$23,885	$7,620
Total		**$429,180**	**$198,094**	**$72,737**	**$116,600**	**$41,749**

Supplementary Appendix I
Capacity Assessment

Draft Final Technical Assistance Report

for

RETA 6741 Strengthening Coastal and Marine Resources in the Coral Triangle of the Pacific

ADB, GEF and AIMS Financed

BACKGROUND

1188. Each of the countries in the CTI Program has weak capability to lead a successful program in sustainable development of coastal natural resources. The roles of the designated lead government agencies – Departments of Environment and Departments of Fisheries – are not clear. Roles of provincial and local communities are also not clear and capability is low. Efforts by local NGOs have in some cases galvanised local community actions, but the reach of NGOs across any country is patchy at best.

1189. Government officials frequently do not recognise the key challenges for utilization of coastal natural assets and then possible strategies for developing and managing these assets. Understanding of key linkages between economic development and enhancement of the condition of the natural coastal assets is not broadly- or well- understood by most stakeholders of natural coastal resources. In particular there is little evidence of commitment to sustainable development - increasing jobs and incomes that rely on natural coastal assets, which in turn leads to sustainable improvements in ecosystems of natural coastal assets.

1190. The lead government agencies – especially the Departments of Environment – have low numbers of staff and small budgets. Perceptions of the staff – as reported in surveys completed by the PPTA team – reveal that staff view their own skills as less than adequate for future challenges and that the performance of their agencies can be considerably improved. Survey results are presented in the separate country appendices.

1191. In the CTI Program, the major emphasis in each country is on building individual skills, developing government organizations, and learn-by-doing via best-practice demonstrations on integrated coastal resources management and sustainable development of natural resources. The CTI Program will support each country with an extensive training and development program.

O. COUNTRY ISSUES, APPROACHES, AND CTI SUPPORT

1192. Although each country has similar issues that drive a training and development program, there are also differences and this led the PPTA team to customize training and development.

1. Fiji

1193. Fiji has years of experience in implementing community-based management of inshore marine resources through its locally-managed marine areas (LMMAs). A key issue going forward for Fiji is how to manage larger habitat or ecosystem areas that cross two or more LMMAs. Related to this is the question of how terrestrial resources that impact marine areas can be included along with marine resources in an integrated ecosystem approach to coastal resource management.

1194. The key challenges for development of Fijian government agencies are:

- Improve understanding of staff on sustainable development and ecosystem approaches to managing natural assets,
- Develop leadership on sustainable development that can involve and work across key central government agencies, and
- Involve stakeholders in coastal natural assets in learning about ecosystem approaches to sustainable development through demonstrations.

1195. The CTI Program in Fiji includes training and development for:

- Department of Environment staff on integrated coastal management, inshore fisheries management, and community-based management of coastal resources, and
- Staff in government sector agencies on integrated coastal management.
- The University of South Pacific will deliver both of the above training programs.

1196. The CTI Program budget to support training and development in Fiji is about USD 27,000. In addition, the CTI Program in Fiji includes training and mentoring of new lawyers in environmental and natural resources law, and learn-by-doing demonstrations of ecosystem-based integrated coastal management.

2. Vanuatu

1197. Vanuatu has begun to foster community-based approaches to natural resource management. These are based on customary ownership of resources and mostly have been confined to managing local areas of terrestrial or inshore marine resources.

1198. Key challenges for Vanuatu include:

- Increasing staff numbers and staff skills in the Department of Environment,
- Focusing key central government departments – particularly Department of Environment - on providing overarching direction and technical advice while provincial governments and communities implement programs,
- Moving fisheries management from managing the catch to managing marine habitats and ecosystems, and
- Developing technical skills in coastal resource management.

1199. The CTI Program's training and development in Vanuatu includes:

- Training for staff in government agencies and provincial governments on community-based resource management, integrated coastal management, conservation management, biodiversity assessment, sustainable development, climate change, and project management,
- Training for conservation rangers in North Efate, and
- Funding of new field coordinator positions for the Department of Environment and Shefa province.

1200. University of South Pacific and the climate change contractor for the CTI Program in Vanuatu will deliver the training programs. The CTI Program's budget for training and development in Vanuatu is about USD 294,000. In addition the CTI Program will fund learn-by-doing demonstration programs on ecosystem-based fisheries management and community-based integrated coastal management. Both of these demonstrations will develop and utilize a spatial data system and this will provide learning opportunities for the government's GIS unit.

3. Papua New Guinea

1201. A key challenge for the PNG government is to manage renewable natural resources as a sustainable asset base that can support the food security and economic development needs of a high

population. This will require substantial revisions to policy settings, and supporting legislative and regulatory frameworks.

1202. A second challenge is to define more precisely the roles that provincial governments and local governments can play and the roles that central government will fulfill in natural resource management. A third challenge is to approach renewable natural resource management from an ecosystem perspective.

1203. A small number of initiatives to promote community-based management of inshore marine resources have begun – mostly fostered by NGOs operating in PNG. These initiatives have focused on managing local marine areas. There is now interest from NGOs and the government in addressing issues that arise from terrestrial impacts on the marine area and on managing marine resources across a broader ecosystem.

1204. The CTI Program's training and development in Papua New Guinea includes:

- International TAs to (a) complete an organizational assessment, and (b) develop improved organizational systems of the Department of Environment and Conservation (DEC) in the area of coastal marine resources management,
- Funding for a senior mentor for DEC staff in coastal marine resources management,
- Training for DEC staff in community-based resource management, integrated coastal management, and sustainable development,
- Training for communities in West New Britain and Manus provinces in community-based resource management, integrated coastal management, sustainable development, ecosystem-based fisheries management, and data collection in local marine areas,
- Training of village court officials in West New Britain and Manus provinces,
- Training of communities in West New Britain and Manus provinces in the legal system and legal underpinnings of sustainable development,
- Training for DEC staff in policy drafting, and
- Training for communities in West New Britain province on locally-managed marine areas.

1205. University of South Pacific will provide the training in technical resource management areas. CELCOR, a local legal NGO, working in conjunction with IUCN, will provide the legal training. The CTI Program budget for training and development in Papua New Guinea is about USD 980,000. In addition, the CTI Program will fund extensive learn-by-doing demonstration areas in West New Britain and Manus provinces, and policy and legal development in both DEC and the National Fisheries Authority.

4. Solomon Islands

1206. In recent years, a small number of communities have become involved in managing local inshore fisheries and coastal marine resources. These communities have been fostered mainly by NGOs in the Solomon Islands, including a new Solomon Islands local managed marine areas (SILMMA) organization, although the Department of Fisheries has also become more interested in the last three years.

1207. At the same time, the Ministry of Environment, Conservation, and Meteorology (MECM) began to seriously increase the size and develop its Environment and Conservation division and the Ministry of Fisheries began to undertake major organizational development and change.

1208. Key challenges for the Solomon Islands include:

- extending community-based local management programs while at the same time addressing how larger ecosystems that extend across two or more local areas can be managed,
- defining the roles of central government agencies and provincial governments in marine resource management – in particular Ministry of Fisheries and the relatively new MECM, and
- strengthening the number of people and skills in the MECM,

1209. The CTI Program's training and development in Solomon Islands includes:Funding three new positions in the MECM,

- Training staff in the MECM in community-based resource management, integrated coastal management, adaptive management, information systems and data, monitoring and reporting, and environmental reporting,
- Training staff in the Ministry of Fisheries in ecosystem-based fisheries management, and
- Training communities in Malaita and Isabel in locally-managed marine areas.

1210. University of South Pacific will provide the training in technical resource management areas. The SILLMA program will provide training to communities in locally-managed marine areas. The CTI Program's budget for training and development in Solomon Islands is about USD 556,000. In addition, the CTI Program will fund learn-by-doing demonstrations in Malaita and Isabel provinces, and training for new lawyers in environmental and natural resources law and paralegal training in local communities.

5. Timor-Leste

1211. Timor-Leste seeks to manage its inshore coastal resources as a sustainable asset – to improve food security and economic development for coastal dwelling people.

1212. Key challenges include:

- empower local communities to manage their local marine resources, but to also have a broader ecosystem approach to manage issues that extend over multiple local areas and/or to address terrestrial issues that impact on marine resources,
- build the skills of staff in central government agencies – and in particular the National Directorate of Fisheries (NDFA) - so that they can provide communities with needed technical advice and policy information, and
- undertake organizational development of the NDFA so it has the structure and systems to better lead the strategy and delivery of integrated coastal resource management.

1213. The CTI Program's training and development in Timor-Leste includes:

- International technical assistance to work with the NDFA in implementing changes in the organizational structure and in developing operational systems and procedures,
- Training for NDFA staff in English, snorkelling and diving, and management and administration, and
- Training for NDFA staff in survey design, interviewing, and data analysis.

1214. Local providers will deliver the training programs in English, snorkelling and diving, and management and administration. The Department of Statistics will deliver the training program on surveys. The CTI Program's training and development budget in Timor-Leste is about USD 702,000. In addition, the CTI Program will fund learn-by-doing demonstrations in Batugade and Atuoro Island.

P. OUTPUTS

1215. Following are the key outputs from each country:

Fiji

1. At least 20 staff in the Department of Environment complete technical training.
2. At least 45 staff in sector agencies complete technical training.

Vanuatu

1. Two new field coordinator positions are based in the Department of Environment.
2. At least 20 staff in the Department of Environment and provincial or local governments complete technical training.
3. At least 30 rangers in North Efate complete training.

Papua New Guinea

1. DEC implements an appropriate organization structure that can strategically address the development of natural coastal resources.
2. At least 10 DEC staff are successfully mentored.
3. At least 15 DEC staff complete technical training.
4. At least 200 community residents in West New Britain and Manus provinces complete technical training.
5. Over 20 village court officials in West New Britain and Manus provinces complete training.
6. Over 200 community residents in West New Britain and Manus provinces complete legal training.
7. At least 5 DEC staff complete training in legal drafting.
8. At least 8 communities complete training in data collection for locally-managed marine areas.

Solomon Islands

1. Three new positions are based in the MECM.
2. At least 20 staff in the MECM and other government agencies complete the technical training.
3. At least 15 staff in the Ministry of Fisheries complete the technical training.
4. At least 5 communities in Malaita and Isabel provinces complete training in locally-managed marine areas.

Timor-Leste

1. NDFA is successfully re-structured.
2. NDFA has implemented appropriate systems and processes.
3. At least 40 staff in NDFA complete skills training.
4. At least 15 staff in NDFA complete training in surveys.

Q. IMPLEMENTATION ARRANGEMENTS

1216. The CTI program will contract University of South Pacific to deliver a sub-regional training program in Fiji, Vanuatu, Papua New Guinea, and Solomon Islands. Table C1 shows the summary budget for this contract.

1217. In addition to this USP contract, there will be the following country contracts that will be tendered by the country project manager:

- In Vanuatu, a contract for training of Efate rangers (USD 39,480) and a contract to fund field coordinator positions in the Department of Environment (USD 127,888).
- In Papua New Guinea, contracts for international TAs for DEC (USD 339,476), for a senior mentor (USD 61,919), for local community training (USD 325,430) for training of local judicial officials and local communities on the legal system (USD 70,642), for training West New Britain communities in locally-managed marine areas (USD 48,954), and training DEC staff in policy drafting (USD 66,404).
- In Solomon Islands, contracts for three staff positions in the MECM (USD 73,509), for training Ministry of Fisheries staff in ecosystem-based fisheries management (USD 64,061), and for training of local communities in locally-managed marine areas (USD 35,826).

- In Timor-Leste, contracts for international TAs for NDFA organizational development (USD 568,523), for skills training for NDFA staff (USD 110,093) and for survey training for NDFA staff (USD 23,100).

Country		Amount (USD)		Expense Category (USD)		
				TA	Travel	Per Diems
Fiji		$0				
Vanuatu		$166,191		$133,591	$6,200	$26,400
Timor		$0				
PNG		$128,205		$84,000	$12,000	$32,205
Solomons		$382,328		$212,824	$49,666	$119,838
Total		**$676,724**		**$430,415**	**$67,866**	**$178,443**

Table 27 Budget for USP Regional Contract for Training

Note:
Fiji has $26,684 of USP training that will be paid by government contribution